TEACHING EVERY STUDENT IN THE 21ST CENTURY: TEACHER EFFICACY AND TECHNOLOGY

DISSERTATION

Presented in Partial Fulfillment of the Requirements for
the Degree Doctor of Philosophy in the Graduate
School of The Ohio State University

By

Beatrice Hope Benton-Borghi, M.Ed., M.A.

The Ohio State University
2006

Dissertation Committee

Professor Anita Woolfolk Hoy, Adviser

Professor Robert Hite, Adviser

Professor Joseph Gliem

Professor Rick Voithofer

Approved by

____

Adviser
College of Education

ABSTRACT

This descriptive quantitative online survey research explored the relationships among Teachers' Sense of Efficacy, Collective Inclusion Efficacy, Technology and other predictor variables to determine their saliency in relationship to the criterion variable Teachers' Sense of *Inclusion* Efficacy. Data were collected from a random sample of general and special educators in all teaching positions, across all grade levels, in urban, rural and suburban Ohio school districts. Descriptive quantitative statistics, frequencies, means, standard deviations, percentages, reliability coefficients, correlation coefficients, principal component analyses, multiple regression analyses, and a one-sample t test, were used to analyze the relationships and interrelationships among the predictor variables and the criterion variable. The results provided rich contextual and situational data. The predictor variables, Teachers' Sense of Efficacy, Collective Inclusion Efficacy, and Attitudes Toward Inclusion, had strong or moderate relationships with the criterion variable Teachers' Sense of Inclusion Efficacy.

Analyses of the data support the new scales developed and used in this study to assess teachers' personal and collective efficacy for the *inclusion* of students with disabilities in the general education classroom. The *Teachers' Sense of Inclusion Efficacy Scale* (I-TSES) was adapted from the 12-item Teachers' Sense of Efficacy Scale (TSES) (Tschannen-Moran & Woolfolk Hoy, 2001), and the *Collective Inclusion Efficacy* scale was adapted from the 12-item Collective Efficacy scale (Goddard, 2002). Further research and application of these new scales should help inform schools, colleges, and departments of education (SCDEs) of the need to ensure that teachers are prepared to integrate technology to teach *every* student in the 21st century.

Dedicated to
my loving husband Peter,
my beloved daughter Sarah,
and in memory of my beloved daughter Kathryn.

ACKNOWLEDGMENTS

I wish to express my heartfelt gratitude to the members of my dissertation committee. Their support over the last three years has been truly appreciated while I have been striving to expand my knowledge and scholarly abilities at The Ohio State University. The experience at OSU has been intellectually stimulating, occasionally exhausting, and thoroughly exhilarating. I have been fortunate to have had exceptional learning experiences in every course that I have taken. During this time, I have grown as a student and gained much as a human being through rigorous inquiry, reflection, and discourse, and I have experienced the joy of intellectual partnership with professors and fellow doctoral students. I will cherish these memories of the time that I have spent at the University.

I would like to especially thank the chair of my committee and my co-advisor, Dr. Anita Woolfolk Hoy. Her management style, high expectations, and attention to detail helped me stay focused, work independently, and complete my dissertation in a timely fashion. Her questions for my candidacy examination significantly helped me move in the right direction and gain the necessary momentum for completion. Prior to my examinations, I began to explore the construct of teacher efficacy and found that Teachers' Sense of Efficacy Scale (TSES) (Tschannen-Moran & Woolfolk Hoy, 2002) was robust and theoretically supported, leading me down the path of exploring a method to measure teachers' personal and collective efficacy for the inclusion of students with disabilities in the general education classroom.

Words are insufficient to describe what Dr. Hite's mentorship has meant to me. He has been one of the greatest teachers that I have ever had in my life. I regard him as a master scholar who teaches with the subtle skills of the expert. His tacit and professional knowledge of teacher education has been essential to my intellectual development. He motivated and supported me in the writing of a symposium for the American Association of Colleges of Teachers Education (AACTE) Conference in

Washington DC in February 2005, a learning experience that I will never forget. His vitality, sensitivity, endless energy, commitment to students, deep compassion for all people, and joy of teaching are the qualities that I hope to emulate in my career.

Dr. Rick Voithofer was one of my first professors at OSU. He is a gifted professor with a kind heart who was very helpful in my academic pursuits, providing an entirely new perspective on technology and disabilities that added depth to my dissertation. His carefully chosen questions for my examination challenged my assumptions about the issues surrounding inclusion and introduced me to Disability Theory—seeing individuals with disabilities through a fresh lens, for which I am very grateful. Were it not for his insight, my dissertation would lack an essential underlying structure. Most instructive was Dr. Voithofer's approach. He took me to the door and let me walk through it on my own, essentially inducting me into the constructivist learning style on a personal level.

The quantitative analysis central to my dissertation would not have been possible without the astute guidance of Dr. Joseph Gliem. He made statistics and research enjoyable, understandable, and enlightening—not an easy task to perform. His warm personality and love of learning were infectious. Thanks to his unique style, I looked forward to all of my courses on research design and statistics despite the daunting multiple-choice tests! His provocative candidacy examination was grueling, but it enabled me to understand research design, multiple regression and principal component analysis at a deeper level.

The advice, suggestions, and encouragement of all my professors and academic support personnel at the University eased my burden and allowed me to reach a timely completion of the doctoral program. I would be remiss if I did not mention Drs. Damarin, Lather and James-Brown, who introduced me to a qualitative, socio-cultural perspective. Their expertise lent balance to my inquiry into the factors that impact teaching and learning. Special thanks to Julianne Manchester, fellow doctoral candidate, for convincing me that I would be enriched by Dr. Liu's Structural Equation

Modeling course (SEM)—she knew that I would appreciate the intellectual challenge and that it was important for me to add SEM to my knowledge base. Thanks also to MinJeong Kim for endless hours of stimulating discussions and study sessions while taking the research courses.

Maneuvering through the maze of completing forms and meeting deadlines would not have been possible without the help of Deb Zabloudil at the College of Education Policy and Leadership. Always available to students and willing to listen, she was a helping hand every step of the way. Dianne Efsic was also a steady source of support and inspiration.

From a personal perspective, I must thank my loving husband Peter and my beloved daughter Sarah. They supported my decision to return to school and allowed me the luxury of dedicating my full attention to my studies. They have forgiven a messy house, poorly prepared meals, and forgetfulness, as well as missed family gatherings, vacations, and even time together, all to enable me to spend quality time focusing on my degree. I could not have even begun to study without their constant love and understanding. Helen Borghi, my mother-in-law, was a constant source of strength and moral courage. She never doubted that I would graduate. My sisters Pamela, Linda, Maura and Barbara were also there for me at the most exhausting times when I thought that I might not be able to continue. They reminded me of my passion to share what I learned from my daughter Kathryn so that other teachers would be able to teach every student.

Dr. Nancy Henceroth-Gatto has been a wonderful friend and believer in my plunge back into the world of academia at this stage of my life. She listened for hours as I tried to express the meaning of multiple regression analysis aloud in an attempt to learn it by explaining it. Nancy is one of the smartest and most affable people I know, and her lively spirit kept me centered throughout my time in the program. My friends Karen Pettus and Deborah Dargham have also been supportive. Their expertise, professional knowledge, and inclusive dispositions make them exemplary educational leaders, and I aspire to reach the same level of mastery in teaching and learning.

My parents modeled inclusion with my brother Clyde, who is hearing and visually impaired, since the 1940s without the innovative technologies available today. They were able to do so because of their strong belief in equity and the rights of every human being. These were foundational beliefs that they lived, not just a mantra that they espoused, and by example they instilled those values in me. I must also thank my brother Clyde, who has been a role model. Clyde has lived his life to the fullest because he did not consider his hearing impairment a disability.

Last, I must thank my beloved daughter Kathryn who taught me the joy of loving, living and learning. She overcame incredible physical challenges because her love of life and zeal for learning enabled her to transcend the barriers society put in her path. In her mind, Kathryn did not have a disability. She only saw the endless possibilities that life offered. Her short life changed me forever, and provided the reason for returning to The Ohio State University, in hopes that I might practice what Kathryn taught me: *How to teach every student in the 21st century through the effective application and integration of technology—removing the barriers that create disability*.

VITA

1946. . . . . Born San Antonio, Texas

1968. . . . . B.A. Chemistry, Massachusetts State College, North Adams, Massachusetts

1972 . . . . .M.Ed. Boston University Boston, Massachusetts

1968 - 1969 . . . . Chemistry, Cathedral High School, Springfield, Massachusetts

1969 - 1970 . . . . Chemistry, Munich American High School, U.S. Department of Defense Schools, Munich, Germany

1970 - 1971 . . . . English to Japanese Businessmen Shinjuku, Tokyo, Japan,

1971 - 1980 . . . . Chemistry, Marlborough High School, Marlborough, Massachusetts

2006. . . . . M.A. The Ohio State University

PUBLICATIONS

Benton, H. (1996). *A thousand lights.* Columbus, OH: Open Minds, Inc.

Benton, H. (1996). *Best friends.* Columbus, OH: Open Minds, Inc.

Benton, H. (1996). *Down the aisle.* Columbus, OH: Open Minds, Inc.

Benton, H. (1996). *Whoa, nellie!* Columbus, OH: Open Minds, Inc.

Beck, B., Benton-Borghi, B. H., & Cloern, M. (1996). *Parent and teacher guide: A thousand lights.* Columbus, OH: Open Minds, Inc.

Beck, B., Benton-Borghi, B. H., & Cloern, M. (1996). *Parent and teacher guide: Best friends.* Columbus, OH: Open Minds, Inc.

Beck, B., Benton-Borghi, B. H., & Cloern, M. (1996). *Parent and teacher guide: Down the aisle*. Columbus, OH: Open Minds, Inc.

Beck, B., Benton-Borghi, B. H. & Cloern, M. (1996). *Parent and teacher guide: Whoa, nellie!* Columbus, OH: Open Minds, Inc.

Benton-Borghi, B. H., & Cloern, M. (1996). *A thousand lights journal.* Columbus, OH: Open Minds.

Benton-Borghi, B. H., & Cloern, M. (1996). *Best friends journal.* Columbus, OH: Open Minds, Inc.

Benton-Borghi, B. H., & Cloern, M. (1996). *Down the aisle journal*. Columbus, OH: Open Minds, Inc.

Benton-Borghi, B. H., & Cloern, M. (1996). *Whoa, nellie! journal,* Columbus, OH: Open Minds, Inc.

CONFERENCES

Benton-Borghi, B. H. & Dargham, D. (2006, April) *Teaching every student in the 21st century: The Integrated Roles of Technology, universal design, and collaborative leadership*. Presentation at the Ohio Confederation of Teacher Education Organization (OCTEO) Spring Conference, Columbus, Ohio.

Benton-Borghi, B. H. (2005, February). Symposium Organizer and Discussant. *Teaching every student in the 21st century: The integrated roles of technology, universal design, and collaborative leadership*. AACTE Annual Meeting, Washington D.C.

Benton-Borghi, B. H. & Kurz, N. (2004, October). *Assessing the effect of candidates on learning using 21st century technologies*. Presentation at the Ohio Confederation of Teacher Education Organization (OCTEO) Fall Conference, Columbus, Ohio.

Benton-Borghi, B. H. (1999, April). *Model for attitudinal change and subtle inclusion through literature*. Poster presentation at the Council for Exceptional Children's Annual Convention, Charlotte, North Carolina.

FIELDS OF STUDY

Major Field: Education
Teacher Education
School of Educational Policy and Leadership
College of Education and Human Ecology

Minor Fields: Research Method in Human Resource Development
Technology

TABLE OF CONTENTS

				Page
Abstract				ii
Dedication				v
Acknowledgments				vi
Vita				vii
List of Tables				viii
List of Figures				xxii
Chapters:				
1.	Introduction			1
	1.1	Background		4
		1.1.1	Attitudes Toward Inclusion	5
		1.1.2	Efficacy for Integration of Technology	6
		1.1.3	Teachers' Sense of Efficacy	8
		1.1.4	Teachers' Sense of Inclusion Efficacy	8
		1.1.5	Collective Efficacy	9
		1.1.6	Collective Inclusion Efficacy	10
	1.2	Statement of the Problem		11
	1.3	Purpose		13
	1.4	Research Questions		15
	1.5	Conceptual Model of the Study		16
	1.6	Significance of the Study		17
	1.7	Assumptions of the Study		18
	1.8	Constitutive and Operational Definitions		21
	1.9	Limitations of the Study		26
2.	Review of the Literature			29
	2.1	Inclusion, Laws, and Disability Theory		29
		2.1.1	19th and Early 20th Century	30
		2.1.2	Last Quarter of the 20th Century	30
		2.1.3	Laws	31
		2.1.4	Reactions by General Education and Special Education	32
		2.1.5	Legal Decisions Stimulate Implementation	33
		2.1.6	Normalization and Least Restrictive Environment	35
		2.1.7	Regular Education Initiative	35
		2.1.8	Section 504, Section 508, and Assistive Technology Act of 1998	36
		2.1.9	Twenty-First Century	36
		2.1.10	Laws – Inclusion	38

	2.1.11	Individuals with Disabilities Education Improvement Act, 2004	39
	2.1.12	Access to Curriculum Content	39
	2.1.13	No Child Left Behind Act, NCLB in relation to the IDEA 2004.	40
	2.1.14	Adequate Yearly Progress AYP and Students with Disabilities.	41
	2.1.15	Presidents Freedom Initiatives	42
	2.1.16	Reactions From General Education and Special Education.	42
2.2	Technology.		45
	2.2.1	Inclusion with Technology.	46
	2.2.2	Diffusion of Innovation	46
	2.2.3	Assistive Technology, Access to Computer, and Digital Content. . . .	48
	2.2.4	Technology Enhanced for Student Learning.	49
	2.2.5	Universal Design.	50
	2.2.6	Mediational Quality of Technology	51
	2.2.7	Technology Improved Assessment of Student Learning.	51
	2.2.8	Inclusion, Technology Integration, and Teacher Education.	52
	2.2.9	Technology, Efficacy and Teachers	53
2.3	Efficacy: Teachers' Sense of Efficacy and Collective Efficacy		54
	2.3.1	Social Cognitive Theory	55
	2.3.2	Self Efficacy	55
	2.3.3	Sources of Efficacy Information.	57
	2.3.4	Teacher Efficacy Measures.	59
	2.3.5	Teachers' Sense of Efficacy Model	60
2.4	Collective Efficacy.		61
	2.4.1	Theoretical Foundation of Collective Efficacy.	62
	2.4.2	Collective Efficacy Measures	63
	2.4.3	Model of Collective Efficacy	63
2.5	Teachers' Sense of Efficacy, the NCLB, and IDEA		65
2.6	Collective Efficacy, the NCLB and IDEA.		66

3.	Methodology		68
3.1	Research Design.		68
3.2	Criterion Variable: Teachers' Sense of Inclusion Efficacy.		68
3.3	Predictor Variables		69
	3.3.1	Teachers' Sense of Efficacy	68
	3.3.2	Collective Inclusion Efficacy.	68
	3.3.3	Attitude Toward Inclusion	70
	3.3.4	Technology: Ability to Use Technology and Need for Technology. . .	70
	3.3.5	Quality of Teacher Preparation	71
	3.3.6	Characteristics of Teaching Assignments	71
	3.3.7	Characteristics of Teachers	72
3.4	Instrument Development and Data Collection		73
	3.4.1	Teacher Beliefs Inventory	73
	3.4.2	IRB Approval	78
3.5	Panel, Field, and Pilot Test		79
	3.5.1	Population and Sampling.	79
	3.5.2	Review by Panel of Experts.	79
	3.5.3	Field Test for Suitability and Usability.	80

3.5.4 Pilot Test 80
3.5.5 Timing of the Pilot Test 81
3.5.6 Reliability 81
3.6 Research Study 85
3.6.1 Population and Sampling 85
3.6.2 Data Collection Concerns 86
3.6.3 Comparison of Sample to ODE Target Population. 88
3.6.4 Measurement Error 92
3.6.5 Survey of Non-Responders 96
3.6.6 Timetable for Research Study 96
3.6.7 Data Analysis 97
3.6.8 Bartz (1999) Convention for Describing Magnitude of Relationships 98

4. Data Analysis 99
4.1 Contextual and Situational Descriptions 99
4.1.1 Sample 100
4.1.2 Teacher Characteristics 100
4.1.3 Characteristics of Teaching Assignments 108
4.2 Analysis of Research Questions 115
4.2.1 Research Questions 1: TSES and I-TSES 115
4.2.1.1 Reliability 117
4.2.1.2 Principal Component Analyses. 121
4.2.1.3 One-Sample T Test: TSES – I-TSES 130
4.2.1.4 Multiple Regression Analysis. 131
4.2.2 Research Question 2: I-Collective Efficacy 137
4.2.2.1 Reliability 138
4.2.2.2 Principal Component Analyses. 140
4.2.2.3 Multiple Regression Analyses. 144
4.2.3 Research Questions 3: Attitudes Toward Inclusion 149
4.2.3.1 Reliability 149
4.2.3.2 Multiple Regression Analyses. 150
4.2.4 Research Questions 4: Technology Use and Technology Need. 154
4.2.4.1 Means and Precentages: Tech Use. 155
4.2.4.2 Reliability: Tech Use 156
4.2.4.3 Principal Component Analyses: Tech Use 159
4.2.4.4 Multiple Regression Analyses: Tech Use. 161
4.2.4.5 Means and Percentages: Tech Need. 162
4.2.4.6 Reliability: Tech Need 161
4.2.4.7 Principal Component Analyses: Tech Need 162
4.2.4.8 Multiple Regression Analyses: Tech Need. 164
4.2.5 Research Questions 5: Quality of Teacher Preparation 170
4.2.5.1 Reliability 170
4.2.5.2 Multiple Regression Analyses. 170
4.2.6 Research Questions 6: Characteristics of Teaching Assignment 175
4.2.6.1 Multiple Regression Analyses. 175
4.2.7 Research Questions 7: Characteristics of Teachers. 180
4.2.7.1 Multiple Regression Analyses. 180

5. Discussion. 185
5.1 Overview. 185
5.1.1 Research Questions 4, 6 and 7. 186
5.1.2 Technology Use and Need. 186
5.1.2.1 Recommendations. 189
5.1.2.2 Future Research. 189
5.1.3 Specific Disabilities Included. 189
5.1.4 Findings. 191
5.1.4.1 Recommendations. 191
5.1.4.2 Future Research. 192
5.2 Research Question 1. 193
5.2.1 Findings: TSES and I-TSES. 193
5.2.1.1 Recommendations. 193
5.2.1.2 Future Research. 194
5.3 Research Question 2 195
5.3.1 Findings:Collective Inclusion Efficacy. 195
5.3.1.1 Recommendations. 195
5.3.1.2 Future Research. 196
5.4 Research Question 3. 197
5.4.1 Findings: Attitudes. 197
5.4.1.1 Recommendations. 198
5.4.1.2 Future Research. 198
5.5 Research Question 5 199
5.5.1 Findings:Qualityof Teacher Preparation. 199
5.5.1.1 Recommendations. 200
5.5.1.2 Future Research. 200
5.6 Advantages and Disadvantages of Online Research. 201
5.7 Summary. 202

References. 207

Appendix A: IRB approval 230
Appendix B: IRB approval. 232
Appendix C: IRB Approved Communications, Protocols, and Teacher Beliefs Inventory. 234
C-1 Panel of Experts. 236
C-2 Field Test. 237
C-3 Pilot Test 238
C-4 Study 246
C-5 Study of Nonrespondents. 256
C-6 Teacher Beliefs Inventory. 260
Appendix D: Teachers' Sense of Efficacy. 277
Appendix E: Collective Efficacy Scale 279
Appendix F: Correlation Matrix. 281
Appendix G: Scree Plots. 286
.

LIST OF TABLES

Table		Page
2.1	Partial Listing of Assistive, Accessible Technology.	49
2.2	Efficacy Measures Based on Bandura's Concept of Self Efficacy.	60
2.3	Collective Efficacy Measures Based on Bandura's Concept of Self Efficacy.	63
3.1	Characteristics of Teachers: Predictor Variables.	74
3.2	Characteristics of Teaching Assignment: Predictor Variables.	76
3.3	Reliability Coefficients for the Criterion Variables and Predictor Variables in the Pilot.	83
3.4	Reliability Coefficients for Predictor Variables in the Pilot Study.	84
3.5	Target Population, Accessible Sample, and Accepting Sample in Research Study.	87
3.6	Accepting Sample, Data Sample, and Comparison Sample After Accounting for Frame Error in Research Study.	88
3.7	Comparison of Valid Percentages Between Ohio Department of Education (ODE) and the Research Study Samples (Accepting, Data, and Comparison).	91
3.8	Survey of Random Sample of 100 Non-Respondents for Reasons for Non-Response. . .	93
3.9	Online Survey of 1059 Non-Respondents for Reasons for Non-Response.	94
3.10	Timetable for Research Study.	96
3.11	Conventions (adjectives) for Describing Magnitude of Relationships.	98
4.1	Frequency and Valid Percentages for Teacher Characteristics.	106
4.2	Percentage Understanding of NIMAS and NIMAC.	107
4.3	Frequency and Valid Percentages of Characteristics of Assignment.	110

4.4 Means and Standard Deviations for Characteristics of Assignment. 111

4.5 Percentages of Students with Specific Disabilities Included in the Classroom for Instruction. 113

4.6 Percentages of Students with Specific Disabilities Frequently Included in the General (Regular) Education Classroom. 114

4.7 Reliabilities for TSES and I-TSES. 118

4.8 Subscales within TSES 119

4.9 Subscales within the I-TSES (with technology). 120

4.10 TSES: Extraction Method: Principal Component Analysis. 121

4.11 TSES: Extraction Method: Principal Component Analysis: Rotation Method. 122

4.12 TSES Components Based on 3-Factor Model. 123

4.13 I-TSES Extraction Method: Principal Component Analysis 3-Factor Model. 124

4.14 I-TSES Extraction Method: Principal Component Analysis: Rotation Method. 125

4.15 I-TSES Extraction Method: Principal Component Analysis. 127

4.16 I-TSES Extraction Method: 4-Factor Model Rotated Method. 128

4.17 I-TSES Components Based on 4-Factor Model 129

4.18 TSES and I-TSES One Sample T Test. 130

4.19 Symbols Representing Some of the Criterion and Predictor Variables Referenced 132

4.20 Full Model: Means and Standard Deviations for Multiple Regression Analysis 133

.4.21 Correlations Matrix for Multiple Regression. 134

4.22 Full Model Multiple Regression. 136

4.23 Collective Inclusion Efficacy Reliability Coefficients 138

4.24 Subscales within Collective Inclusion Efficacy Based on Goddard (2002) 139

4.25 Collective Inclusion Efficacy: Extraction Method: Principal Component Analysis 141

4.26 Collective Inclusion Efficacy: Extraction Method: Rotated Component Analysis. 142

4.27 Five-Component Model of Collective Inclusion Efficacy. 143

4.28 FULL Model: Means and Standard Deviations for Multiple Regression Analysis. 145

4.29 Correlation Matrix for Multiple Regression. 146

4.30 FULL Model Multiple Regression. 148

4.31 Reliability for Attitudes Toward Inclusion 149

4.32 FULL Model Multiple Regression: Means and Standard Deviations. 150

4.33 Correlation Matrix Multiple Regression. 151

4.34 FULL Model Multiple Regression. 153

4.35 TECH USE Means and Standard Deviations 155

4.36 Reliabilities TECH USE. 156

4.37 TECH USE: Extraction Method: Principal Component Analysis 2-Factor. 157

4.38 TECH USE: Matrix Extraction Method: Rotated Component Analysis. 158

4.39 Two-Component Model of TECH USE. 159

4.40 TECH NEED Means, Standard Deviation, and Variance. 160

4.41 Reliabilities TECH NEED. 161

4.42 TECH NEED: Extraction Method: Principal Component Analysis 2- Factor. 162

4.43 TECH NEED Extraction Method: Principal Component Analysis. Rotated Method. . . . 163

4.44 Two-Component Model TECH NEED. 164

4.45 FULL Model Multiple Regression Means, Standard Deviations, and Variance. 165

4.46 Correlation Matrix Multiple Regression. 166

4.47 FULL Model Multiple Regression. 169

4.48 Reliabilities Quality of Teacher Preparation. 170

4.49 FULL Model Multiple Regression Means and Standard Deviations. 171

4.50 Correlation Matrix Multiple Regression. 172

4.51 FULL Model Multiple Regression. 174

4.52 FULL Model Multiple Regression Means and Standard Deviations. 176

4.53 Correlation Matrix Multiple Regression: Characteristics of Teaching Assignment 177

4.54 FULL Model Multiple Regression 179

4.55 FULL Model Multiple Regression Means and Standard Deviations. 181

4.56 Correlation Matrix Multiple Regression: Characteristics of Teachers. 182

4.57 FULL Model Multiple Regression. 184

LIST OF FIGURES

Table		Page
1.1	Conceptual Model of Study	16
2.1	An Integrated Model of Teachers' Sense of Efficacy	61
2.2	A Simplified Model of Collective Efficacy	64

CHAPTER 1

INTRODUCTION

The Individuals with Disabilities Education Improvement Act, IDEA (2004) and the No Child Left Behind Act, NCLB (2001) have mandated the improved performance of all students, and that, "to the maximum extent appropriate, children with disabilities are educated with children who are non disabled" (Hall, 2002, p. 147). This means being included in the general education classroom with the supports, adaptations, and accommodations to ensure academic and social success, and access to the same curriculum and high standards with accountability. The IDEA 2004 reconfirmed and strengthened the 1997 amendments to the Individuals with Disabilities Education Act (IDEA), which "marked a major shift in the legislation. For the first time, legislation attributed primary responsibility and accountability for all students with disabilities to regular education and clarified special education's role as providing support to the regular educational system" (Kleinhammer-Tramill, 2003, p. 238). This recent version has reaffirmed that the responsibility for teaching students with disabilities belongs to the general education teacher (Federal Register, 2005; IDEA, 1997; Kleinhammer-Tramill, 2003; Kluth, Villa & Thousand, 2002).

In 2001, the National Council for Accreditation of Teacher Education (NCATE) raised assessment standards that require the integration of technology into the curriculum to enable all students to overcome barriers to learning (NCATE, 2001). The Technology Related Assistance for Individuals with Disabilities Act (TECH Act) of 1998, along with the IDEA, 1997, 2004, the Enhancing Education Through Technology Act with the NCLB, 2001, and the National Education Technology Plan 2004 have mandated the role of technology in teaching and learning (Bausch & Hasselbring, 2004). It is technology that has enabled *every* student to access the general education curriculum for student learning (Center for Applied Special Technology, CAST, 2002, 2003, 2001; Dalton, Pisha, Coyne, Eagleton & Deysher, 2001; Edyburn, 2005; Enwefa & Enwefa, 2002; Hasselbring & Goin, 2004; Rose & Meyer, 2002; Rose, Meyer & Hitchcock, 2005; Scherer, 2004), and for the assessment of student learning (Hanley, 1995; Johnstone, Thompson, Ross, Moen, Bolt & Kato, 2005). The mediating quality of technology enables students with learning difficulties to use it as an "intellectual partner" to scaffold the deficits while learning new things (Englert, Manalo, & Zhao, 2004, p. 5).

Despite legislation, judicial decisions, professional mandates, technological innovations, and initiatives, teacher resistance to the inclusion of students with disabilities continues to remain prevalent (Burgin, 2005; Ferri & Connor. 2005; Hamon, 1979; Kluth, et al, 2002; Otis-Wilborn, Winn, Griffin & Kilgore, 2005; Sailor & Roger, 2005; Scruggs & Mastropieri, 1996). Hence, the most significant problem facing schools, colleges and departments of education and the nation is whether teacher candidates actually graduate from teacher preparation programs with the knowledge, skills, and dispositions needed to teach *every* student. That is, do colleges of teacher education really prepare teachers to teach all students? Do they provide preservice teachers with the courses, field experiences and student teaching that result in highly efficacious teachers who believe that they can and should teach every student? If so, then why do general education teachers continue to resist this responsibility and charge? Otis-Wilborn et al. (2005) posit that both general education and special education teachers feel there is a lack of clarification concerning the roles and responsibilities with regards to teaching students with disabilities in the general education classroom.

Giangreco, Halvorsen, Doyle and Broer (2004) suggest that "[i]n order for students with disabilities to be successfully included in general education classes, it is vital that the classroom teacher play a substantive role" (p. 85). Do general education teachers believe that they have a role to play? An ownership problem exists (Benedetto, 2005; Elmore, 2005), because many teachers feel that they are not responsible for teaching every student (Roberts, 2001). Perhaps a gap exists between teachers' sense of efficacy to teach students without disabilities and to teach students with disabilities in the general education classroom?

The teachers' sense of efficacy, the "[t]eachers' belief in his or her capability to organize and execute courses of action required to successfully accomplish a specific teaching task in a particular context" (Tschannen-Moran, Woolfolk Hoy, & Hoy, 1998, p. 233), and the collective efficacy, "the perception of teachers in a school [and the school district] that the faculty as a whole can organize and execute the courses of action necessary to have a positive effect on students" (Goddard, 2001, p. 809), might be task specific when teaching students with disabilities in the general education classroom (Bandura, 1993; Goddard, 2002, 2001, 1998; Tschannen-Moran & Woolfolk Hoy, 2000). Individual teachers and group members make choices or exhibit agency (Bandura, 1997; Goddard, 2001) to teach every student. Researchers suggest a positive relationship exists among teachers' sense of efficacy, collective efficacy and student achievement (Bandura, 1993; Goddard, 1998; Goddard, LoGerfo & Hoy, 2004; Tschannen-Moran & Woolfolk Hoy, 2002), making a robust sense of efficacy requisite for teaching.

Bandura (1997) identified the four *sources of efficacy information* as mastery experience, vicarious experience, social persuasion, and affective states (Goddard, 2001). If novice teachers experienced sufficient and effective sources of efficacy information for the task of teaching every student in the 21st century, then they should have completed initial preparation programs with a strong sense of *inclusion* efficacy to teach students with disabilities in the general education classroom. It is imperative that colleges of teacher education determine if their programs are effective because without teachers whose beliefs [efficacy] support inclusion, it cannot happen (Billingsley & McLeskey, 2004; Guskey, 2002; Keiper & Larson, 2000; Zhao, 2003), and the pernicious underachievement (Edyburn, 2005) of thousands of students will continue unabated.

Background of the Study

Preparing teachers to teach students with disabilities in the general education classroom has been funded and refunded with hundreds of millions of dollars since the 1960s (Kleinhammer-Tramill & Fiore, 2003, Kleinhammer-Tramill, 2003). Little gain has been evidenced by the change in teachers' attitudes toward mainstreaming, inclusion, and the teaching of students with disabilities in the general education classroom (Burgin, 2005; Ferri & Connor, 2005; Hamon, 1979; Kluth, et al., 2002; Otis-Wilborn et al., 2005; Scruggs & Mastropieri, 1996). Thirty years have passed since students with disabilities were allowed into the nation's public schools where they have been excluded, isolated and re-segregated in rooms within the schools (Blanchett, Brantlinger & Shealey, 2005; Burch, 2002; Edwards, 2001; Lane, 1997; Shealey, Lue, Brooks & McCray, 2005).

Even with legislative, judicial, professional, and societal support for the inclusion of students with disabilities in the general education classroom, inclusion continues to be difficult to implement (Ferri & Connor, 2005; Sailor & Roger, 2005). Otis-Wilborn, et al. (2005) found that general education teachers undermined the efforts of 81 percent of special education teachers who provided support to students in inclusion classrooms with the general education teachers openly expressing negative comments about students with disabilities. Sonja, a self contained elementary school teacher said, “In team meetings, I was on the sixth grade team and they would make fun of the kids in my class as being ‘dumb.’ If they talk about them like that, their kids can pick up on it too” (p. 147). Another teacher, Sydney, a self contained elementary teacher, wanted to involve her students in the awards ceremony at the end of the year, however, she was confronted by teachers who felt that her students should not receive awards. She explained, “I ended up having people investigating whether my kids actually earned the awards. They didn't want us (the students with disabilities) to be at the awards ceremony. I was questioned about giving them awards" (p. 147). Otis-Wilborn, et al. (2005) suggest that the attitudes of general education teachers are a barrier to students' participation in the general education classroom.

As a result of resistance (Burgin, 2005; Ferri & Connor, 2005; Kluth, et al., 2002), most students with disabilities attend the nation's schools without access to the instructional or curriculum content that they are expected to learn (Rose et al. 2005; CAST, 2002; Rose & Meyer, 2002). The United States Department of Education (1998) (as cited in Kleinhammer-Tramill, 2003) noted that "…extensive data indicate that general education teachers do not feel that they have the knowledge and skills necessary to meet the educational needs of these students in their classrooms (p. 238).

Attitudes Toward Inclusion

Attitudes toward the inclusion of students with disabilities continue to be problematic. Mittnacht (2005) suggests that "the schools must seek to build a general education program that deliberately, thoughtfully, and comprehensively [*believes*] that all students can learn and can achieve to high levels" (p. 51). This paradigm shift demands the attention of general education, special education teachers and their teacher educators. Competencies in collaboration are needed to prepare new teachers to teach every student (AACTE, 2001; Dolan, Hall, Banerjee, Chun, Strangman & CAST, 2005; Johnstone et al, 2005; NCATE, 2002; Rose & Meyer, 2002; Shippen, Crites, Houchins & Ramsey, 2005; Smith, Tyler, Skow, Stark & Baca, 2003).

There are two models of disability and both are being applied in the schools today. The first is the medical rehabilitative model of disability based on the print/script mode of communication, which supports the exclusion and segregation of students into separate classrooms. The second is the social constructionist model of disability based on the electronic mode of communication, which supports inclusion of students into the general education classrooms where the barriers that create disability are removed (Davis, 2002; Linton, 2002; Winzer, 1997).

Schools are transitioning from the print and script mode of communication, which privileged individuals without disabilities throughout the 1900s, to the electronic (digital) mode of communication (Lowe, 1982) (as cited in Davis, 1995). This “print” modality has been the foundation for the development of education in the United States throughout the 19th century and most of the 20th century. The print and script modes of delivery, that privileged certain learners, were applied concurrently with the medical-rehabilitative model of disability, which supports segregation and exclusion of students with disabilities (Davis, 1997). This model of disability and the print-script mode of communication resulted in the separation of education into general education and special education. Students were placed in separate institutions and in separate areas of the school if allowed to attend the same schools that housed general education (Davis, 1995, 1997; Linton, 2002).

Otis-Wilborn, et al. (2005) posit that "[i]n the last two decades, the field of special education has established a clear preference for working collaboratively with general educators and for educating students with disabilities in more inclusive educational settings" (p. 143). General educators have been hesitant to embrace the new social constructionist model of disability, which supports inclusion (Davis, 1995, Linton, 2002), and the new electronic (digital) mode of communication (Dickson, 2000; Moursund & Bielefeldt, 1999; Strudler & Grove, 2002).

Efficacy for Integration of Technology

Even as the society has adapted to the digital mode of communication, the print-script modality remains ubiquitous in the schools along with segregation and isolation for individuals with disabilities (Linton, 2002). Today, technological and medical advances enable the schools and the teachers to remove the barriers to access (Burgsthaler, 2005; CAST, 2002; Daly, 2000; Edyburn, 2005;

Rose & Meyer, 2002; Scherer, 2004), thereby removing the stigma of disability (Davis, 1995; Linton, 2002; Parette & Scherer, 2004). Innovative technologies provide the opportunity for teachers to universally design the curriculum and instruction for student learning (Rose et al. 2005) and to universally design the assessment of student learning (Johnstone, 2003). Assistive technology (e.g. accessible digital text, word prediction software) enhances learning and promotes independence (Higgins & Raskind, 2000; Lewis, Graves, Ashton, & Kieley, 1998; MacArthur, 1998; MacArthur, Graham, Haynes, & De La Paz, 1996; Montgomery, Karlan & Coutinho, 2001; Williams, 2002; Wissick, 2005).

Over the past decade, the federal and state governments have provided incentives and initiatives to increase the availability of technology and Internet access to all schools throughout the nation in an effort to reduce the digital divide. Recent statistics indicate that progress has been made. Russell, Bebell & Higgins (2004) (as cited in Bebell, 2005) found that the national ratio of students to computers changed from 125:1 in 1983 to 4:1 in 2002. In 2003, the ratio of students to instructional computers with Internet access in public schools was 4:l, a substantial decrease from the 12:1 in 1998 (Tab, 2005). The National Center for Educational Statistics, NCES (2005) reported "overall student use of the Internet increased from five percent in 1998 to 93 percent in 2001" (p. 23). The dramatic increases in the student-to-computer ratio and Internet access in schools have changed the focus from computers to teacher training, because despite the exponential growth in technology innovations, use and availability, teachers are not integrating technology in their teaching (Becker, 2000; Russell, Bebell, O'Dwyer & O'Connor, 2003; Strudler & Grove, 2002).

The International Society for Technology in Education (ISTE) found that teacher educators also fail to integrate technology into their teaching (Moursund & Bielefeldt, 1999; Office of Technology Assessment, 1995). Since 1999, Preparing Tomorrow's Teachers to Use Technology (PT^3) grants infused millions of dollars into the colleges and universities to change the dynamic and to influence teacher educators to integrate technology in their teaching. The common logic was that technologically literate new teachers would use technology in the classroom. Russell et al. (2003) assert that "[t]he assumption that technology use in classrooms will increase simply because a teacher grew up in a technology-rich world appears false" (p.16). Zhao (2003) states that [u]nless a teacher holds a positive attitude [belief] toward technology, it's not likely that he or she will use it in teaching" (p. 809). If teachers do not use technology to enable students with disabilities to access the same general curriculum as their peers, then the implementation of the legislative and judicial mandates is in question (Hall, 2002).

Teachers' Sense of Efficacy

Teachers' sense of efficacy impact teacher behaviors and attitudes and ultimately student outcomes and attitudes (Bandura, 1997; Goddard, 2004; Hoy, et al., 2002; Tschannen-Moran et. al., 1998). Based on Bandura's (1997) social cognitive theory, this construct has become an essential element to success in teaching (Tschannen-Moran, et al., 1998). Has the measure of the teachers' sense of efficacy kept pace with the exponential growth of technology in teaching and learning and the influx of students with disabilities in the classroom? The NCLB and IDEA have added considerable burden to the expectations of teacher performance. Teachers' voices must be heard because Bandura (1997) posits that efficacious people are more persistent when faced with difficult tasks.

Each teacher needs to develop a strong sense of "judgement of his or her capabilities to bring about desired outcomes of student engagement and learning, even among those students who may be difficult or unmotivated" (Tschannen-Moran & Woolfolk Hoy, 2001, p. 783). Until they do, teachers will have little incentive to attempt to teach every student or to use the technologies that are needed to ensure the performance of students with disabilities. Teachers' sense of efficacy (Tschannen-Moran & Woolfolk Hoy, 2001) must also include changing expectations of their performance. Teacher efficacy beliefs are still malleable during the first years of teaching (Hoy & Spero, 2005; Tschannen-Moran, et al., 1998), therefore, sources of efficacy information provided during preservice training or during the first years of teaching are crucial.

Teachers' Sense of Inclusion Efficacy

Do teachers' sense of efficacy to teach students without disabilities differ from the teachers' sense of inclusion efficacy to teach students with disabilities? Success depends in part on a strong teachers' sense of efficacy to implement inclusion and to integrate technology (e.g. assistive technology and digital content) to teach every student (Mrsnik, 2003; Hargrave, 2001). Such beliefs are essential to the successful inclusion of students with disabilities (Babar, 2004; Hamon, 1979) and the integration of technology to teach every student (Rose & Meyer, 2002; Becker, 2000). The implementation of legislative, judicial and professional mandates requires the consent and the commitment of teachers. Thus, teacher preparation programs need to provide sufficient sources of efficacy information to develop a strong sense of inclusion efficacy to teach students with disabilities in the general education classroom.

Collective Efficacy

Collective efficacy of teachers involves the perceptions of teachers in the school that the faculty and the school district, as a whole, support the ability to organize and execute the actions needed to have positive effects on students (Goddard et.al, 2004; Goddard, 2002; Bandura, 1997). Bandura (1993) developed the construct of collective efficacy based on the concept that teachers do not operate alone, but in a dynamic and interactive social system. The collective efficacy of teachers (Dawson, 2005; Rose, et al., 2005; Russell et al., 2003; Smith, Tyler, Skow, Stark & Baca, 2003) also correlates with student achievement (Goddard Hoy & Woolfolk Hoy, 2004; Hoy & Spero, 2005; Hoy, et al., 2002; Tschannen-Moran & Hoy, 2001) and goal attainment (Goddard, Hoy & Hoy, 2004). Bandura (1997) called for educational researchers to develop instruments to measure collective efficacy and its effect on group functioning. Goddard et al. (2004) postulate that the collective efficacy measures the constructs of group [teaching] competence and task analysis or the perceptions of the opportunities and constraints found in the task.

Collective Inclusion Efficacy

Does the collective efficacy of teachers in a school or school district to teach students without disabilities differ from the collective inclusion efficacy to teach students with disabilities in the general education classroom? If the school policy, leadership and collective support for *inclusion* are low, what impact does this have on a teacher's sense of efficacy to teach students with disabilities in that school or district? And, what effect does it have on the special education teacher who must support the student with disabilities within that classroom?

The teachers' sense of efficacy [and inclusion efficacy] affects and is affected by the collective efficacy of the faculty, entire school district, and the community (Bandura, 1995; Goddard, et al., 2004). Teacher efficacy and collective efficacy are reciprocal and cyclical (Tschannen-Moran, et al., 2001; Goddard, 2002, 2001), and both teacher's sense of efficacy (Tschannen-Moran, et al., 2001) and collective efficacy (Goddard, 2002, 2001) require sources of efficacy information. Multiple sources of efficacy information for the task of inclusion would increase the teachers' sense of inclusion efficacy to teach [or to support] students with disabilities in the general education classroom as well as the collective inclusion efficacy.

The reciprocal and cyclical nature of teacher efficacy and collective efficacy suggest that the teachers' sense of inclusion efficacy should be strengthened if the collective inclusion efficacy of the school supports inclusion in the general education classrooms. The teachers' sense of inclusion efficacy to teach students with disabilities in the general education classroom would necessitate making accommodations (e.g. universally designed instruction and assessment) and using technology (e.g.

accessible digital content and text readers). In such a school, teachers would feel the need to provide accommodations, to integrate technology and to provide accessible content, confident of the school's support and their own ability to teach and to support students with disabilities in inclusive classrooms.

Statement of the Problem

Teachers are expected to graduate from colleges of teacher education with the knowledge, skills, and dispositions to teach every student, including students with disabilities in the general education classroom. They are expected to implement the laws of the United States (IDEA, 2004; American Association of Colleges of Teacher Education, AACTE, 2002; National Council for the Accreditation of Teacher Education, NCATE, 2001; NCLB, 2001; TECH Act, 1998). Without technology and universally designed, accessible, digital content, most students with disabilities cannot access the general education curriculum (Edyburn, 2005; IDEIA, 2004; Rose, et al., 2005; Rose & Meyer, 2002; Wissick, 2005). Yet, teachers are disinclined to integrate technology (Swain, 2005; Russell et al. 2003), and they are not taking responsibility for teaching *every* student (Blanchett et al. 2005; Burgin, 2005; Elmore, 2005; Kleinhammer-Tramill, 2003; Shealey et al. 2005). Instead, segregation remains a reality for most students with disabilities who attend the nation's schools (Ferri & Connor, 2005; Hahn, 2002; Sailor & Roger, 2005), and a subtle form of re-segregation for students of color and English language learners, who are placed in special education (Shealey, et al., 2005). Educational researchers question whether inclusion is actually an illusion inasmuch as only 15 states are even moving toward allowing students with learning disabilities to be included in the general education classroom (McLeskey, Hoppey, Williamson, and Rentz, 2004).

Sailor & Roger (2005) indicate that inclusion policy has failed to receive the support that it needs from general education teachers. The disconnect between preparation and lack of implementation suggests that teachers may not have been adequately prepared by the colleges of education for the enormous task of teaching students in diversely populated and inclusive classrooms (Hewitt, 1999;

Schumm, et al, 1994; Scruggs & Mastropieri, 1996). Schumm & Vaughn (1995) (as cited in Otis-Wilborn, et. al., 2005) declare "[g]eneral education teachers' discomfort [with inclusion] also may be grounded in a belief that they are not prepared to work with students with disabilities" (p. 149).

Innovative technologies have made the inclusion of students with disabilities possible because they provide the scaffolds, access, and mediation that these students require (Sturm, 2002), but teachers remain averse to using them (Russell, et al, 2003; Kluth, Villa & Thousand, 2002). P-12 schools have the digital technology (NCES, 2005; Tab, 2005; Russell et al, 2004; Bebell et al, 2005), but *computers alone* have not been sufficient to change the dynamic. Russell, et al. (2005) confirms that technologically literate teachers are not using technology in their teaching (Adamson, Banks, Burtch, Cox III, Judson, Turley, Benford & Lawson, 2003). Most teachers continue to teach as they were taught (Russell et al, 2003; Adamson, et al., 2003; Dickson, 2000; NCATE, 1997, Office of Technology Assessment, 1995; Tharp & Gallimore, 1988). Researchers maintain that such actions are due to teacher education programs failing to model how to teach [and how to support inclusion] with technology (Adamson, et al., 2003;Hartshorne, Ferdig & Dawson, 2005; Wetzel & Williams, 2004-2005). "Teacher education faculty members also find themselves without the necessary skills to teach preservice teacher education students the skills and methods of integrating technology into the classroom" (Hartshorne, et al., 2005, p. 77).

Universal design and access to instructional and curriculum content were included in the new IDEA (Federal Register, 2005; IDEA, 2004). The National Instructional Materials Accessibility Standard (NIMAS) and the National Instructional Materials Access Center (NIMAC) were established to provide curriculum and instructional content in accessible formats (digital, Braille, and audio) for students with [qualifying] disabilities (IDEA, 2004; Federal Register, 2005). The new legislation also mandated the application of *universal design principles* (Federal Register, 2005; Johnstone, et al., 2005). These principles have been applied to universally design instruction [curriculum content] for student learning (Federal Register, 2005; Rose, et al., 2005; Rose & Meyer, 2002) and for the assessment of student learning (Clapper, Morse, Lazarus, Thompson & Thurlow, 2005; Johnstone et al. 2005; Minnema, Thurlow & VanGetson, 2004). Implementation and change require that teachers' attitudes, beliefs and sense of efficacy must support the new reforms (Gregorie, 2004; Zhao, 2003). Pierson (2006) states "[j]ust as classromm teachers and special educators in the schools now need to collaborate to meet the UDL [universal design for learning] challenge, so do those who prepare general and special educators" (p. 87).

Russell et al. (2003) recommend that the colleges of teacher education need to focus less on teaching technology and more on teaching with technology. "Efforts to model how to use products can be used to support instructional objectives may result in stronger beliefs about the value of technology [attitudes toward technology] for teaching and learning" (p. 16). Teacher educators need to model how to teach students with disabilities using technology. Huang (1994) (as cited in Wetzel & Williams, 2004-2005) affirms teacher educators' attitudes toward and uses of technology [in their teaching] have significant impact on their students' integration of technology in their teaching. Wetzel and Williams (2004-2005) found student teachers successfully integrated technology when their teacher educators effectively modeled its use. Shippen, Crites, Houchins, Ramsey, & Simon (2005) assert that colleges of teacher education must address these deficits in teachers' knowledge, skills and dispositions.

Purpose of the Study

This study described and investigated Teachers' Sense of *Inclusion* Efficacy and the Collective *Inclusion* Efficacy, and the relationships that exist between the criterion variable, Teachers' Sense of Inclusion Efficacy and a set of predictor variables. The predictor variables included: (1) Teachers' Sense of Efficacy, (2) Collective Inclusion Efficacy, (3)Attitudes (toward inclusion), (4) teachers' perceived ability to use and need for technology, (5) characteristics of teachers, and (6) the characteristics of teaching assignments.

The Teachers' Sense of *Inclusion* Efficacy Scale was developed using an adapted version of the Teachers' Sense of Efficacy Scale (Tschannen-Moran & Hoy, 2001) and with the addition of items measuring the construct of technology for inclusion. What is the relationship between the Teachers' Sense of Efficacy and the Teachers' Sense of Inclusion Efficacy? The cyclical and reciprocal nature of teacher efficacy and collective efficacy necessitated the development of the Collective *Inclusion* Efficacy Scale adapted from the Collective Efficacy scale (Goddard, 2001) with the addition of items that measured technology for inclusion. What is the relationship between the Collective Inclusion Efficacy and the Teachers' Sense of Inclusion Efficacy? Do novice teachers and recent graduates have positive attitudes about inclusion and the use of technology to teach every student? Do they perceive their teacher preparation programs as having provided them with adequate sources of efficacy information [course work, field experiences, and clinical practice] to strengthen their sense of inclusion efficacy? What relationship do the teachers' sense of inclusion efficacy have with the characteristics of teachers and characteristics of teaching assignments (See Figure 1.1). The voices and perceptions of novice teachers and experienced teachers have provided insight to inform the colleges of teacher education and the teacher educators who must prepare teacher candidates.

The factors, described, explored and investigated, are based on conceptual theories of teacher efficacy, collective efficacy, and teachers' efficacy for inclusion and the integration of technology. This descriptive survey research will inform the schools, colleges, and departments of education (SCDEs) about the preparation of new teachers in Ohio to teach every student in the 21st century.

Research Questions

The following research questions were addressed in this study:

Question 1

What is the relationship between Teachers' Sense of Efficacy and the Teachers' Sense of Inclusion Efficacy?

Question 2

What is the relationship between the teachers' perceptions of Collective Inclusion Efficacy and the Teachers' Sense of Inclusion Efficacy?

Question 3

What is the relationship between the teachers' attitudes toward inclusion of students with disabilities in the general education classroom and the Teachers' Sense of Inclusion Efficacy?

Question 4

What are the relationships among the teachers' perceptions of their ability to use technology and their perceptions of the need for technology and the Teachers' Sense of Inclusion Efficacy?

Question 5

What is the relationship between the teachers' perceptions of the quality of their teacher preparation programs and the Teachers' Sense of Inclusion Efficacy?

Question 6

What are the relationships among the characteristics of the teaching assignment and the Teachers' Sense of Inclusion Efficacy?

Question 7

What are the relationships among the characteristics of teachers and the Teachers' Sense of Inclusion Efficacy?

Conceptual Model of the Study

The following (figure 1.1) represents the conceptual model of the study in a visual format. This study investigated the predictive variables to determine the relationships to the criterion variable, Teachers' Sense of Inclusion Efficacy.

Predictive Variables

Teachers' Sense of Efficacy
Tachannen-Moran and Woolfolk Hoy, 2001
Collective Inclusion Efficacy
Adapted from Collective Efficacy (Goddard, (2002) to measure efficacy for inclusion and the support and integration of assistive, accessible technology to teach every student.
Attitudes Toward Inclusion
Perceived support for inclusion
Technology: Use and Need
Perceived level of ability to use technology
Perceived level of need for technology
Quality of Teacher Preparation Program
Perceived quality of courses, field experiences, student teaching, and modeling how to integrate technology
Characteristics of Teaching Assignment
School Location: urban, suburban, rural;
Number of students with disabilities included; and
Specific disabilities of students included for instruction
Characteristics of Teachers
Demographic data: race and gender
Licensure: General Education and Special Education
Years of Teaching Experience
Scores on Praxis II (content), Praxis II (PLT), and Praxis III tests
Knowledge of NIMAS and NIMAC

Criterion Variable

Teachers' Sense of *Inclusion* Efficacy
Adapted from the Teachers' Sense of Efficacy, TSES (Tschannen-Moran & Hoy, 2001) to measure efficacy for inclusion and for the integration of assistive, accessible technologies to teach every student.

Figure 1.1 **Conceptual Model of Study**

Significance of the study

This study will inform the P-12 schools, colleges and departments of education (SCDEs) of the importance of preservice teachers' courses, field experiences, and student teaching in providing sufficient *sources of efficacy information* to develop vigorous *teachers' sense of inclusion efficacy* in graduates.

Teachers who participated in the study may have increased their awareness concerning the inclusion of students with disabilities.

Technology proficient teachers are expected to integrate technologies and to provide the accessible digital curriculum content and supports to teach *every* student under the IDEA, 2004 and NCLB. It is essential that colleges of education remain relevant in the 21st century by finding innovative solutions to prepare preservice teachers to meet present and future challenges.

A deeper understanding of the cyclical and interdependent nature of teacher efficacy and collective inclusion efficacy was gleaned from this study with the adaptation and the addition of the technology construct to develop the Teachers' Sense of Inclusion Efficacy Scale and the Collective Inclusion Efficacy Scale.

Federal regulations (2005) delineated universal design principles and equal access to curriculum content (National Instructional Materials Access Center (NIMAC) and the National Instructional Materials Accessibility Standard (NIMAS) for students with disabilities under the IDEA, 2004. Teachers' Collective Inclusion Efficacy for the task of inclusion and providing curriculum content in accessible formats was related to their knowledge of NIMAC and the NIMAS. The teachers' sense of inclusion efficacy for this specific task is essential for the delivery of services to students with disabilities included in the general education classroom and in the special education classroom.

Rose et al. (2005) postulate that technologies and digital [curriculum and instructional] content must be available and effectively integrated to teach for student learning and Johnstone et al (2005) note the same need for the assessment of student learning. Inclusion of students with disabilities and improvement of student performance require the application of the principle of universal design, and the use of innovative, assistive technologies and accessible digital content (Edyburn, 2005; IDEA, 2004; Rose & Meyer, 2002; CAST, 2001, 2003).

The findings provided valuable data that might become the catalyst for proactive change and increased collaboration between general education and special education in the teacher preparation programs at the colleges of teacher education in Ohio

Assumptions of the Study

This descriptive survey research study assumed that the location or site (special education or general education) for the instruction of students with disabilities was debated prior to the passage of the Education of All Handicapped Children Act of 1975 (PL94-142), and continues to the present (Wiley, 1996). The Individuals with Disabilities Act (IDEA) of 1990, 1997, and the Individuals with Disabilities Education Improvement Act (IDEA) of 2004, have continued to strengthen the rights of students with disabilities and have increased the opportunities and support for inclusion in the general education classroom. Wolery and Snyder (1996) state that the arguments debated "…have been couched in normalization, integration, mainstreaming, least restrictive environment, Regular Education Initiative, and most recently inclusion…" (p.1). Fuchs and Fuchs (1994) (as cited in Wolery & Snyder, 1996) suggest that the issue is of such complexity that "reasonable, informed, and well-meaning individuals have disagreed at various points in our history about recommendations for practice" (p. 1-2). The debate concerning "inclusion" is moot for this study, because the main assumption is that students with disabilities are being included in the general education classroom (Harriott, 2004; U.S. Department of Education, 2001) and these numbers are expected to increase based on legislative and judicial mandates. In the mind of this researcher, teachers must be prepared to teach these students in the general education classroom, providing the technology and accessible digital content mandated under the NCLB, 2001, and the IDEA, 2004. Therefore, the need for highly efficacious teachers exists today, if the schools expect to fulfill the mandates for inclusion.

The following are additional assumptions of the study:

(1) The need for universally designed and accessible technology for students with disabilities [to access the same textbooks and instructional content as their peers], does not mean that students with disabilities are sitting at computers throughout the school day. It means that when other students are using their textbooks or receiving instructional content, that students with disabilities would have access to the same content in a format that they can use.

(2) The No Child Left Behind (NCLB) 2001 legislation included students with disabilities. This researcher believes that the NCLB requires amendments to improve the law based on the input of all stakeholders, especially the voice of the teachers who teach at risk students and students with disabilities. At risk students are frequently placed in special education classrooms (Shealey, Lue, Brooks, & McCray, 2005), and these students and students with disabilities require innovative technology to scaffold the deficits, to remove barriers to learning and assessment of learning, and to eliminate pernicious underachievement.

(3) Short versions of the measures of Teachers' Sense of Efficacy Scale (TSES) (Tschannen-Moran & Woolfolk Hoy, 2001) and the Collective Efficacy Scale (Goddard, 2002) are the instruments best suited to be adapted to study inclusion efficacy. These instruments were chosen because they are well established and accepted instruments among researchers

(4) The novice teachers (three or fewer years of teaching experience) in Ohio who participated in the study were *millennials* (Microsoft, 2002; U.S. Department of Education, 2004; Russell, et al., 2003). Millennials are students who were born during the middle 1980s, who have grown up using technology in their every day lives. Even respondents, older than the standard millennials were considered technologically literate because as recent graduates, they would have used technology to

register for classes, to access Web CT or Blackboard and class management systems, to use word processing, to send and receive emails, and to use cell phones.

(5) The approximate ratio of students to computers 4:1 as reported by the National Center for Education Statistics (NCES) for urban, rural and suburban locations was reliable. Russell, Bebell & Higgins (2004) (as cited in Bebell, 2005) posit that the national ratio of computers dropped from 125:1 in 1983 to 4:1 in 2002. Thus the assumption was that there exists a *sufficient ratio* of students to computers to support the inclusion of students with disabilities in the general education classroom.

(6) The teachers' perception that their school and other teachers support for special education services (special education) are distinct and that these differ from the teachers' perception of their collective support for the *inclusion* of students with disabilities in the general education classroom.

(7) Novice (three or fewer years of teaching experience) teachers would have less resistance to the IDEA, 1997 and the 2001 NCLB, having recently graduated from the colleges of education. These teachers should be familiar with the goals of inclusion of students with disabilities in the general education classroom, and the expectation that technology supports and enhances the learning of *every* student, especially students who cannot access the general curriculum without it.

(8) Those responding to the survey have provided their honest opinions.

(9) The Individuals with Disabilities Improvement Act of 2004 may be referred to as either the IDEIA 2004 or the IDEA 2004. Ohio Department of Education, ODE (A. Guinan, personal communication, June 19, 2006) indicated that the state of Ohio has chosen to use IDEIA to place emphasis on the improvements, but the majority of the states are using the term IDEA. The U.S. Department of Education uses the abbreviation IDEA 2004 (D. Anderson, personal communication, June 12, 2006).

Constitutive and Operational Definitions

Novice Teachers

Constitutive definition: All teachers in the state of Ohio who have been teaching in special education and general education for three or fewer years.

Operational definition: The Ohio Department of Education (ODE) 2005 frame of teachers (as reported from October 2005 until the deadline in February 2006) with three or fewer years of teaching experience. The specific position codes identify teachers who teach all students in the general education classroom and the special education classrooms in grades P-12. The frame included the following ODE position codes: 205 (Regular Teaching Assignment), 206 (Special Education/Learning Center Teaching Assignment), 207 (Vocational Education Teaching Assignment), 208 (Tutor/Small Group Instructor Assignment), 211 (Education Services Teacher) and 212 (Supplemental Services Teacher Assignment).

Teachers' Sense of Efficacy

Constitutive definition. "Teachers' belief in his or her capability to organize and execute courses of action required to successfully accomplish a specific teaching task in a particular context" (Tschannen-Moran, Woolfolk Hoy, & Hoy, 1998, p. 233). The teacher efficacy scales measure the following constructs: student engagement, classroom management and instructional strategies.

Operational definition. Teacher efficacy score as measured by the Teacher Efficacy Scale short form developed by Tschannen-Moran and Woolfolk Hoy, 2001. The teachers' sense of efficacy was based on the teachers' responses to 12 items on a 9-point Likert-type summative rating scale from 1 = Nothing, to 9 = A Great Deal. The Teachers' Sense of Efficacy Scale (TSES) measures the following constructs: student engagement, classroom management, and instructional strategies (For example: *How much can you do to control disruptive behavior in the classroom?*).

Teachers' Sense of Inclusion Efficacy

Constitutive definition. The teacher's belief in his or her capability to organize and execute courses of action required to successfully teach students with disabilities in an inclusive general education classroom. The teacher would use assistive, accessible technology and digital content for students with disabilities to access the curriculum content for student learning and assessment of student learning.

Operational definition. The operational definition of teachers' sense of inclusion efficacy was measured by the instrument developed by the researcher based on an adapted version of the established 12 item Teachers' Sense of Efficacy Scale (TSES) (Tschannen-Moran & Woolfolk Hoy, 2001). The teachers' sense of inclusion efficacy was based on the teachers' responses to 17 items on a 9-point Likert-type summative rating scale from 1 = Nothing, to 9 = A Great Deal. The Teachers' Sense of Inclusion Efficacy measures the teachers' efficacy for inclusion of students with disabilities in the general education classroom and teachers' efficacy for integrating [assistive universally designed and accessible digital content] technologies for student learning and assessment of student learning (IDEIA, 2004; Federal Register, 2005). The Teachers' Sense of Inclusion Efficacy Scale measures the following constructs: student engagement, classroom management, instructional strategies, and accessible, universally designed technology (For example: *To what extent can you implement accommodations for assistive and accessible technology for students with disabilities in your classroom?*).

Collective Inclusion Efficacy

Constitutive definition. Collective *Inclusion* Efficacy is the perception of teachers that the faculty and the school district as a whole "supports the ability to organize and execute the actions" (Goddard, 2002) needed to include and to teach students with disabilities in the general education classroom.

Operational definition. The operational definition of collective *inclusion* efficacy was measured by the instrument developed by the researcher based on an adapted version of the established 12 item collective efficacy scale (Goddard, 2002) and originally developed by Goddard, Hoy and Woolfolk Hoy, 2000. The operational definition of collective inclusion efficacy was based on the teachers' responses to 17 items on a 6-point Likert-type summative rating scale from 1 = Strongly disagree, to 6 = strongly agree. The *Collective Inclusion Efficacy* measures the following constructs: group competence, task analysis and accessible, universally designed technology (For example: *Teachers here support each other to teach students with disabilities in the regular education classroom*.).

Attitudes Toward Inclusion

Constitutive definition. The teacher believes that students with Individualized Education Plans (IEPs) can and should be included in the general education classroom (IDEA, 2004; Federal Register, 2005) with access to the same curriculum, high standards and accountability as general education students.

Operational definition. The operational definition of attitudes toward inclusion was measured by four items developed by the researcher concerning the inclusion of students with disabilities in the general education classroom. The operational definition of attitudes (toward inclusion) was based on the teachers' responses to four items on a 6-point Likert-type summative rating scale from 1 = Strongly disagree, to 6 = Strongly agree (For example: *Students with disabilities learn more in a special education classroom with a special education teacher than they can learn in the regular education classroom.*).

Technology : Teachers' Perceived Level of Ability to Use and Level of Need

Constitutive definition. The following assistive, accessible technologies (alternative keyboards, ebooks, electronic concept mapping, general accessibility options, multimedia programs, spelling and grammar check software, text readers and digital text, text to speech word processors, text scan and read software, tutorial and scaffolding software, universally designed assessments, universally designed learning, video streaming and podcasts, voice recognition software, and word prediction software) are needed by teachers to teach students with disabilities.

Ability to Use Technology. *Operational definition*. The operational definition of ability to use technology was measured by 15 items adapted from the Project Access Digital Toolkit and other research (Johnson, 2005; Michaels & McDermott, 2003; Puckett, 2004). Teachers reported their perceived level of ability to use these technologies on a 4-point Likert-type scale summative rating scale from 1 = None to 4 = Expert.

Need for Technology. *Operational definition*. The operational definition of need for technology was measured by 15 items adapted from the Project Access Digital Toolkit and other research (Puckett, 2004; Michaels & McDermott, 2003; Johnson, 2005). Teachers reported their perceived level of need for these technologies on a 4-point Likert-type scale summative rating scale from 1 = Do not need to 4 = Critically need.

Quality of Teacher Preparation Programs

Constitutive definition and Operational definition. The teachers' perceptions of the quality of their teacher preparation programs were measured by their responses to items on their courses, field experiences, student teaching (Michaels & McDermott, 2003) and teacher educators use [model] of technology in their teaching (Adamson, et.al, 2003). The quality of teacher preparation was measured by the teachers' responses to these seven items on a 6-point Likert-type summative rating scale: 1 = strongly disagree to 6 = strong agree (For example, *My college or university teacher preparation program required field experiences that prepared me to teach students with disabilities in my classroom*).

Characteristics of Teaching Assignments

Number of students with disabilities included in classroom instruction. Constitutive definition. York (1997) (as cited in Jackson, Harper, & Jackson, 2001) states that inclusion "means that students with disabilities are: a) attending the same schools as siblings and neighbors, b) have membership in general education classrooms with age-appropriate peers, c) have individualized, relevant learning objectives, and; d) are provided with the means to [*access*] the classroom curriculum materials" (p. 3).

Number of students with disabilities. Operational definition, The actual number of students with individualized with disabilities in the teachers' classroom.

Number of students with disabilities with individualized education plans (IEPs.). Number of student with disabilities with IEPs, under the IDEA, 2004, included in the general education classroom for instruction.

Specific type of disability. *Constitutive definition. S*pecific disabilities as defined by the Ohio Department of Education (2006) included: autism, blind, cognitive disability, Deaf, developmental disabilities, emotional disturbances, hearing impaired, multiple disability, orthopedic disability, other health impairment, specific learning disabilities, speech and language impairments, traumatic brain injured, and visual impairment.

Operational definition. Teachers self reported the frequency of students with specific disabilities who were included in their classroom for instruction. Teachers responses were based on a 4-point Likert-type summative rating scale: 1 = Not applicable to 4 = Frequently.

Characteristics of Teachers

Constitutive and Operational definition. The teachers self reported *demographic data*: race, gender; *area of licensure*: general education or special education; *grade level*: (P-3, 4-6, 7-8, 9-12, and P-12; number of years of teaching experience; degrees earned: bachelors, masters, doctorate; *Scores on*

Praxis tests: Praxis II (content), Praxis II PLT, and Praxis III, and knowledge of *NIMAS and NIMAC:* National Instructional Materials Accessibility Standard (NIMAS) and the National Materials Instructional Access Center (NIMAC).

Licensure: General Education Teacher and Regular Education Teacher

Constitutive and Operational Definition. These two terms were used interchangeably. Many schools and teachers still recognize and use the term regular education (e.g. Regular Education Initiative) while the literature and the U.S. Department of Education used the term general education (e.g. Center for Accessing the General Education Curriculum). The term "regular education" was used in the instrument even though the term "general education" was the term referred to most often in the study. The regular or general education teacher refers to any teacher who was not licensed to teach Special Education or is not teaching in a special education position. The general [regular] education teacher teaches students with and without disabilities in their classroom. The special education teacher is licensed in special education and teaching and/or supporting the inclusion of special education students.

Limitations of the Study

A limitation of this study was that the data gathered was entirely through teacher self-reporting. Teachers may have found that the statements in the survey did not relate to their own perspectives or beliefs, or some of the survey items may have been difficult to interpret. Self-reported data included the possibility that some teachers may not have answered the items honestly.

Another limitation involved the use of electronic surveys and the availability of computers and the technical competency of respondents. Teachers in this sample were assumed to have had access to and use of personal computers. Technical difficulties were a possibility and may have presented a limitation for this study with the number of invalid or bounced email addresses and Internet accessibility.

The researcher's concerns included the limitations caused by possible errors in measurement were: (1) sampling, (2) frame, (3) selection, (4) measurement, and (5) non-response errors. The researcher attempted to minimize the risk of error through the application of Dillman's (2000) recommendations concerning survey research as noted below.

Sampling Error

The limitation of sampling errors was addressed through random sampling. "Random sampling allows such characteristics to be estimated with precision, with larger sample sizes achieving ever larger degrees of precision. Sampling error is the result of attempting to survey only some, and not all, of the units in the survey populations" (Dillman, 2000, p. 9).

Frame

The Ohio Department of Education (ODE) provided a frame, which was to have included teachers with three or fewer years of teaching experience during the 2005/2006 academic year. Email addresses for teachers in the sample were not included.

Selection

To reduce selection error, the researcher thoroughly checked the frame of teachers provided by ODE and eliminated duplicate names before the random sample was obtained.

Non-response error

The major strategies suggested by Dillman (2000) to increase response rate are (1) to establish trust; (2) to increase rewards; and (3) to reduce the social costs. Online email campaigns were used to invite teachers to participate in the research. Print invitations and survey instruments were mailed to teachers who did not have email addresses and to those who requested the survey instrument in the optional print format. The value of their participation was reinforced in the cover letter. Telephone calls were made to attempt to contact teachers to reduce the number of non-respondents.

Hamilton (2005) posits that the average response rate for online surveys with sample sizes greater than 1000 is 32.52 percent, but it is 41.42 percent for surveys with a sample less than 1000. Due to the expected low response rate online, the researcher decided to randomly sample a larger number of teachers, 1540. Due to this higher sample size, the study used the 32.52 percent as the acceptable response rate.

Incentives

Incentives were offered to teachers who participated in the survey. A copy of a fiction book whose main character has a physical disability was mailed to the first fifty teachers who responded. All teachers who completed the survey had their names placed into a drawing for one of ten sets of classroom fiction books on inclusion with each set consisting of 15 paperback copies of each of four different titles. Winners, who did not teach students in grades 3-6, were given the option to have the set of books for their own classroom or to donate the set of fiction books to the school or teacher of their choice.

All research activities adhered to the legal and ethical requirements for human subjects and the protocols of the Institutional Review Board. The teachers surveyed were provided consent information regarding the online electronic survey research titled: Teaching Every Student in the 21st Century: Efficacy and Technology. Participation was voluntary and participants were not subjected to physical or psychological duress and had a clear understanding of the purpose of the research study without any deception or concealment of information. The confidentiality of teachers' identity data were and are given the highest priority by the researcher.

CHAPTER 2

REVIEW OF THE LITERATURE

Are graduates from the colleges of teacher education leaving with the knowledge, skills and dispositions to teach every student? It is essential to determine whether teachers have a strong sense of efficacy to teach students with disabilities in the general education classroom. Buckenmeyer (2005) determined that "[i]f change is to occur in the classrooms, it must begin with the teacher" (p. 16). Thus the theoretical underpinnings for assessing the level of preparedness of these new teachers to teach in inclusive classrooms are based on the constructs of Teachers' Sense of Efficacy and Collective Efficacy and attitudes toward inclusion and technology.

The review of the literature for this study is presented in three sections. The first section examines *Inclusion, Law, and Disability Theory*. A brief history of the inclusion of students with disabilities in the nation's schools interwoven with disability theory is provided along with the reactions of special education and general education teachers for and against the implementation of the mainstreaming, integration or inclusion. The second section examines *Technology* and its integration in the schools to accommodate and include students with disabilities. The third section examines *Efficacy*, specifically Teachers' Sense of Efficacy (Tschannen-Moran & Woolfolk Hoy, 2001) and Collective Efficacy (Goddard, 2002) These factors were investigated to determine the relationships between the predictor variables (See Figure 1.1) and the criterion variable the Teacher's Sense of Inclusion Efficacy to teach students with disabilities in general education classrooms.

Inclusion, Laws, and Disability Theory

The debate on inclusion of students with disabilities continues 30 years after the passage of the law that enabled students with disabilities to enter the nation's schools with the same rights as other children, the right to learn. Why has it taken 30 years? This section of the literature review presents research on inclusion, the laws, and disability theory.

19th Century and Early 20th Century

Disability theories have framed society's view of individuals with disabilities and their reaction to them (Abberley, 2002; Davis, 1995; Thomas, 2002). The medical and rehabilitative models of disability focused attention on identification, avoidance, treatment and classification of disability. The impact of these models resulted in the segregation and isolation of individuals with disabilities in society (Davis, 1995). Laws were on the books in many states that denied parents the right to even keep their child with disabilities; the state would take the child away from the parents to be institutionalized (Johnson, 2003).

Students with disabilities were not allowed to attend the nation's public schools. Students were institutionalized and sent to special segregated schools, relegated to the margins of civilization (Abberley, 2002; Winzer, 1997). The medical and rehabilitative model of disability meant segregation, isolation, and separation for these students (Davis, 2002; Linton, 2002; Winzer, 1997; Davis, 1995), and in the process, it resulted in the unintended segregation of the teachers who teach them. The bifurcated system of teacher education emerged into two distinct and separate entities: general education and special education.

Last quarter of the 20th century

Near the end of the 20th century, general education and special education were separate with little communication, even though more students with disabilities were entering the schools. The medical and rehabilitative models of disability were still applicable and the students continued to be segregated and isolated in the nation's schools. These students with disabilities were provided remedial instruction and other services (Sailor & Roger, 2005). The collaboration between general education and special education was almost nonexistent, because teachers saw themselves as serving different populations. Most students with physical disabilities were still kept at home or sent to special separate schools (e.g Clarke School for the Deaf in Northampton, Massachusetts) until the 1990s (Burch, 2002; Edwards, 2001; Lane, 1997).

Laws

The civil rights movement of the 1960s and 1970s motivated the disabilities rights movement (Pate, 2005; Shealey et al. 2005) and the first law passed was Section 504 of the Rehabilitation Act (1973). Section 504 protects the individual's right to physical access (e.g. ramps into buildings for students with physical disabilities and books on audiotape for students with learning disabilities) in order to participate. Kleinhammer-Tramill & Fiore (2003) explain how Public Law 93-380, the *Family Educational Rights and Privacy Act* of 1974, became the first law to extend services to children with disabilities in the *Least Restrictive Environments (LRE).* Despite the legislative mandate, most of the programs and training were not successful in changing the resolve of teachers to resist teaching students with disabilities in the nation's schools (Hamon, 1979).

The Education for All Handicapped Children Act (Public Law 94-142) was passed in 1975, to provide all students with disabilities an education with their non-disabled peers (Day & Huefner, 2003; Kluth et al. 2002). Public Law 94-142 expanded and strengthened the protections established under P.L. 93-380 and mandated the Individualized Education Program (IEP) to ensure a free, appropriate education for all students with disabilities. The National Education Association and the American Association of Colleges of Teacher Education advocated for the preparation of regular educators to serve students with disabilities (Kleinhammer-Tramill, 2003). The inclusion of students with disabilities was met with resistance (Ferri & Connor, 2005; Blanchett, et al., 2005; Shealey, et al., 2005). Kluth et al. (2002) maintain that "[t]he law, whose name changed in subsequent re-authorizations in 1990 and 1997 to the Individuals with Disabilities Education Act (Public Law 101-476; Public Law 105-17), set the stage for inclusive schooling, ruling that every child is eligible to receive a free and appropriate public education and to learn in the least restrictive environment possible" (p.24).

The United States Department of Education reported that from 1977 to 1990, the placement of students with disabilities [in the general education classroom] did not happen, only 1.2 percent of all students with disabilities were recommended for both general education and resource rooms. The National Council on Disability (2000) released similar findings and found that every state in the nation was out of compliance. The schools in the nation were not enforcing compliance (Kluth et al. 2002). Kluth et al. (2002) confirm that years later, most educators and administrators still did not know how to implement the law of the land. "Three common misunderstandings still determine decisions about students with disabilities in U.S. schools: Our School Doesn't Offer Inclusion, She Is Too Disabled to Be Educated in a Regular Classroom, and We Offer Special Programs Instead of Inclusion" (p.25-27).

Reaction by General Education and Special Education

Prasse (1986) found that "Not since Brown v. Board of Education (1954) has the law so pervasively affected such a major component of education" (p. 311). It was a new phenomenon and the reform movements to include students with disabilities since 1975 had not been well received by general education teachers. The separation between general education and special education had existed for decades during which time students with disabilities were excluded and institutionalized (Davis, 1995, 1997; Linton, 2002). The laws had changed but the foundational beliefs of teachers had not. To situate the teachers' reactions during this period in the history of inclusion seems essential to better understand the divide that existed and continues to exist between general education and special education. Boston University's College of Education Journal published an article written by Hamon (1979) who described the reaction of regular education teachers (and others) to the passage of the Education of All Handicapped Children Act (PL 94-142) which did not go into effect until 1977

> "…Regular teachers sometimes believe that PL 94-142, brings to an end that which they have fought so long for, that is, getting the handicapped child out of the regular program so that they can teach with greater ease…through the principle of least restrictive environment, we are saying to the regular teacher, 'Take back what you have been trying to give away…'"(p. 83).

Harmon further warned that there would be a price to pay for not having collaborated with the regular education teachers [general education teachers], that there would be resistance.

General education teachers' beliefs, attitudes, and reactions to mainstreaming, to the regular education initiative, and to inclusion have been and continue to be less than enthusiastic. Scruggs and Mastropieri (1996) found two thirds of the general education teachers surveyed supported the idea of inclusion, however, only one third of the respondents believed that they had the time, the skills, the training, or resources that they needed in order to adapt and to accommodate students with disabilities.

Change takes time and one must consider the attitudes of teachers during the transition and find ways to extend ownership of the problem. Guskey's (2002) model for teacher change considers the perspective of the teachers whose concerns and lived experiences in the classroom affect the implementation of innovations [inclusion]. The teacher must experience or observe some improvement in student performance before change is considered. Teachers' experiences must be included in the discussion if professional development programs expect to succeed. Teachers must experience their own evidence of improved student learning outcomes for change to occur.

Legal Decisions Stimulate Implementation

The movement toward implementation has had advances, but those have occurred because of continuous litigation during the last 30 years. The judicial decisions have energized the movement forward toward compliance (Zigmond, 2003). These include: (a) Brown v Board of Education (1954),

(b) Pennsylvania Association for Retarded Children (PARC) v Commonwealth of Pennsylvania (1972), and (c) Miles v Board of Education of the District of Columbia (1972). These cases helped to establish the foundation for the least restrictive and most appropriate setting (Goldstein, Gee & Daniel, 1995; Zigmond, 2003). State and federal legislation supported and validated the principle with laws, statues or regulations that the least restrictive concept was here to stay.

Litigation was the only avenue that the legislators had left open to citizens (Charlton, 2000; Linton, 1998). Judicial decisions have continued to alter the face of education:

(1) Jose P. v Ambach: provided progress toward compliance. The rights of students with disabilities to be referred, evaluated, and placed in a timely manner into educational programs were upheld (Fafard, Hanlon, Bryson, 1986);

(2) The Lora v Board of Education of the City of New York, dealt with nonbiased referral, assessment, and placement procedures (to correct abuses in the identification and placement of Black and Hispanic students in segregated special day schools for students with emotional disturbances), (Wood, Johnson & Jenkins, 1986);

(3) Larry P. v. Riles gave insight to the issue of bias in intelligence tests and program placements (Segregation occurring through the disproportionate placement of Black children in classes for the mildly retarded based on biased intelligence tests) (Prasse & Reschly, 1986);

(4) Board v. Rowley clarified the meaning of the term "appropriate" (Goldstein, Gee & Daniel, 1995, p. 1028) and the integration of children with disabilities with those who do not (Turnbull III, 1986);

(5) Frederick L. v. Thomas, restated the right to a free appropriate public education program and enabled students with learning disabilities to attend school until age 21 (Tillery & Carfioli, 1986);

(6) Luke S. and Hans, S. vs. Nix et al., resulted in system-wide changes that have had a powerful impact on the assessment of students with disabilities that have reduced the long wait for evaluation and referral for inclusion and appropriate placement in the classroom (Taylor, Tucker & Galagan, 1986); and

(7) Smith v. Robinson, attorney's fees reimbursement in special education cases (Luckasson, 1986).

Normalization and Least Restrictive Environment

The principle of normalization (Wolfensberger, 1972) (as cited in Fisher, Frey & Thousand, 2003) had a significant impact on the training of teachers which resulted in the de-institutionalization movement and students with disabilities having access to public education. The development of the Least Restrictive Environment (LRE) with the passage of Public Law 94-142, was also influenced by these concepts and teachers began to teach students with disabilities with age-appropriate activities. Based on normalization and the LRE, the principle of *partial participation* emerged, Baumgart, et al. (1982) (as cited in Fisher, Frey & Thousand, 2003) and "reinforced the notion that students with disabilities should have access to important activities, even if the independent skill mastery was questioned" (p. 43).

Regular Education Initiative

In the 1980s the failure of the system to provide services that improved student performance was the topic of debate. The line in the sand was drawn because of the perceived failure of the pull out programs and the exclusion and segregation. "In 1986, Madeline Will, then Secretary of the U.S. Department of Education Office of Special Education and Rehabilitation Services, issued a call for redesigning special education services to emphasize shared responsibility between regular education [general education] and special education for students with mild disabilities" (Kleinhammer-Tramill, 2003, p. 236). The development of *The Regular Education Initiative (REI)* that emerged in the middle 1980s (Gartner & Lipsky, 1989), called for *integrated inclusion* learning to improve student performance along with demands for changes in the model of delivery with the focus clearly on regular educators. Lieberman (1985) was critical of the Regular Education Initiative because it was led by special educators not regular educators [general educators] and he used the famous and oft cited analogy that the special educators planned the wedding but forgot to invite the bride, the regular educators [general educators].

Section 504, Section 508, and Assistive Technology Act of 1998.

Congress defined assistive technology (AT) and services in the IDEA (1990) and further expanded the AT mandate in the IDEA (1997). Students who are not eligible under the IDEA are still eligible under Section 504 and Section 508 of the Rehabilitation Act of 1973 (U.S. Department of Education, 1999). The Technology Related Assistance Act for Individuals with Disabilities (1998) for students with disabilities expanded the mandate for AT devices and services. Section 504 requires school districts to make reasonable accommodations for students with disabilities to have access to the school's full program and activities. Section 508 requires mandatory accessible Web design for federal agencies (Day & Huefner, 2003).

Twenty-First Century

The new model for disability seemed to be changing right along side the new digital modality of communication (Lowe, 1982) (as cited in Davis, 1995). And, both of these seemed to have paralleled the civil rights movements at the end of the 20^{th} century (Barnes, Oliver & Barton, 2002; Davis, 2002; Linton, 2002) along with the development of the new social constructivist theory of learning. The world was changing at a fast pace. The opportunities that became available as a result of the innovations in science and technology (CAST, 2002; Jackson & Harper, 2001; Rose et al., 2005; Rose & Meyer, 2002; Scherer, 2004) have removed the barriers to learning that create disability (Strum, 2002). The political power and activism of disability groups have resulted in the passage of legislative mandates and judicial decisions that have produced the climate for change (Barnes, Oliver & Barton, 2002; Linton, 2002; Scherer, 2004).

Near the end of the twentieth century, a new model of disability began to emerge, the *social constructionist model of disability* (Albrecht, 2002; Davis, 2002). This model is based on the belief that disability is socially constructed and that the barriers that create disability should be removed. Disability in schools is socially constructed when barriers to access learning are not removed, thereby creating the disability. "Inclusion now refers to ways in which schools can reduce barriers to participation and learning for all pupils who are at risk of being marginalized and excluded" (Farrell, Ainscow, Howes, Frankham, Fox, & Davis, 2004, p. 7). Linton (1998) posits that the social constructionist model of disability supports the inclusion of students with disabilities in the general education classroom.

Campbell, Dobson, and Bost (1985) delineate the need for teacher-training institutions to prepare educators to teach both students with and without disabilities. Linton (1998) "predicted that special and general education teacher education would merge eventually, when teacher preparation programs reflect the need to prepare teachers to work in mainstreamed schools" (p. 81). However, general and special education have remained separated and collaboration has been minimal.

Recognizing the problem, Shippen, Crites, Houchins, Ramsey, and Simon (2005) found that "coursework and field experiences must address deficits in knowledge and skills as well as focus on helping teacher candidates to develop dispositions that would enhance the education of students with disabilities in the general education classroom" (p. 97).

Davis (2002) posits that until special education and general education operate under the same social constructivist model of disability, they will not be able to fully implement inclusion in the general education classroom. He suggests an argument for the combined medical and social constructionist models, but only if the medical model is not automatically interpreted as justification for segregation and exclusion over inclusion.

Teacher educators and preservice candidates may be unaware that they still teach using multiple models of disability. The newer model of disability supports inclusion not exclusion and segregation (Linton, 2002). Inclusion will be implemented through the use of universally designed, innovative, assistive technologies and accessible content, which will be available for use by students who require them to access the general education curriculum (CAST, 2002).

Smith (2005) states "technological proficiency is an essential characteristic of a successful teacher" (p. 64), and Mike (2000) (as cited in Smith, 2005) indicates that preservice teachers…must become familiar with instructional technology including educational software, adaptive/assistive technologies, and Internet use" (p. 64). The lack of access to the curriculum [e.g. textbooks] and instructional content [e.g. teachers' worksheets] and to the school's program creates disability by not removing barriers (e.g students with severe learning disabilities require digital text with text readers). These barriers obviate and thwart the implementation of the laws and policies of the United States (IDEA, 1997, 2004; Tech Act (1988, 1998).

Laws - Inclusion

York (1997) (as cited in Jackson, Harper, & Jackson, 2001) states that inclusion "means that students with disabilities are: a) attending the same schools as siblings and neighbors, b) have membership in general education classrooms with age-appropriate peers, c) have individualized, relevant learning objectives, d) are provided with the means to [*access*] the classroom curriculum materials" (p. 3).

Individuals with Disabilities Education Improvement Act (IDEA), 2004

In December 2004, the Individuals with Disabilities *Improvement* Act (IDEA) was signed into law by President Bush. The features of the new improved legislation that are pertinent to this research study include: (a) the inclusion of students with disabilities in the general education classroom; (b) the provision of curriculum and instructional content in accessible formats; (c) application of universal design principles; and (d) establishment of the National Instructional Materials Accessibility Standard and the National Instructional Materials Access Center. The IDEA 1997 amendments had already made progress toward inclusion through the stipulation that all students with disabilities would have access to the general education curriculum and participate in state and district wide assessments. The law prohibits the exclusion of these students with disabilities from state and district-level accountability (Jackson, 2004; Stahl, 2004). The new legislation freed the teachers from much of the burdensome paperwork and provided the additional tools [e.g. National Instructional Materials Accessibility Standard and the National Instructional Materials Access Center) required to improve student performance.

Access to the curriculum content.

Stahl (2004) posits that the nation's approximately 100,000 public and private K-12 schools provide access to the curriculum content in the form of traditional textbooks. Eighty to ninety percent of grades 4-12 use textbooks. Most students with disabilities cannot access the traditional print format of the text. Students from widely diverse social, economic, cultural and language backgrounds as well as the full spectrum of disabilities from physical to cognitive to sensory would profit from digital access. The legislation mandates increased expectations and accountability that cannot be achieved without individualized instruction. "One critical barrier to individualized instruction is the curriculum itself. Rather than offering multiple gateways to learning and understanding, the 'one-size-fits-all' printed textbooks and other resources that make up general curriculum often serve as barriers" (p. 1). Teachers are left with the burden of differentiation (Tomlinson, 1999), adaptation and accommodation (Edyburn, 2004) to teach every student. Teachers cannot improve the performance of students in inclusion classrooms without technology (Edyburn, 2005; Enwefa & Enwefa, 2002; Hasselbring, 2004; Scherer, 2004; Strum, 2002). The teachers must believe that the students have a right to be included in the general education classroom and that they are responsible for teaching them (Davis, 2002; Linton, 1998; Mittracht, 2003).

No Child Left Behind, NCLB in relation to the IDEA 2004.

Congress passed the NCLB, 2001 legislation and the Enhancing Education through Technology Act under the NCLB is "to improve student academic achievement through the use of technology in elementary and secondary schools. An additional goal is to assist every student in crossing the digital divide by ensuring that every student is technologically literate by the time the student finishes the eighth grade, regardless of the student's race, ethnicity, gender, family income, geographic location or [*disability*] (Jackson, 2004, p. 10; O'Neill, 2005).

Important elements of the act address the integration of technology along with curriculum alignment, standards-based reform and *students with disabilities*. Schools are expected to initiate technology plans for integrating technology in elementary and secondary schools to improve academic achievement and to align curriculum instruction with content standards. The NCLB has also brought together several reform initiatives in education, that support all learners and a single standards based curriculum [*accessible*] for all students. In the past, the deficit-oriented programs segregated and excluded diverse learners and tended to blame the student to explain school failures. Innovative technologies (e.g. text to speech digital books, word prediction software, tutorial and scaffolding programs), enable the schools to respond to the mandates for curriculum access, student inclusion and participation, and the ability to improve the quality of education and outcomes for all learners (Jackson, 2004; O'Neill, 2005; Stahl, 2004).

Adequate yearly progress AYP and Students with Disabilities

Under the No Child Left Behind legislation, Adequate Yearly Progress has become the benchmark that schools aspire to every year. Mainzer, Castellani, Lowry, and Nunn (2006) note that "Most schools fail to close the achievement gaps for subgroup populations and reach Adequate Yearly Progress (AYP) targets…" (p. 1). Stahl (2004) clarifies that "All schools must provide achievement data in four separate areas: mathematics, reading/language arts, and either graduation rate (for high schools and districts) or attendance rate (for elementary and middle/junior high schools)" (p. 3). There was a deliberate emphasis on inclusion of students with disabilities in the NCLB, 2001, however, most state assessment initiatives failed to deal with these students. "Educational reform policies stress the importance of including all student in accountability systems" (Thurlow & Wiley, 2006, p. 247). NCLB intended for these students to be included, but the states' failed to include them. The law was specific in its intent. "NCLB clearly required accommodations in Section 202.2 responsibilities for assessments: (b) The assessment system required under this section must meet the following requirement: (2) Be designed to be valid and accessible for use by the widest possible range of students, including students with disabilities and students with limited English proficiency" (Stahl, 2004, p. 3).

Most educators were caught off guard because they thought that the students with disabilities would not be included. They thought that these students would take other assessments, but the U.S. Department of Education in December 2003, cleared up the confusion and the NCLB limited the participation in alternative assessment to only 1 percent of the total student populations, even though approximately 9 percent of the population were identified. If the scores of the 8 percent are included in the Annual Yearly Progress than the schools will have to improve their performance (Stahl, 2004). "That's the point, you own it, you fix it" (Rose, 2003).

To provide some breathing room for schools to begin to teach every student, the Department of Education has increased the percentage of students with disabilities who can participate in alternative assessments. The challenge remains for schools to improve the performances of every student.

President's Freedom Initiatives

The *President's New Freedom Initiatives* (2002) seek to remove barriers to independence for Americans with disabilities: (a) increasing access through technology, (b) expanding educational opportunities for youth with disabilities, (c) integrating Americans with disabilities into the workforce, and (d) promoting full access to community life. Section 508 of the Rehabilitation Act, "…requires that all Federal government electronic and information technologies be accessible to individuals with disabilities" (Executive Summary, May, 2002, p. 1). The natural progression would be to have the Freedom Initiatives apply to P-12 schools and colleges and universities. Foley (2003) voiced concern for the accessibility issues for colleges and universities concerning online and distance learning that is growing at a phenomenal pace. At this point, the universities are voluntarily applying the freedom initiatives and making web sites accessible, but it could become costly and then it will become a concern (Burgstahler, 2005).

Reactions from General Education and Special Education

After 30 years of efforts to implement the laws of the land, "the body of knowledge constructed since Public Law 94-142 was passed has resulted in a deeper understanding of students with disabilities and the systems that serve, or fail to serve them" (Fisher, Frey & Thousand, 2003, p. 42). Have teacher educators integrated the new body of knowledge into the preservice teachers' curriculum at the colleges and universities? Preservice teachers need to become privy to this body of knowledge. The understanding and commitment of general education teachers to see beyond color or classification and to see the full spectrum of abilities and disabilities as teachable in their classrooms are at issue.

Villa and Thousand (2003) question whether new teachers are leaving the colleges of teacher education prepared to teach all students. In response to the changing times, general education teachers must envision their new role in teaching interwoven in a new collaborative relationship with the special education teacher (Shippen, et al, 2005; Smith, Tyler, Skow, Stark & Baca, 2003). The general education teachers must take responsibility for the performance of students with disabilities (Shippen et al., 2005; Kluth et al., 2002). Others believe that teachers are not being prepared for the enormous task of teaching students in diverse and inclusive classrooms (Hewitt, 1999; Roberts, 2001; Schumm, et al, 1994; Scruggs & Mastropieri, 1996). General education and special education must share their unique expertise and must bridge the divide. Collaborative practice between special education and general education requires teacher educator attention (Jones, Cunningham & Stewart, 2005; AACTE, 2002) to ensure that inclusion does not remain an illusion (McLeskey, et al., 2004).

Some studies posit that the achievements of students in inclusion classrooms were as good as those students who were excluded (Baker, Wang & Walberg, 1995; Natarajan, 1999). Rea, McLaughlin & Walther-Thomas, 2002), others reported mixed results Manset & Semmel (1997), while Waldron and McLeskey (1998) found that inclusion programs are effective for some but not others. The educational debate continues to focus on where to educate students with disabilities in inclusion classrooms or segregated classrooms. Segregated classrooms would result in schools remaining firmly entrenched in the implementation of the medical/rehabilitative model of disability. The medical/rehabilitative model promotes the fixing of the student through remediation and it exists concurrently with the print/script modality that creates disability by failing to remove barriers to learning (Linton, 2002).

Skrtic (2003) warns that "students who are poor and/or members of racial, ethnic, or linguistic minority groups are at greater risk of being disabled by schooling, because, historically, they have been disproportionately identified as 'handicapped' and placed in special education programs" (p. 41).

Shealey et al. (2005) note that students of color have been re-segregated in the special education classrooms. Toward a new definition of inclusion, Farrell, Ainscow, Howes, Frankham, Fox, and Davis (2006) propose that "inclusion is a process in which schools, communities, local authorities, and governments strive to reduce barriers to the participation and learning for all citizens [students]" (p. 7-8).

The social constructionist model of disability removes the barriers that create disability through accessible technology. Rakes, Fields and Cox (2006) note when teachers thoroughly integrate technology into the classroom, constructivist learning environments evolve which support critical thinking and higher cognitive skill development. Students work together collaboratively in dynamic learning environments. Burris, Heubert and Levin (2006) found that "performance of initial high achievers [gifted] did not suffer statistically in heterogeneous classes relative to previous homogeneous grouping, and rates of participation in advanced placement calculus and test scores improved" (p. 105). Such classrooms remove the barriers to the learning created by print/script modality and provide the supports for learning that digital access affords all learners, but especially learners with disabilities.

Villa and Thousand (2003) suggest that students with disabilities are not succeeding because the teachers are allowing them into the classroom, but they are failing to implement inclusion [providing assistive technology]. On the other hand, Semmel, Abernathy, Butera, and Lesar (1991) postulate that good teachers cannot teach all students and that that assumption is unfounded, warning that general education teachers are not likely to support the inclusion of students with disabilities in the classroom, never mind provide effective instruction. Rose, Meyer and Hitchcock (2005) offer an alternative, asserting that teachers, if properly prepared, can teach every student because of the advances in technology and the concept of universally designing instruction for student learning.

Benedetto (2005) suggests that the "teachers can be successful, but they must take ownership" (p3.). Villa and Thousand (2003) postulate "Inclusive education is a general education initiative, not another add-on school reform unrelated to other general education initiatives. It incorporates demonstrated general education best practices, and it redefines educators' and students' roles and responsibilities as creative and collaborative partners" (p. 23).

Society has experienced dramatic changes with the exponential growth of innovative technologies and medical advances that have created a climate for change. Yet, despite these movements and the availability of the technology, the mainstreaming, integration, and/or inclusion of students with disabilities in the general education classrooms in the nation's schools have remained in a state of flux for over 30 years. The resistance to change has been vigorous and consistent, because teacher attitudes and beliefs are not easy to alter (Guskey, 2002; Hamon, 1979) and for that very reason, they persist, along with continued separation of teacher education into special and general education.

Regardless, the laws, executive orders, legislative and judicial mandates continue to move society closer to inclusion of individuals with disabilities, even though the schools have noticeably lagged behind (Sailor & Rogers, 2005). The focus of this study is to examine teachers' sense of inclusion efficacy to teach students with disabilities in the general education classroom, because inclusion requires the teachers to have strong sense of efficacy for the difficult task of inclusion.

Technology

The integration of innovative technologies enables the implementation of the legislative and judicial mandates in a way that print and text could not. The print modality created disability because not all students could access the traditional print format. Inclusion and access to the curriculum content strengthened under the reauthorization of the IDEA in 2004 provide access and removal of barriers to curriculum content. Charlton (2002) asserts that disability is socially constructed and the removal of barriers [access to digital text and text readers] to enable a student with a learning disability to access the general education curriculum prevents the social construction of disability.

Inclusion with Technology

Under these existing laws, if students require accessible and universally designed digital formats to access the general curriculum, the expectation is that schools and teachers will provide them (Bausch & Hasselbring, 2004; IDEA, 2004; Federal Register, 2005; Technology Related Assistance for Individuals with Disabilities Act of 1998). Not providing accessible textbooks and environments resulted in the creation of disability in the schools (Linton, 2002). Beyond providing mere access to the curriculum content, technology provides the support or mediating capabilities that are often needed by students with [and without] disabilities, to allow them to learn through participation in advanced levels of performance that would normally lie beyond their ability (Edyburn, 2005; Englert, Manalo & Zhao, 2004).

Diffusion of Innovation

Rogers (1995, 2003) found that the "innovation-development process consists of all the decisions, activities, and their impacts that occur from recognition of a need or a problem through research, development, and commercialization of an innovation" (p. 137). Technology in the 21st century has changed and grown exponentially, providing the accessibility for millions of Americans who require digital access in multiple formats and delivery systems. Rogers' model of innovation-decision making provided a look at how technology might be integrated into the curriculum, resulting in the inclusion of students with disabilities in the classroom.

Rogers (1995, 2003) explains that the model includes sequential stages in the process of innovation decision-making: a) Knowledge. The teacher is exposed to the innovation and learns about it through examination to gain a deeper understanding of its functionality; b) Persuasion. The teacher develops a favorable or unfavorable opinion or attitude about the innovation through examination and early use; often asking what are the advantages and disadvantages of its use; c) Decision. The teacher engages in activities that lead to adoption or rejection of the innovation; d) Implementation. The teacher puts the innovation into use and builds a stronger support for it or against during use; and e) Confirmation. The teacher seeks reinforcement concerning the decision to implement the innovation and will either stop using it or share its use with others (pp. 168-218).

Becker (2000) posits that *The Teaching, Learning and Computing* survey of more than 4000 teachers in 1100 schools in the United States, found that teachers' teaching philosophy and beliefs predicted the use of computers with students. The teachers who follow the conventional "transmission pedagogy" did not use technology, while the "constructivist" teachers used technology in creative ways. The conventional transmission pedagogy and the medical /rehabilitative model of disability both prevent the teacher from embracing innovative technologies and reforms. To change their attitudes, one must understand the basis of their beliefs about teaching and learning.

Guskey (2002) suggests a deeper look into professional development for teachers similar to Roger's diffusion theory of innovations. Both focus on the implementation and confirmation stage. Guskey suggests that teachers will not integrate the innovation or the reform or the new instructional idea unless or until the application of it produces successful student learner outcomes. Zhao and Frank (2003) note that "Unless a teacher holds a positive attitude toward technology, it is not likely that he or she will use it in teaching" (p. 809). What is in it for them is an essential component of the implementation stage. If the teacher does not improve the performance of their students, then the likelihood of continue use is low. On the other hand, understanding that [technology] improves the performance of students with disabilities may not be sufficient, if the teachers are philosophically opposed to inclusion.

Assistive Technology, Access to Computer, and Digital Content

Edyburn (2004) suggests a definition for "[a]ssistive technology device means any item, piece of equipment, or product system, whether acquired commercially off the shelf, modified, or customize, that is used to *increase, maintain, or improve the functional capabilities of a child with a disability"* (p. 16). Edyburn recommends the need for a "unifying theory that clarifies the relationships among assistive technology, instructional technology and universal design" (p.20).

The availability of computers in schools has grown substantially in the past decade. Babell (2005) found "that the national ratio of students to computers has dropped from 125:1 in 1983 to 4:1 in 2002" (p. 1), which supports the figures released by the U.S. Department of Education. Even with the availability of computers in those ratios, teachers do not integrate technology into their instruction. Elliot, Foster & Stinson (2003) found that despite "legal obligations to provide students with appropriate assistive technology or other instructional accommodations, students and their families often face hurdles in obtaining and implementing assistive technologies in their classrooms" (p. 46). In the end, the attitudes and beliefs of teachers determine whether technologies are implemented for students who require them to access the general education curriculum (Becker, 2000; Russell, et. al., 2003). It often depends upon sheer numbers, if there are only a few students who require the use of technology, the teachers are less likely to integrate it into their instruction or to embrace it if it requires modifying their teaching style (Elliot et al. 2003). The failure to integrate technology for the benefit of the full inclusion of students with disabilities is not because of the lack of available resources. Roberts (2001) reiterates the idea that it is lack of skills, knowledge, and dispositions by teachers, who still believe that it is not their job to teach students with disabilities in the general education classroom.

Puckett (2004) identified instructional and assistive technologies for students with mild disabilities, who were included in the general education classroom and Johnson (2005) identified

Intelligent Tutors and other software that provide “patient practice and remediation” (p. 15). This (Table 2.1) is only a partial listing of the types of software and technology that enable students with disabilities to access the content with supports and educational enhancements for learning while maintaining high standards for content.

Concept	**General Use**
Multi-media Programs	Sound, pictures, text, graphics, and movies increase student interest and engagement in learning.
Text to speech word processors	Writing supported by highlighted text read by word, letter or sentence, spell checks with voice support
Word prediction	Supports students unable to use the keyboard with supports for word retrieval and spelling
Text to speech	Accessible digital books are read in multiple voices and languages and have advanced study skills built-in with supports for students unable to access the traditional print book because of physical disabilities and/or learning disabilities.
Tutorial and support programs	Electronic worksheets with electronic manipulative templates and tutorial programs that scaffold deficit areas while the student is learning.
Mediational Software	Cognitive tutor authoring tools and computer-assisted instruction with built-in remediation, intelligent tutor systems (ITS) that use artificial intelligence software and cognitive psychology models to provide individualized instruction.
Universal Design for Learning	Accessible presentation, learner expression and engagement

Table 2.1: Partial listing of Assistive, Accessible Technology (Puckett, 2004; Johnson, 2005)

Technology Enhanced Student Learning

The traditional print only format of the 20th century is considered to be a one-size-fits-all, which does not fit every student, especially students with disabilities (O’Neill, 2004; Rose et al., 2005; Stahl, 2004). Curriculum and instructional content are considered to be accessible when they are universally designed to enable access to more than one user (Jackson & Harper & Jackson, 2001; Rose et al., 2005; Stahl, 2004). O'Neill (2000) (as cited in Jackson, Harper, Jackson, 2001) "Increasingly, general education classrooms will undergo rapid changes with the introduction of new forms of media such as digital text, digital images, digital audio, digital video, digital multimedia, and networked environments" (p. 1).

Universal Design

The digital format enables teachers to universally design instruction for student learning through representation, expression and engagement (CAST, 2002: Rose, et al. 2005). The first provides multiple and flexible representations of the information which support the diverse needs of the population (e.g. audiotexts, text-to-speech, online simulations, podcastiing, video streaming, and intelligent tutors) (Boyle, 2003; Edyburn, 2005; Hasselbring & Goiin, 2004; Hourcade, 2001; ; Jackson, Harper, & Jackson, 2001; Rose et al., 2005; Rose & Meyer, 2002, 2000; Xin, 2001). The second provides the student with multiple and flexible methods of expression to support their needs and to enhance learning (Jackson, Harper, & Jackson, 2001; Rose et al., 2005; Rose & Meyer, 2002, 2000). Innovative technologies such as word predictors, spell checkers, (Dattile, 2001; Montgomery, Karlan & Coutinho, 2001) voice activated input, presentation software, communication and scaffolding software have been used by students with disabilities for years. Play Attention (2000), a computer based learning system and innovative software used with U.S. Air Force and NASA pilots have been found to be quite effective when used with students with disabilities (Ashton, 2001; Judge, 2001; Stock, 2004). The third provides multiple and flexible methods for engagement to support diverse learners. Assistive, accessible and innovative technology improves attention, reduces behavior problems and bolsters self-esteem in learning (Edyburn, 2005, 2003, 2002; Jackson, Harper, & Jackson, 2001; Rose et al., 2005; Rose & Meyer, 2002, 2000; Sandholtz, Ringstaff, & Dwyer, 1994; Wehmeyer, 2004).

Mediational Quality of Technology

Technology research shows that computers provide students with a new way to learn (Lee & Vail, 2005) and support student learning (O'Neill, 2004; Stahl, 2004). Judge (2001) explains that computer-based learning has had a positive impact on young children with and without disabilities. Johnston and Cooley (2001) (as cited in Hartshhorne, Ferdig, & Dawson, 2006) have shown that the "effective use of technology in the classroom can provide motivation, relevance, and a deeper understanding of information for students" (p. 77). "Computers provide the tools to make inclusion possible…appropriate technology applications and adaptations can provide many children with disabilities a means of opening the door to an array of learning opportunities that was previously unavailable to them" (Hartshorne, et al., 2006, p. 29).

Lindstrand (2001) states that parents' opinions are an essential starting point to understand what parts of the equation are important in the life of the child with disabilities (Hughes & Hans, 2001). Mistrett (2004) found that "Assistive technology can help young children with disabilities maximize their ability to participate" (p. 1). The *mediational* quality of technology explained by Cole and Engestrom (1993) (as cited in Englert, Manalo, & Zhao, 2004) states that "technology can bring the endpoint forward to the beginning of the learning process, enabling the more sophisticated levels of performance through instrumental assistance that enables students to schedule, organize and employ mental functions before they can accomplish those activities for themselves" (p. 5).

Technology Improved Assessment of Student Learning

Dolan et al. (2005) found that large-scale assessments inadequately evaluate the learning of students with disabilities (Thompson, Johnstone, & Thurlow, 2002; Thompson, Thurlow, Quenemoen. & Lehr, 2002; Thurlow, et al., 2000), however, the application of universal design principles to technology improved the assessment of student learning.

Inclusion, Technology Integration and Teacher Education

Effective leadership has been provided by organizations like AACTE that believe that the promise of the education of *all* children is not just good rhetoric (AACTE, 2002). Aware of the promise and the challenge to educate *all* children, NCATE strengthened assessment standards for colleges of teacher preparation. They have called for the integration and use of technology in the assessment of the candidates to ensure that graduates have a positive effect on the learning of *all* students (Bausch & Hasselbring, 2004; Carter, 2003; INTASC, 2003; NCATE, 2002; TECH Act, 1998).

The National Center on Educational Restructuring and Inclusion (NCERI) established seven factors essential to the practice of inclusion: (1) collaboration between general education and special education; (2) evaluation personnel and pedagogues; (3) classroom personnel and resource room and related service providers; 4) refocused use of assessment; (5) support for staff and students; (6) appropriate funding levels and formulae; (7) effective parental involvement; and curricula adaptations and effective instructional practices (National Study on Inclusive Education, 1995).

Several educators have suggested that teacher educators need to apply the principles of universal design and to model the integration of technology in their teaching to prepare preservice teachers to teach every student (Adamsan, et al., 2003; Pierson, 2006; IDEA, 2004; Shippen, et al., 2005). The rationale is that teacher candidates will understand that computers are accessible if they provide access to multiple users including students with disabilities who require a text reader or screen reader to use the computer. Accessibility means more than having access to the physical facilities as defined under the Americas with Disabilities Act, 1990 (ADA). It means the right for students with disabilities to participate with their peers (Section 504 of the Rehabilitation Act), the right to improve their performance, and the right to have access to the curriculum content in the general education classroom (IDEA, 2004).

The promise to educate *all* students (P-12) cannot be accomplished using the techniques of the past. Shippen, et al. (2005) recommend "College course work and field experiences must address deficits in knowledge and skills as well as focus on helping teacher candidates to develop dispositions that would enhance the education of students with disabilities in the general education classroom" (p. 97). Hartshorne, Ferdig and Dawson (2005) suggest that teacher education faculty find themselves ill prepared to teach preservice and inservice teachers the skills and methodology of integrating technology into the curriculum. Thus these preservice and inservice teachers "find themselves with little ability to meet national or state technology integration mandates" (Hartshorne et al. 2005, p. 77). Goodlad (1994) (as cited in Hartshorne, Ferdig & Dawson, 2005) asserts the need for "simultaneous renewal of both K-12 schools and teacher education programs" and Hartshorne, et al. (2005) suggest that one method of accomplishing this simultaneous renewal is through school-university collaborations. Collaborative leadership initiatives of colleges and universities that provide exemplary programs in the initial preparation of teachers integrate technology policies and plans based on the mission and conceptual framework guiding their programs, teaching, research, and service.

Technology, Efficacy, and Teachers

Perhaps teachers have not bought into technology because the world's primary mode of communication, namely, script and print, remain highly successful for most students. Until teachers believe in the need to use technology for those who cannot access the content in another format (Jackson, 2004; Stahl, 2004), and for those who need to think at a higher cognitive level [gifted students without and with disabilities] (Rakes et al. 2006), they will not use it. Rogers (1995) explains that until the need for and successful use of the innovation is evident, teachers will not transition to integrating technology. During the transition, how will teachers fulfill the IDEA mandates, the provision of curriculum and instructional content in accessible (e.g. digital) formats for students with disabilities, or the NCLB mandate to increase critical thinking and improve performance for all students?

Unless teachers experience mastery, a main source of self-efficacy, the adoption or implementation will drop off soon after the training or workshop or project has ended (Buckenmeyer, 2005; Guskey, 2002; Rogers, 1995). Therefore, collective efficacy (Goddard et al., 2002) and the teacher's sense of efficacy (Tschannen-Moran & Woolfolk Hoy, 2001) are both requisite to change the dynamic.

Efficacy: Teachers' Sense of Efficacy and Collective Efficacy

As the nation's laws and judicial decisions continue to move schools closer to inclusion of students with disabilities in the general education classroom (Federal Register, 2005; IDEA, 2004), the constructs of teacher efficacy and collective efficacy become even more relevant. Schools of teacher education need to know whether teacher candidates are graduating with strong teachers' sense of efficacy to teach every student. Pajares (1992) (as cited in Rakes, Field & Cox, 2006) found "Beliefs are far more influential than knowledge in determining how individuals organize and define tasks and problems and are stronger predictors of behavior" (p. 422). Teachers who do not believe in their ability to teach students with disabilities in the general education classroom are not likely to succeed [inclusion], and schools with a low collective inclusion efficacy will continue to have students that do not improve their performance.

A major theoretical foundation of this study is efficacy based on Albert Bandura's social cognitive theory and his construct of self-efficacy. These are the basis for teacher efficacy and collective efficacy. Tschannen-Moran, Woolfolk Hoy and Hoy (1998) affirm that teacher efficacy has become a viable construct and has been effectively researched over the past 30 years adding essential information to the knowledge base in education and psychology. Both teacher efficacy (Goddard, et.al, 2004; Kranzler & Pajares, 1997; Pajares, 2003; Tschannen-Moran, et al., 1998) and collective efficacy are known predictors of student achievement (Goddard, 2002; Goddard, 2000 and goal attainment (Goddard et al. 2004). The theories relevant to this research study are the reciprocal and cyclical nature of Teachers' Sense of Efficacy Scale (Tschannen-Moran, Woolfolk Hoy, 2001) and collective efficacy (Goddard, 2002) of schools. These models of efficacy are the foundation for the development of the Teachers' Sense of *Inclusion* Efficacy Scale (TSES) and Collective *Inclusion* Efficacy scale used in this research study.

Social Cognitive Theory

Bandura (2002) posits that "Social cognitive theory provides an agentic conceptual framework within which to study how electronic technologies impact worldwide connectivity, and personal and national lives" (p. 3) and further explains that people make choices and decisions on the basis of belief systems. The beliefs of personal efficacy are central and act as a mechanism for self-regulation. The belief system is the basis for human agency. Unless teachers believe that they can produce desired outcomes, namely [to improve the performance of students with disabilities in the general education classroom] they will have little incentive to try (Bandura, 1997, 2001).

Self-efficacy

Bandura (1989) posits "self-efficacy beliefs function as an important set of proximal determinants of human motivation, affect, and action. They operate on action through motivational cognition, and affective intervening processes" (p. 1175). Self-efficacy differs from self-esteem and self-concept because it is task specific (Bandura, 1997; Hoy, 2004) and based on what people believe they are capable of doing in particular situation in the future (Hoy, 2004). Self-efficacy represents an individual's belief in his or her own capability "to organize and execute the courses of action required to produce given attainments" (Bandura, 1997, p. 3). Woolfolk Hoy (2004) suggests that the media has misused these terms, therefore, there might be a tendency to confuse self-efficacy with self-concept or self-esteem. Self-esteem is concerned with one's self worth, while one's self-concept is a more global construct developed through the comparison of self to others using frames of reference and it includes self-efficacy.

Bandura (1991) extended the definition of self-efficacy to include "exercising control over one's own thought processes and affective states, and to the self-regulation of goal-directed pursuits and impulsive and addictive behavior, to the exercise of control over social environments." Teachers with strong self-efficacy beliefs would increase student learning because they would execute a course of action to make the accommodations [e.g. assistive, universally designed technology] and to find the equipment [e.g. tape recorded books, mediational software] that the student needed to access the curriculum content. Bandura (1993) explains that "self-efficacy beliefs are the product of a complex process of self-persuasion that relies on cognitive processing of diverse sources of efficacy information conveyed vicariously, socially, and physiologically" (p. 145).

Self-efficacy could be described as one individual's belief that he or she can swim. Another person might have a high efficacy for flying an airplane. Tschannen-Moran, Woolfolk Hoy, & Hoy (1998) explain that an individual's self-esteem is not affected by his/her inability to be efficacious in a sport such as skiing unless skiing is important to that person. People can still exhibit a high overall self-esteem even though they cannot ski. "Self-efficacy has to do with self-perceptions of competence rather than actual level of competence" (p. 7). Likewise teachers who believe that they can teach students with disabilities succeed without technology because of their strong sense of efficacy to teach every student. Their level of competence might be improved with knowledge of technology and its use. However, their strong sense of efficacy has enabled them to succeed because of their confidence in their ability to accomplish the task of improving student performance. One might also find the teacher with a very strong sense of efficacy who fails to develop the skills and knowledge needed to improve the student's performance. The teachers' sense of efficacy to teach students with disabilities may be weaker than their efficacy to teach students without disabilities. Soodak, Podell, and Lehman (1998) affirmed that teachers’ efficacy is salient to the inclusion of students with disabilities in the general education classroom. Billingsley and McLeskey (2005) indicate that "…the quality and effectiveness of the teacher contribute more to student success than any other factor" (p. 23).

Sources of Efficacy Information

Bandura posited that self-efficacy beliefs are constructed based on four sources of efficacy information: Mastery experiences, Vicarious experiences, Verbal persuasion, and Physiological states

(Tschannen-Moran, Woolfolk Hoy, & Hoy, 1998). Goddard (2001) explains "Efficacy beliefs are developed through individual cognitive processing that uniquely weighs the influence of efficacy-shaping information obtained through mastery experience, vicarious experience, social persuasion, and affective states" (p. 468). The cognitive processing by the individual through the interpretation of the efficacy information is essential because different people can see the same thing and interpret it differently. For example, two teachers with equally strong sense of efficacy with one's belief based on the medical rehabilitative model of disability and the other's belief based on the social constructionist model of disability view inclusion differently. The first supports special [segregated] placement while the second supports the inclusion of students with disabilities using technology.

Mastery experiences. Mastery experiences are the most important sources of efficacy information according to Bandura. Successfully flying the airplane would be a source of master experience for a new airline pilot. The more mastery experiences the higher the efficacy that the individual has for the specific task of flying an airplane. Likewise, general education teachers who do not have mastery experiences in teaching students with disabilities are likely to have low teacher efficacy to teach students with disabilities in a general education classroom. The perception that one's performance has been successful raises one's efficacy beliefs. Thus, teachers who have successful experiences teaching students with disabilities should increase their sense of inclusion efficacy. If the experiences are positive then efficacy is enhanced. However, if the teacher experiences difficulties due to lack of school commitment for inclusion, efficacy may decrease (Tschannen-Moran, et al. 1998). Teachers' Sense of Efficacy is affected by the positive or negative experiences that may be the unintentional result of a low collective efficacy for inclusion.

Vicarious experiences. Vicarious experiences through modeling also provide efficacy information. It is essential for teacher candidates to have successful inclusion experiences inasmuch as teachers often teach as they were taught (Adamson, et al., 2003; Wetzel & Williams, 2004-2005). As preservice teachers observe their teacher educators using technology in effective ways, they are able to cognitively process it and process it as efficacy information. Huang (1994) (as cited in Wetzel & Williams, 2004-2005) confirmed that when teacher educators serve as role models it significantly impacts technology use by new teachers in their teaching. Modeling experiences increase efficacy, if the observer identifies with the model (Tschannen-Moran, et al. 1998).

Persuasion. Persuasion could be verbal, however, this source of efficacy information is the least effective for the long term although it might be effective in the short term. And, "the potency of the persuasion depends on the credibility, trustworthiness, and expertise of the persuader (Bandura, 1997) (as cited in Hoy, 2004, p. 6). If the divide that exists between general education and special education cannot be bridged, the potency of the persuasion will be insufficient. It is likely that preservice teachers in general education are aware of the divide, if they believe inclusion does not impact their teaching, the effect of persuasion will be short lived. If the school's collective efficacy represents a vision of staunch support for inclusion, teachers would be more likely to be persuaded and to persist.

Physiological states. Arousal or physiological states are also sources of efficacy information. The individual who is has a low efficacy for flying may have a physiological state of anxiety and fear of flying, which cannot be overcome. The cognitive processing of this efficacy information makes the same reaction to flying different for everyone because people interpret and assign different degrees of importance to the same set of experiences and physiological sensations (Bandura, 1997; Tschannen-Moran et al. 1998).

Teacher Efficacy Measures

Tschannen-Moran & Hoy (2001) delineate the development of the instruments that have been designed based on Bandura's concept of self-efficacy and the social cognitive learning theory (Table 2.2). The *Teacher Efficacy Scale* created by Gibson and Dembo (1984) used 30 items on a 6-point

Likert scale from 1 = Strongly disagree to 6 = Strongly agree. The results of the factor analysis of 208 elementary teachers' responses identified two factors that accounted for 28.8 percent of the variance. The *Ashton Vignettes* used 50 items describing problem situations concerning various dimensions of teaching, scored using the self-referenced "extremely ineffective to extremely effective", and the norm-referenced "much less effective than most teachers to much more effective than other teachers" responses. *Science Teaching Efficacy Belief Instrument* (STEBI) used 25 items on a 5-point Likert scale from strongly agree to strongly disagree to measure teachers' efficacy for the specific task of teaching science. Bandura's Teacher Efficacy Scale used 30 items on a 9-point scale from nothing to a great deal, to examine the multiple dimensions of teaching.

Tschannen-Moran et al. (1990) developed the Teachers' Sense of Efficacy Scale (TSES) originally referred to as the Ohio State Teacher Efficacy Scale (OSTES). After a series of pilot studies and improvements, they created the final version of the TSES. Tschannen-Moran and Woolfolk Hoy (2001) argued the short version of the TSES measured one overall efficacy factor or the three domains: efficacy for student engagement, efficacy for classroom management and efficacy for instructional strategies. The result was the development of the Teachers' Sense of Efficacy Scale (TSES) long form that used 24 items on a 9-point scale from 1 = nothing to 9 = a great deal along with the short form that used 12 items on a 9-point scale from 1 = nothing to 9 = a great deal. Both the short and long versions of this scale support the three-factor model with high sub-scale reliabilities.

Instrument	Researcher	No. of Items and Scale
Teacher Efficacy Scale	Gibson and Dembo, 1984	30 6-point Likert scale
Ashton Vignettes	Ashton, et. al., 1982	50 Problem situations
Science Teaching Efficacy	Riggs and Enochs, 1990	25 5-point Likert scale
Teacher Efficacy Scale	Bandura, undated	30 9-point Likert scale
Teachers' Sense of Efficacy	Tschannen-Moran and Hoy, 2001	24 9-point Likert scale
Teachers' Sense of Efficacy*	Tschannen-Moran and Hoy, 2001	12 9-point Likert scale

Table 2.2: Efficacy Measures Based on Bandura's Concept of Self Efficacy
*****Indicates the instrument used in this research study.

Teachers' Sense of Efficacy Model

Figure 2.1 represents an Integrated Model of Teachers' Sense of Efficacy (Tschannen-Moran et al. 1998). Tschannen-Moran et al. (1998) found that teacher efficacy was a cyclical process and that teacher efficacy is affected by sources of efficacy information. In addition, the consequences of efficacy reinforce teacher efficacy. The teacher, whose efficacy is high, who experiences repeated failures in teaching students [for whatever reason] will eventually feel less efficacious. If the sources of efficacy are negative experiences teaching students with disabilities in the general education classroom, the consequences could have a profound negative effect on the teachers' sense of inclusion efficacy.

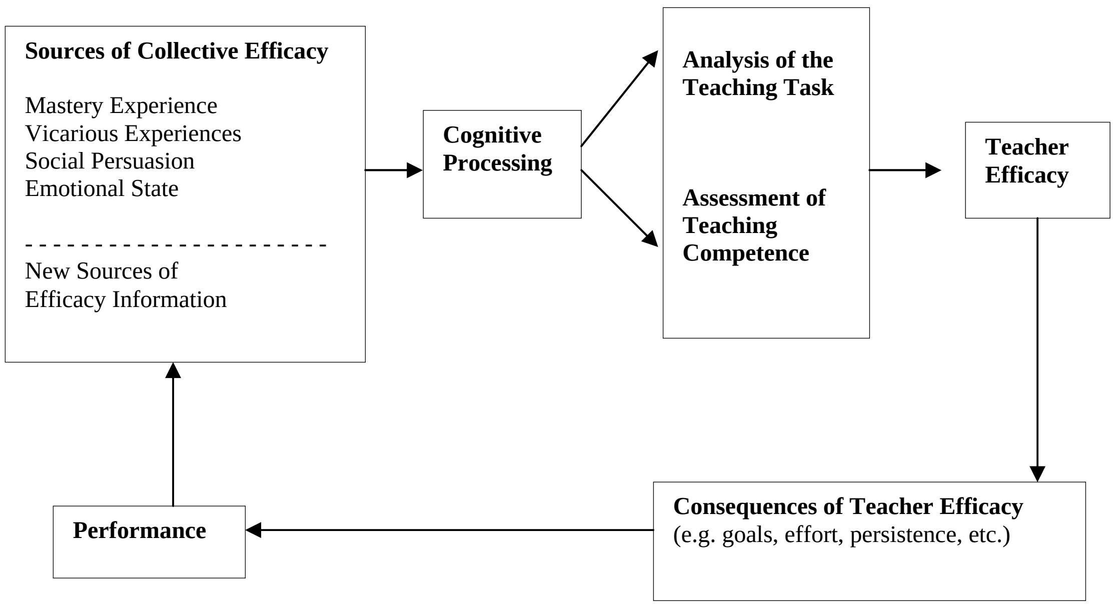


Figure 2.1 An Integrated Model of Teachers' Sense of Efficacy (Tschannen-Moran, Woolfolk Hoy & Hoy, 1998).

Collective Efficacy

Goddard (2002) posits "For schools, collective efficacy refers to the perceptions of teachers in a school that the efforts of the faculty as a whole will have positive effects on students" (p.100). Collective efficacy is the perceived capabilities of the group as a whole and, therefore, the unit of analysis (Bandura, 1991, p. 159; Goddard, 2002; Goddard, et al, 2004). The collective efficacy of a school or district has a reciprocal and cyclical relationship with teacher efficacy (Goddard, 2001; Tschannen-Moran et al. 1998), each having an effect on the other and ultimately on student achievement (Goddard et al., 2000) and group goal attainment (Goddard, et al., 2004).

Goddard, et al (2000) extended the model of teacher efficacy to the organizational level. They made a compelling case for understanding collective efficacy in terms of goal attainment and student achievement. The need for goal attainments is essential for schools to improve the performance of every student. "A better understanding of the outcomes of perceived collective efficacy holds a potential to deepen our understanding of how to improve organizational culture" (Goddard, et al, 2004, p. 10).

Theoretical Foundation of Collective Efficacy

"For schools, collective efficacy refers to the perceptions of teachers in a school that the efforts of the faculty as a whole will have a positive effects on students" (Goddard, 2001, p. 100). Goddard et al. (2004) indicate that a compelling reason for understanding collective efficacy is the strong connection found between collective efficacy beliefs and group goal attainment. Thus, if the collective efficacy of a group strongly supports inclusion then the probability of the group achieving goal attainment is higher.

Collective Efficacy Measures

Goddard developed a shorter version of the collective efficacy scale (Goddard, 2002) was originally based on the Tschannen-Moran et al (1998) model of teacher efficacy. Goddard, Hoy and Woolfolk Hoy (2000) developed the Collective Efficacy scale, using 21 items on a 6-point scale Likert-type scale from strongly disagree to strongly agree. Goddard (2002) shortened the Collective Efficacy scale using only 12 items on a 6-point scale Likert-type scale from strongly disagree to strongly agree (see Table 2.3).

Goddard (2002) chose to use three items to represent each dimensions of the original Collective Efficacy Scale, in equal proportions:

(1) positive group competence (GC+), an example of one of the three items that measures negative group competence (GC+): *Teachers in this school are able to get through to the most difficult students*;

(2) negative group competence (GC-), an example of one of the three items that measures positive group competence (GC+): *If a child does not want to learn teachers here give up;;*

(3) positive task analysis (TA+). An example of one of the three items that measures positive task analysis (TA+): *These students come to school ready to learn*; and

(4) negative task analysis (TA-). An example of one of the three items that measures negative task analysis (TA-); *Students here just aren't motivated to learn*.

Instrument	**Researcher**	**No. of Items and Scale**	
Collective Teacher Efficacy	Goddard, Hoy and Woolfolk Hoy, 2000	21	6-point Likert scale
Collective Teacher Efficacy*	Goddard, 2002	12	6-point Likert scale

Table 2.3: Collective Efficacy Measures Based on Bandura's Concept of Self Efficacy
*Indicates the instruments used in this research study.

Model of Collective Efficacy

Goddard (2001) explains that teachers evaluate their perceptions of personal competence with respect to the demands of the job or task they must perform and adapt accordingly for the specific situation. "The model acknowledges that expectations for attainment depend both on perceived competence to perform a given task and the context in which the task will take place" (Goddard, 2002, p. 100).

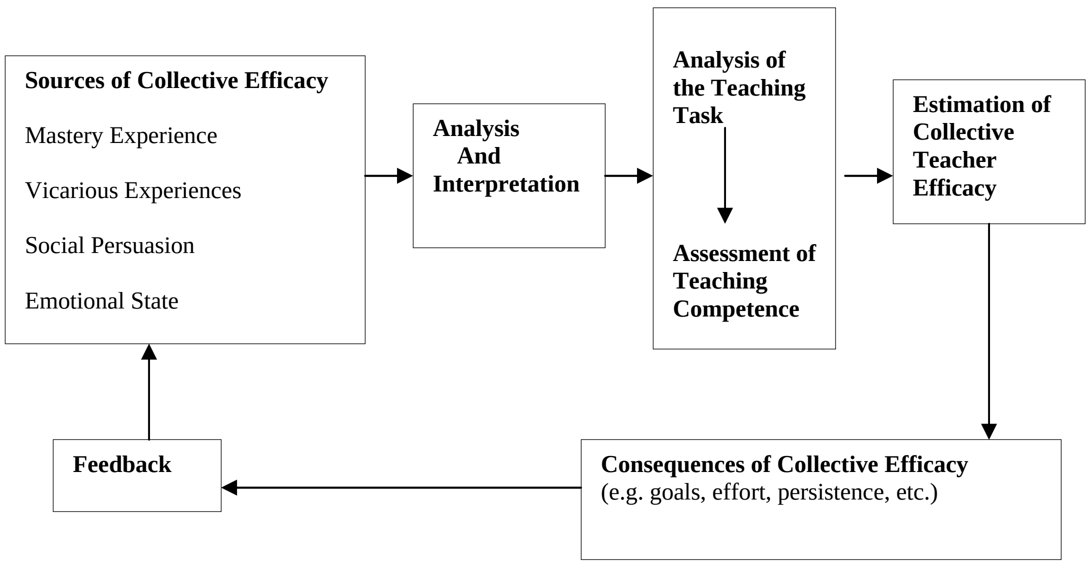


Figure 2.2 A simplified model of collective efficacy (Goddard, 2002)

Goddard, Hoy, and Woolfolk Hoy (2000) found that collective efficacy can be used as an important predictor for differences in student achievement. The collective of teachers, administrators, and other support staff make choices about reform movements and exhibit agency through the choices they make and the action they take to complete the task.

Goddard (2002) noted that mastery experiences explained variation among schools in the collective. "The key distinction between individual and collective efficacy involves the object--self or group--of the efficacy perception" (p. 811). Assessment of collective efficacy was based on the whole group not the individual. The aggregated scores of the group of teachers and their collective belief about their faculty's competence to educate students influenced their own commitment to the task, which resulted in improved student achievement. Collective efficacy represents the expectation level of the group. The school as a collective may support inclusion even though some teachers within the group may not. However, if the collective efficacy of the group does not support inclusion, it would be more difficult for individual teachers to go against the group.

Goddard (2002) found that collective efficacy predicted differences in teacher efficacy between schools. Collective efficacy and the teachers' sense of efficacy are bound in a reciprocal relationship (Goddard, 2002; Tschannen-Moran et al. 1998), where one impacts the other. "According to social cognitive theory, the control individuals and collectives exert over their lives is influenced by their perceptions of efficacy" (Goddard, 2001, p. 467). The collective efficacy associated with the specific task undertaken by the group is predictive of the performance capability of the entire group, even though there may be variation among individuals within the group. For example, some low SES schools have been known to be high performing schools because the collective efficacy of the group is high and the teachers' individually rise to the occasion based on their perception of the group's collective efficacy. A person's belief about the efficacy of a school influences her or his behavior (Goddard, 2001). Goddard (2001) provided support for social cognitive theory at the group level. For example, suburban school districts that do well often have common visions and common beliefs about the collective abilities of the school to impact student learning and change.

Teachers' Sense of Efficacy and the NCLB and IDEA

Minke, Bear, Deemer and Griffin (1996) found that general education teachers who reported training in mainstreaming knowledge and skills had significantly higher scores on their personal teacher efficacy than teacher who did not have the training. Soodak, Podell and Lehman (1998) note that teachers who have low efficacy do not differentiate their instruction, do not collaborate with other teachers, do not favor inclusion, and discriminate based on the specific disability (showing a preference for physical disability over cognitive or behavioral). Students with disabilities are not experiencing successful inclusion in the nation's schools (McLeskey et al. 2004). Soodak et al. (1998) caution that "as is the case with most reforms in education, the movement to include students with disabilities was not necessarily initiated by those most affected [general education teachers] by its implementation" (¶41).

Teachers who do not believe in their ability to teach students with disabilities in the general education classroom are not likely to support inclusion (Soodak et al. 1998), and schools with a low collective efficacy for inclusion will not include students or support the teachers who include them. Roberts (2001) notes that a school system that segregates and separates [special education] and [general education] produces a climate where teachers would not consider it their job to include these students.

Soodak et al. (1998) found the relationship between years of teaching experience and attitudes toward inclusion of students with disabilities in the general education classroom to be curvilinear. After an initial drop in efficacy for new teachers, the level of teaching efficacy for some teachers for inclusion went up (Tschannen-Moran et al. 1998).

Russell et al. (2003) found a similar curvilinear result when investigating the beliefs of teachers in the integration of technology into the curriculum. They were surprised that the new technologically literate teachers had attitudes, which paralleled those of the experienced teachers. These new teachers had negative attitudes toward the use of technology for student learning even though they use it in their lives.

Collective Efficacy and the NCLB and IDEA

The NCLB (2001) demands accountability from school systems for student performance, which has placed a strain on the collective efficacy of schools that must now consider the improved performance of students with disabilities as indicative of their competence as a collective or group. The collective efficacy of the school system must assess and deal with the impact of the group's competence to teach every student, including marginalized groups.

The collective efficacy of the school for inclusion and the administrative support for inclusion have been shown to affect its implementation (Villa et al,. 1996), and to affect the teacher sense of efficacy within the school toward inclusion, which in turn perpetuate the collective efficacy of the school to support or not to support inclusion. The NCLB (2001) affects the collective efficacy of the schools by requiring schools to improve the performance of every student, even those previously excluded from testing or from the aggregated data (Thompson et al, 2003). The NCLB and IDEA have forced schools to reevaluate themselves from a new perspective and a new image of competence.

Thus, teachers and schools are experiencing monumental changes in accountability under the NCLB and IDEA and understanding the cyclical and interdependency of both the Teachers' Sense of Efficacy and Collective Efficacy are essential for teachers and schools in the 21st century. Research strongly indicates that general education teachers and schools are in noncompliance with the law. Students with disabilities are not being included in the general education classrooms. The teachers' voices need to be heard and teachers' sense of efficacy provided a powerful theoretical framework with which to listen. Teachers may require a strong sense of inclusion efficacy to accomplish a difficult task. Many teachers teach within schools that do not support inclusion and that lack a collective sense of efficacy for inclusion. Therefore, this study developed a way of assessing teachers' personal and collective efficacy for inclusion of students with disabilities in the general education classroom compared to their personal and collective efficacy for teaching students without disabilities, and examined other possible predictors of inclusion efficacy.

CHAPTER 3

METHODOLOGY

The methodology presented in this chapter was used to describe and to investigate the research questions in this study. This chapter includes the following: the research design, description of the variables, population and sampling, procedures, instrumentation, data collection, and the descriptive statistical methods used to analyze the data collected.

Research Design

The design for this study was descriptive survey research to investigate the relationships among the factors that impact *teachers' sense of inclusion efficacy* to teach students with disabilities in the general education classroom. The data were collected through an on-line survey instrument with the option to select a paper and pencil version. This study looked at sense of teachers' efficacy, collective inclusion efficacy, attitudes toward inclusion, level of ability to use technology and need for technology, quality of teacher preparation , the characteristics teaching assignments and characteristics of teachers and their impact on the teachers' sense of teachers' inclusion efficacy

Variables

Criterion Variable

Teachers' Sense of Inclusion Efficacy

The scale assessing Teachers' Sense of Inclusion Efficacy to teach every student in the 21st Century, was developed by the researcher based on an adapted version of the established instrument Teachers' Sense of Efficacy Scale (TSES) (Tschannen-Moran & Woolfolk Hoy, 2001). This adapted scale measures the teachers' efficacy for inclusion of students with disabilities in the general education classroom and the teachers' efficacy for integrating assistive universally designed technologies for student learning and assessment of student learning (Federal Register, 2005; IDEA, 2004). The teachers' sense of inclusion efficacy measures the following constructs: student engagement, classroom management, instructional strategies, and technology. The teachers' responses were measured on a 9-point Likert-type summative rating scale.

Predictor Variables

Teachers' Sense of Efficacy (*TSES), Tschannen-Moran & Woolfolk Hoy, 2001)*

The TSES measured the following constructs: student engagement, classroom management and instructional strategies. The teachers' responses measured on a 9-point Likert-type summative rating scale.

Research Question 1

What is the relationship between Teachers' Sense of Efficacy and the Teachers' Sense of Inclusion Efficacy?

Collective Inclusion Efficacy

Collective *Inclusion* Efficacy is the perception of teachers that the faculty and the school district as a whole "supports the ability to organize and execute the actions" (Goddard, 2002) needed to include and to teach students with disabilities in the general education classroom. The Collective *Inclusion* Efficacy scale was adapted version of the 12-item Collective Efficacy scale (Goddard, 2002). The collective inclusion efficacy scales measure the following constructs: group competence for inclusion (GC+, group competence for inclusion (GC-), task analysis for inclusion (TA+), task analysis for inclusion (TA-), and technology. The teachers' responses are measured on a 6-point Likert-type summative rating scale.

Research Question 2

What is the relationship between the teachers' perceptions of Collective Inclusion Efficacy and the Teachers' Sense of Inclusion Efficacy?

Attitude Toward Inclusion

The teachers’ attitudes (toward inclusion) were measured by a scale developed by the researcher concerning the inclusion of students with disabilities in the general education classroom. The attitudes (toward inclusion) were based on the teachers' responses to 4 items on a 4-point Likert-type summative rating scale from 1 = Strongly disagree, to 6 = Strongly agree.

Research Question 3

What is the relationship between the teachers' attitudes toward the inclusion of students with disabilities in the general education classroom and the Teachers' Sense of Inclusion Efficacy?

Technology: Ability to Use Technology and Need for Technology

Level of Ability to Use. The teachers self reported their ability to use technology measured by 15 items adapted from the Project Access Digital Toolkit and other research (Johnson, 2005; Michaels & McDermott, 2003; Puckett, 2004). Teachers reported their perceived level of ability to use these technologies on a 4-point Likert-type scale summative rating scale from 1 = None to 4 = Expert.

Level of Need for Technology. The teachers self reported their need for technology measured by 15 items adapted from the Project Access Digital Toolkit and other research (Puckett, 2004;

Michaels & McDermott, 2003; Johnson, 2005). Teachers level of need for these technologies were measured on a 4-point Likert-type scale summative rating scale from 1 = Do not need to 4 = Critically need.

Research Question 4

What are the relationships among the teachers' perceptions of their ability to use technology and their need for technology and the Teachers' Sense of Inclusion Efficacy?

Quality of the Teacher Preparation Program

The teachers self reported their perceptions of the quality of their teacher preparation (courses, field experiences, student teaching, and teacher educators modeling of how to integrate technology) to prepare them to teach students with disabilities in the general education classroom. The teachers responses were measured on a 6-point Likert-type summative rating scale from 1 = Strongly disagree to 6 = Strongly agree.

Research Question 5

What is the relationship between the teachers' perceptions of the quality of their teacher preparation programs and the Teachers' Sense of Inclusion Efficacy?

Characteristics of Teaching Assignments

Location. Based on teachers' self reported data on the location of their school as suburban or rural.

Number of Students with Disabilities Included in the Classroom. Teachers self reported the number of students with disabilities in their classrooms, the number of students with disabilities who have Individualized Education Plans (IEPs), and the number of students with IEPs included in the their classrooms for instruction.

Specific Disabilities Included in Classroom Instruction. The teachers self reported how often students with specific disabilities were included in their classrooms for instruction. The teachers' responses were measured on a 4-point Likert-type summative rating scale from 1= Not Applicable to 4 = Frequently included.

Research Question 6

What are the relationships among the characteristics of the teaching assignment and the Teachers' Sense of Inclusion Efficacy?

Characteristics of Teachers

Demographic . The teachers were asked to report data concerning their race and gender.

Licensure. The teachers were asked to identify their area of licensure: general education or special education.

Class Grade Level: Teachers were asked to identify the grade level(s) that they taught including: P-3, 4-6, 7-8, 9-12, and P-12.

Years of teaching experience. Teachers were asked the number of years of teaching experience that they had, not counting the present school year.

Scores on Praxis Tests. Teachers were asked to identify the Praxis tests that they had passed including: Praxis II (content), Praxis II for present position, Praxis II (PLT), and Praxis III.

NIMAS and NIMAC. Teachers were asked to identify their knowledge of the National Instructional Materials Accessibility Standard (NIMAS) and the National Materials Instructional Access Center (NIMAC). Teachers responses were measured by 1 = no, 2= somewhat, and 3 = yes.

Research Question 7

What are the relationships among the characteristics of teachers and the Teachers' Sense of Inclusion Efficacy?

Instrument Development and Data Collection

A survey instrument called the *Teacher Beliefs Inventory* was developed by the researcher to collect data for this study. The instrument was developed, refined and adapted from available instruments based on the literature in the field. A panel of experts, field test and pilot test conducted during the second week in March 2006 confirmed the face validity, construct validity and reliability of the instrument.

Teacher Beliefs Inventory

Section A.

This section of the *Teacher Beliefs Inventory* collected data on characteristics of teachers (Table 3.1), characteristics of teaching assignments, the level of ability to use and the level of need for technology, the quality of teacher preparation and attitudes toward inclusion were collected.

Characteristics of Teachers

Examples of the items found in this section (see Table 3.1) are: race, gender, years of teaching experience, licensure (general education or special education), scores on Praxis tests (Praxis I, Praxis II Content, Praxis II PLT, and Praxis III) and the categories and levels of measurement.

Variable	Categories	Level of Measurement
Gender	Male Female	Nominal
Race	African American/Black American Indian or Alaskan Asian or Pacific Islander Caucasian/White Hispanic Prefer not to respond	Nominal
Praxis II (Content)	Yes No	Nominal
Praxis II (PLT)	Yes No	Nominal
Praxis III	Yes No	Nominal
Licensure	General Education Special Education	Nominal
Years of Teaching Experience	Number of years	Ratio
Highest Degree Completed	Doctorate Masters Bachelors	Ordinal
Teacher Understanding of NIMAS	No, Somewhat, Yes	Nominal
Teacher Understanding of NIMAC	No, Somewhat, Yes	Nominal

Table 3.1 Characteristics of Teachers: Predictor Variables

Technology: Level of Ability to Use and Need for Technology

These items concerned the teachers perceived level of ability to use and their need for 15 different technologies. Teachers were asked to identify their level of ability to use and their level of need for the 15 different technologies as measured by the teachers' responses on a 4-point Likert-type summative rating scale.

*Technology: Level of Ability to U*se. For example, *"Identify your level of ability to use text to speech word processors,*" as measured by the teachers' responses on a 4-point Likert-type summative rating scale when 1 = None, 2 = Novice, 3 = Advanced, and 4 = Expert.

Technology: Level of Need for Technology. For example, *"Identify your level of need for ebooks,"* as measured by the teachers' responses on a 4-point Likert-type summative rating scale when 1 = Do not need, 2 = Rarely need, 3 = Frequently need, and 4 = Critically need.

Attitudes Toward Inclusion

These four items measured the teachers' attitudes toward the inclusion of students with disabilities in the general education classroom. An example of the items found in this instrument: *"Students with disabilities learn more in a special education classroom with a special education teacher than they can learn in the regular education classroom."* as measured by the teachers' responses on a 6-point Likert-type, summative rating scale from 1 = Strongly disagree to 6 = Strongly agree.

Quality of Teacher Preparation Program

These seven items measured teachers' perceptions about the quality of their teacher preparation programs. An example of the items found in this instrument: *"My teacher preparation program prepared me to teach students with disabilities in my classroom,"* as measured by the teachers' responses on a 6-point Likert-type summative rating scale from 1 = Strongly agree to 6 = Strongly disagree.

Characteristics of Teaching Assignment

Characteristics of the teaching assignment found in this section (Table 3.2) included: school location, number of students with disabilities, and those with Individualized Education Plans (IEPs) who are included in classroom instruction.

Variable	Categories	Level of Measurement
Location	Urban Suburban Rural	Nominal
Teaching Grade Level	P-3 4-6 7-8 9-12 P-12	Ordinal
Number of Students with Disabilities In the classroom for instruction	0- 100	Ratio
Number of Students with Disabilities Who have Individualized Education Plans (IEPs)	0-100	Ratio
Number of Students with IEPs Included in Classroom Instruction	0-100	Ratio

Table 3.2 Characteristics of Teaching Assignment: Predictor Variables

Specific Disabilities Included in Classroom Instruction

Fourteen specific disabilities as defined by the Ohio Department of Education were included in this section. For example: *"Students with the following disabilities are included in your classroom for instruction."* as measured by the teachers' responses on a 4-point Likert-type summative rating scale when 1 = Not applicable, 2 = Rarely, 3 = Occasionally, and 4 = Frequently.

Section B

Teachers' Sense of Inclusion Efficacy

The scale assessing *Teachers' Sense of Inclusion Efficacy*, the criterion variable, was developed by the researcher based on an adaptation of the short version (12 item) *Teachers' Sense of Efficacy Scale* (Tschannen-Moran & Woolfolk Hoy, 2001) measured by responses on a 9-point Likert-type, summative rating scale from 1 = Nothing to 9 = A great deal. The TSES supports the three-factor model for teacher efficacy that measures the constructs of student engagement, classroom management and instructional strategies. This instrument has been adapted to measure the same constructs of student engagement, classroom management and instructional strategies to teach students *with disabilities* with the addition of five items to measure the perceived ability to use technology (accessible, assistive, and universally designed) to teach *every* student. An example of the changes made to the original 12 items from the TSES: "How much you can do to help your students *with disabilities* to value learning?" An example of the five items added to the original TSES to measure the teachers' sense of efficacy for integrating assistive and accessible technology to teach students with disabilities: *"How well can you motivate students with disabilities who require assistive technologies in your classroom?"*

Section C

Collective Inclusion Efficacy

Collective inclusion efficacy, a predictor variable, was developed by the researcher based on an adapted version of the short version (12 item) of the Collective Efficacy scale (Goddard, 2002) measured by responses on a 6-point Likert-type summative rating scale from 1 = Strongly disagree to 6 = Strongly agree. Collective efficacy supports a two-factor model for collective efficacy that measures the constructs of group competence (GC+), group competence (GC-), task analysis (TA+), and task analysis (TA-). This instrument has been adapted to measure the same constructs of group competence and task analysis for inclusion of students with disabilities in the general education classrooms for instruction with the addition of five items to measure the construct of technology (accessible, assistive, and universally designed) to teach every student. An example of the changes made to the original 12 items from the Collective Efficacy scale, *"Teachers in this school are able to get through to the most difficult students with disabilities."* The new scale also included efficacy for integration of technology with school and teacher support and competence for the task of inclusion. An example of these items, *"Teachers here have the computers, software, training, and support needed to use technology to teach students with disabilities."*

Section D

Teachers' Sense of Efficacy

Teachers' Sense of Efficacy Scale (TSES) (Tschannen-Moran & Woolfolk Hoy, 2001) was used to measure the predictor variable Teachers' Sense of Efficacy. The 12 items were measured by responses on a 9-point Likert-type, summative rating scale from 1 = Nothing to 9 = A great deal.. This predictor variable was investigated to determine whether teachers had a different efficacy when teaching students with and without disabilities. An example of the items found in this instrument, *"How much can you use a variety of assessment strategies?"*

Institutional Review Board

Application for Exempt Research

The researcher applied to the Institutional Review Board (IRB) for exempt research on March 3, 2006 and received approval on March 8, 2006. A copy of the approval of the application for exempt research is provided in Appendix A. The application included the pilot project and the research study. Communications, protocol for the online invitations, email and print reminders, follow-up interviews, and the Teacher Beliefs Inventory are provided in Appendix C.

Second Application for Exempt Research

The researcher reapplied to the Institutional Review Board (IRB) for exempt research on June 1, 2006 and received approval on June 2, 2006. This application included a resubmission of the entire research study along with the addition of a follow-up survey of non-respondents to determine their reasons for not responding to the invitation to participate in the original survey. A copy of the approval for the exempt research for this study is provided in Appendix B. Communications and the follow-up online and print survey are provided in Appendix C.

Panel, Field and Pilot Test

Population and Sampling

Review by panel of experts

The Teacher Beliefs Inventory was submitted to a panel of two experts with experience integrating technology and teaching students with disabilities, at-risk learners, and English as a second language (ESL). The survey instrument was made available online at Websurveyor.com for their review.

The Teachers' Sense of Efficacy (TSES) and Collective Efficacy Scales are well established and highly respected instruments. These two instruments were adapted to measure the teachers' efficacy to teach students with disabilities and five additional questions were developed to measure the construct of technology for students with disabilities. The panelists were asked to review the entire instrument with concern for the content of technology and disabilities. The expert opinion was needed to determine content validity, “refers to the representativeness of the items on the instrument as they relate to the entire domain or universe of content being measured” (Miller, 2004, p. 19), for the domains of inclusion and the integration of technology to teach every student.

The experts did not make any recommendations for additional content and indicated that the constructs of attitudes toward the integration of technology and the inclusion of students with disabilities were adequately covered.

Field test for suitability and usability.

The questionnaire was available online and with the option for a paper and pencil version to a convenience sample of two teachers in the Midwest. These individuals were asked to look at the face validity of the measure and to assess the strengths and weaknesses of the online questionnaire. Formatting and structural changes (e.g. the removal of the university logo image on every page of the instrument eliminated the need for respondents to click on a button to accept the HTML image on each page). The field test improved the suitability of the instrument and was invaluable in the elimination and resolution of the technology issues for conducting the survey online.

Pilot Test

A pilot test was conducted online with the option for a paper and pencil version of the instrument. Twenty teachers were randomly sampled from a final frame of 61 teachers at a high income, low poverty middle school in the Midwest. The sample included teachers teaching in the following position codes provided by the ODE for the study's sample: 205 (Regular Teaching Assignment), 206 (Special Education/Learning Center Teaching Assignment), 207 (Vocational Education Teaching Assignment), 208 (Tutor/Small Group Instructor Assignment), 211 (Education Services Teacher) and 212 (Supplemental Services Teacher Assignment).

The first email campaign invited the subjects of the study to participate and provided them with the link to the secure site with unique passwords to access the survey instrument, ensuring confidentiality. The password allowed a one-time survey submission by the user. Then two additional email reminders were sent to the non-respondents, which resulted in 12 online submissions of the completed instrument. Print copies of the survey instrument were sent to the remaining teachers along with envelopes and separate post cards. Four teachers completed and mailed the print copies of the *Teacher Beliefs Inventory*. Sixteen of the twenty teachers responded. No respondents volunteered to participate in the follow-up interviews.

Timing of the Pilot Test.

The pilot test was conducted March 9, 2006 through March 16, 2006. The time was extended to March 20, 2006 for those completing the print version of the instrument.

Reliability

The purpose of the pilot study was to refine the survey instrument under development and to determine the reliability of the instrument. Cronbach's Alpha was used to assess the reliability or the internal consistency of the instrument, using SPSS software. In Table 3.3, the reliability coefficients are provided for each of scales within the instrument. The reliabilities for the different scales exceed an alpha = .80, which indicates strong reliability for the Teacher Beliefs Inventory.

The pilot test identified three questions under attitudes that were removed to increase the reliability of alpha = .878. Suitability decisions resulted in changes in the responses on the inclusion of students with specific disabilities in classroom instruction. The responses were changed from percentages to words representing Likert-type scale ratings from 1 = Not applicable to 4 Frequently included.

Reliability for Scales Adapted from Established Instruments

The Teachers' Sense of Efficacy Scale, TSES had a high overall reliability for the total scale of alpha = .951. The reliability coefficients within each sub-scale were equally strong: TSES-SE Student Engagement with an alpha = .848, and TSES-CM Classroom Management with an alpha = .909 and TSES-IS Instructional Strategies with an alpha = .928.

The Teachers' Sense of Efficacy Scale was adapted to measure the criterion variable the Teachers' Sense of Inclusion Efficacy (I-TSES), which had an overall reliability for the total scale of alpha = .948. The researcher examined the sub-scales within the instrument based on the same three factors identified by Tschanne-Moran and Woolfolk Hoy (2001). The reliability coefficients within each sub-scale were somewhat lower. The I-TSES-SE Student Engagement with an alpha = .889, and I-TSES-CM Classroom Management with an alpha = .789 and I-TSES-IS Instructional Strategies with an alpha = .876, and the new construct technology (accessible, assistive, and universally designed) with an alpha = .957. The entire scale without the technology items had a lower overall alpha = .923. The I-TSES scale with technology questions has a slightly higher reliability with an alpha = .957.

The Collective Efficacy Scale (Goddard, 2002) was adapted to measure the predictor variable the Collective Inclusion Efficacy (I-Collective). The predictor variable without the technology for inclusion items had an overall reliability for the total scale of alpha = .780. The researcher examined the total scale with the technology items and the reliability coefficient was slightly higher with an alpha = .852 (Table 3.3).

SCALES	Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	Number of Items
TEACHER' SENSE OF EFFICACY (TSES) - Predictor Variable			
TSES-SE (Student Engagement)	0.848	0.855	4
TSES-CM (Classroom Management)	0.909	0.914	4
TSES-IS (Instructional Strategies)	0.928	0.934	4
TSES-TOTAL	0.951	0.955	12
TEACHERS' SENSE OF INCLUSION EFFICACY (I-TSES) - Criterion Variable			
I-TSES-SE (Student Engagement)	0.889	0.894	4
I-TSES-CM (Classroom Management)	0.789	0.773	4
I-TSES-IS (Instructional Strategies)	0.876	0.861	4
I-TSES-TECH (Technology for Inclusion)	0.957	0.957	5
I-TSES-SE-CM-IS (Total without Technology)	0.923	0.921	12
I-TSES-SE-CM-IS-TECH (Total with Technology)	0.948	0.948	17
COLLECTIVE INCLUSION EFFICACY (I-Collective) - Predictor Variable			
I-Collective (Total without Technology)	0.780	0.777	12
I-Collective (Total with Technology)	0.852	0.847	17

Table 3.3 Reliability Coefficients for the Criterion Variables and Predictor Variables in the Pilot Study. Scales used to measure efficacy were based on the TSES (Tshannen-Moran & Woolfolk & Hoy, 200) and Collective Efficacy Scale (Goddard, 2002).

Reliability for Non-Established Instruments and Scales

Attitudes toward inclusion were measured using interval data. The four items measured had a high overall reliability of alpha = .878. Originally, the reliability coefficient was much lower, but items were removed to increase the reliability. The Quality of Teachers Preparation was measured using interval data. The seven items had a high overall reliability of alpha = .921. The Teachers Perceived

Level of Ability to Use Technology was measured using interval data. The 15 items measuring TECH USE had a high overall reliability of alpha = .925. The Teachers Perceived Need for the Technology was also measured using interval data. The 15 items measuring TECH NEED had an overall reliability of alpha =.925.

Items	**Cronbach's Alpha**	**Cronbach's Alpha Based on Standardized Items**	**Number of Items**
Attitudes Toward Inclusion ATTITUDES	0.878	0.883	4
Quality of Teacher Preparation Programs Q-T-PREP	0.921	0.925	7
Level of Ability to Use Technology TECHUSE	0.925	0.924	15
Level of Need for Technology TECHNEED	0.946	0.950	15

Table 3.4 Reliability Coefficients for Predictor Variables in the Pilot Study Based on Interval Data

Suitability, reliability, and validity assessed during field and pilot tests resulted in formatting changes that improved the survey instrument. For example, the two questions on the National Instructional Materials Accessibility Standard (NIMAS) and the National Instructional Materials Access Center (NIMAC) were repositioned at the end of the instrument with the term, “somewhat,” added to clarify the responses.

Research Study

Population and Sampling

The Ohio Department of Education (ODE) provided an original frame of 21, 610 regular and special education teachers with three or fewer years of experience teaching. The teaching position codes defined by ODE were the following: 205 (Regular Teaching Assignment), 206 (Special Education, Learning Center Teaching Assignment), 207 (Vocational Education Teaching Assignment), 208 (Tutor/Small Group Instructor Assignment), 211 (Education Services Teacher) and 212 (Supplemental Services Teacher Assignment).

These position codes fully represent a sample of all teachers in Ohio. This researcher chose to survey all teachers [general education and special education] who teach students with and without disabilities in the schools. This required the position codes to determine that all teachers responsible for actual instruction (e.g. small group instructors, tutors) would be included in the target population.

Teachers' school addresses and contact information provided by the Ohio State Department of Education did not include email addresses. Email addresses were determined through school web sites or by telephone. The final target population (with duplicates purged) consisted of 19,013 teachers. A random sample of 1,540 subjects was selected from this population, using SPSS software. After teachers who were not teaching in Ohio were removed, the final accessible sample was 1,386. The researcher made every attempt to obtain feedback from the subjects in the accessible sample. The accepting sample was 227 (See Table 3.5).

Email Addresses

Email addresses were not provided by the ODE. The researcher found 1495 of the subjects' email addresses by telephone and online searches. The websurveyor.com was the online provider chosen for the study because it met the standards for web accessibility and it was 508 compliant. The

1495 email addresses were uploaded to the Websurveyor.com site at the beginning of the study. Forty-five subjects' emails addresses were unavailable at the beginning of the online survey, but within a week an additional 34 were found and added. Print invitations and surveys were mailed to the subjects' without email addresses and to those who requested them.

Bounced Emails

Bounced emails and undelivered invitations were investigated to: (1) confirm whether the teachers were teaching in Ohio schools, (2) address technical problems with emails, and (3) obtain and correct email addresses. For bounced and undelivered emails, schools often refused to verify the email addresses due to privacy issues. A few teachers had to be contacted by email through their school principal before an email address could be obtained. Teachers with "bounced" emails remained part of the accessible sample unless information was obtained to indicate that they were no longer teaching in Ohio.

Data Collection Concerns

The researcher's concerns included the limitations caused by possible errors in measurement: (1) sampling, (2) frame, (3) selection, (4) measurement, and (5) non-response errors.

Sampling.

A simple random sample of Ohio teachers with three or fewer years of teaching experience was drawn from the target population of 19,013 provided by the Ohio Department of Education using the teaching position codes that fully represent all teachers in Ohio who teach students with and without disabilities.

The survey instrument was administered online at *Websurveyor, com*. during the month of April and extended throughout the entire month of May 2006. The final accepting sample was 227. This sample included subjects with more than 3 years of teaching experience. See Table 3.5 and 3.6 for a clarification of the final data sample and accepting sample used in the data analysis.

Population/Sample	Origin	Total Number
Three or fewer years of teaching experience	Database Provide by Ohio Department of Education Position Codes: 205, 206, 207, 208, 211, 212	21, 610
Target Population	Duplications of Names Removed	19, 013
Original Random Sample	Random sample of 19, 013 target population	1, 540
Accessible Sample	Removal of Teachers No Longer Teaching in Ohio	1,386
Accepting Sample	Online or Print Submissions of survey	227

Table 3.5 Target Population, Accessible Sample and Accepting Sample in Research Study

Selection.

Selection was not a problem because all duplicates were removed from the database of 21, 610. The final target sample was reduced to 19,013 subjects with three or fewer years of teaching experience.

Frame

During analysis of the data, it was found that the accepting sample included teachers with more than three years of teaching experience. There was no way of knowing how many of the target population or the accessible sample included teachers with more than three years of teaching experience. The frame error resulted in the addition of a new variable, teaching experience, to determine the effect of years of experience on the data collected. This variable was also included in the multiple regression analysis.

The distinction among the different samples can be found in Table 3.6. The accessible sample was 1386 with an accepting sample of 227 subjects who responded to the survey. The final data sample was 108 subjects who had three or fewer years of teaching experience. The remaining 119 subjects, from the accepting sample of 227 subjects who responded to the survey, had more than three years of teaching experience. This sample of experienced teachers was called the comparison sample. The accepting sample of 227 compared to the data sample of 108 teachers and the comparison sample of 119 teachers provided rich contextual and situational data for the study.

Sample	**Origin**	**Total Number**
Accessible Sample	After Removal of Teachers No Longer Teaching in Ohio	1,386
Accepting Sample	Online (225) and (2)Print Submissions of survey	227
Data Sample*	Teachers three or fewer years of teaching experience	108
Comparison Sample	Teachers with more than three years of teaching experience	119

**After Data Collection and After Accounting for Frame Error*

Table: 3.6 Accepting Sample, Data Sample, and Comparison Sample After Accounting for Frame Error in Research Study

Comparison of Samples to Target Population

The Ohio Department of Education provided additional data to be used for comparison purposes to deal with the frame error in the original database (A. Skaggs, personal communication, June 15, 2006). The data provided included the target population of Ohio teachers in the same teaching position codes. These position codes included: 205 (Regular Teaching Assignment), 206 (Special Education/Learning Center Teaching Assignment), 207 (Vocational Education Teaching Assignment), 208 (Tutor/Small Group Instructor Assignment), 211 (Education Services Teacher) and 212 (Supplemental Services Teacher Assignment).

In Table 3.7 the demographic data available from ODE are provided. The ODE data, that included all teachers, were compared to the following three samples. The three samples in the study included: (1) the accepting sample 227, included all teachers, (2) the data sample 108 included teachers with three or fewer years of teaching experience; and (3) the comparison sample 119 included teachers with more than three yeas of teaching experience. The comparisons allowed the researcher to determine whether the accepting sample of respondents was substantially different than the original population of teachers in Ohio teaching in these same teaching positions.

Comparisons with four variables: Race, gender, education, location

The data shown in Table 3.7 represent valid percentages for the different variables. Variables have different total numbers of responses.

Gender. The accepting sample with 25.1 percent males and 74.0 percent females resembled the Ohio target population with 26.2 percent males and 73.8 percent females. The data sample more closely resembled the target population with 26.4 percent males and 73.6 percent females. The comparison sample was slightly higher with 24.6 percent males and 75.4 percent females.

Race. The target population (ODE) had 98.4 percent Caucasians compared to 93.0 percent for the accepting sample, 94.4 percent for the data sample, and 91.2 percent for the comparison sample. All three samples had a higher percentage of all the other races when compared to the target population. The target population had low percentages for populations other than Caucasian. The data sample more closely resembled the target population due to their low percentages of races other than Caucasian. The accepting sample had slightly higher percentages of races other than Caucasian who responded to the survey compared to the ODE database.

*Education (Degrees).*The comparison that was slightly different from the population was the level of education. The difference in college degrees earned by teachers showed a higher percentage of ODE teachers having Masters degrees with 53.6 percent. The comparison sample closely resembled the target population with 44.0 percent Bachelors degrees. However, the data sample of teachers with three or fewer years of teaching experience had a higher 74.1 percent of Bachelors degrees. As a result of the large percentage of subjects with Bachelors degrees found in the data sample, the total accepting sample had a high 60.2 percent of Bachelors degrees when compared to the population 46.0 percent. The population had 53.6 percent Masters degrees and 0.3 percent with Doctorates. All three samples subjects with Masters degrees ranged from 25.0 percent to 53.7 percent and all three samples had 0.0 percent of the subjects with Doctorates.

Location. Based on the data provided by ODE, only 3.12 percent of the school districts in the state are urban, while 67.8 percent were rural school districts throughout the state, and 29.6 percent of all school districts are suburban. The comparison of the three samples to the school districts was not similar. The respondents identified their school location as urban, suburban or rural and this information, percentages of respondents teaching in urban, suburban, and rural school districts, the data are provided for descriptive purposes. The data obtained in the study on location cannot be compared directly with ODE location data, because ODE data represent the percent of all school districts in the three locations not the percent of teachers in the state teaching in these locations. All three research samples had higher percentages of urban, lower percentages of rural and higher percentages of respondents teaching in suburban school districts.

Summary

The comparison of all three samples with the population provided by ODE indicated similarity among the predictor variables gender and race and less similarity among the predictor variables of education and location.

To measure the effects of the frame error, the researcher accounted for the frame error caused by the number of years of experience by creating the variable, teaching experience (years), and dummy coding it for inclusion in the multiple regression analysis.

VARIABLE	Ohio Department of Education (ODE) All Years n = 128,353		Accepting Sample All Years n = 227		Data Sample < = 3 Years n = 108		Comparison Sample > 3 Years n = 119	
	n	Percent	n	Percent	n	Percent	n	Percent
Gender								
Male	33,633.5	26.2	57	25.1	28	26.4	29	24.6
Female	94,719.7	73.8	168	74.0	78	73.6	89	75.4
Race								
AfricanAmerican/Black	687.6	.5	7	3.1	1	0.9	6	5.4
Alaskan/Amer. Indian	68.7	.0	1	0.4	1	0.9	0	0.0
Asian/Pacific Islander	406.9	.0	1	0.4	1	0.9	0	0.0
Caucasian	120,267.4	98.4	211	93.0	102	94.4	108	01.2
Hispanic	738.6	0.6	3	1.3	1	0.9	2	1.8
Education (degrees)								
Bachelors	57,673.5	46.0	133	60.2	80	74.1	52	44.0
Masters	67,071.2	53.6	88	38.8	27	25.0	61	51.7
Doctorate	424.3	.3	0	0.0	0	0.0	0	0.0
Location								
Urban	16.0	3.1	53	23.7	20	18.5	33	28.7
Rural	344.0	67.8	59	26.3	31	26.7	27	23.5
Suburban	152.0	29.6	112	50.0	57	52.8	55	47.8

3.7 Comparison of Valid Percentages between Ohio Department of Education (ODE) and the Research Study Samples (Accepting, Data, and Comparison) on Demographic Data
ODE data based on the same position codes as provided in the original ODE sample (A.Skaggs, personal communication, June 15, 2006) *Location based on the percentages of total school districts throughout the state.

Measurement Error.

Measurement error was not considered a problem because established instruments were based on and adapted for use in this study: Teachers' Sense of Efficacy Scale (TSES), Teachers' Sense of Inclusion Efficacy (I-TSES), and Collective Inclusion Efficacy (I-Collective). Measures of validity and reliability were calculated for each of these scales and adapted scales in the study to measure the internal consistency of the measures. The data for this research study are found in Chapter Four.

Response rate

The response rate for submission of the online *Teacher Beliefs Inventory* was 16.3 percent, which is below the expected rate of return 32.52 percent (Hamilton, 2005). Bounced emails were included in the accessible sample unless it was determined that the subject was no longer teaching in Ohio. The bounced emails indicate that some emails were unable to deliver because of problems with school Internet security safeguards, and an inability to obtain exact email addresses for every teacher.

The websurveyor.com actually records the number of subjects who clicked on the link was 475 from the 1386 accessible sample.. Examining the number of subjects who actually opened their emails, clicked on the link to the survey, and submitted the survey, the response rate was significantly higher than the 16.3 percent. Of the 475 subjects who clicked on the site, 227 completed and submitted the Teacher Beliefs Inventory, which indicates a 48.0 percent return of subjects who actually clicked on the link. Inasmuch as the frame provided by ODE included teachers with the full range of experience, the subjects who were not *millennials* may have been the ones that did not respond, but there was no way of knowing. This study intended to survey *millennials* considered technology users and technology literate.

Survey of Non-Respondents on Reasons for Not Responding

The researcher handled the low response rate by surveying a simple random sample of 100 of the non-respondents selected from the 1159 non-responders using SPSS. These 100 non-respondents were surveyed using a print format through the mail. They were asked for reasons why they had not responded to the online survey invitation and reminders.

The remaining 1059 non-responders (minus the random sample of 100 non-responders) were also surveyed [online]. Most schools had only a week or two left before the start of summer vacation. The results of the two are compared in an attempt to shed light on the reasons for the low response rate.

Survey of Random Sample of Non-Respondents Receiving the Print Format

The researcher used SPSS software to select a simple random sample of 100 from the 1159 non-respondents. The 100 non-respondent subjects were sent cover letters along with stamped, pre-addressed post cards on Saturday, June 3, 2006, requesting their participation in the follow-up survey. These subjects were offered an incentive to participate with the chance to win $50 in a drawing. The purpose of the short survey was to determine the reasons why teachers did not respond to the Teacher Beliefs Inventory.

The survey instrument requested reasons why the subjects had not responded to the original online survey invitation. The 12 percent of the accessible sample of 100 non-respondents, who received the invitations in print format, participated and returned the postcards (Table 3.8). Seventy-five percent of these non-respondents identified being "too busy" as their reason for not completing the inventory online with 17 percent choosing "not comfortable using technology" and eight percent "being suspicious of the online survey."

Possible Responses	**Number of Responses** N	**Percentage of Total Response** Percent
Suspicious of online survey	1	8.0
I am too busy to fill out surveys	9	75.0
I did not like the topic of the survey	0	.0
I am not comfortable using technology	2	17.0
Other	0	.0
Total*	12	100.0

Table 3.8 Print Survey of Random Sample of 100 Non-Respondents for Reasons for Non-Response *The total represents the 12 respondents to the survey.

Survey of Online Non-Respondents

The researcher also surveyed the remaining 1059 non-responders online. These teachers were asked to answer the same questions and were offered the same level of confidentiality and the same incentive for participation. The online sample [with the 100 removed] received email invitations on Monday, June 5, 2006, to participate. They were asked to reply via email. Sixty-seven (67) teachers replied to the online invitation to participate. Table 3.9 identifies the percentage of the sample, receiving online email invitations, who participated. The subjects provided their reasons for not responding to the Teacher Beliefs Inventory. Sixty-seven (67) or 6.3 percent of the accessible sample of 1059 non-respondents participated.

Possible Responses	**Number of Responses** N	**Percentage Total Responses** Percent
Suspicious of online survey	10	14.8
I am too busy to fill out surveys	40	60.0
I did not like the topic of the survey	0	0.0
I am not comfortable using technology	2	3.0
Other (comments)	15	22.2
Technical difficulty (1)		
On sick leave (1)		
I do not use technology [teaching](3)		
Do not like surveys (3)		
Did not apply to me (4)		
Did not know how to answer (1)		
Did not like getting emails (1)		
Do not like to take long surveys (1)		
Total*	67	100.0

Table 3.9 Online Survey of 1059 Non-respondents for Reasons for Non-Response
*Total represents the 67 respondents to the survey.

Analysis of the Survey of Non-Respondents

The results of these two surveys of the non-respondents in the study revealed that 75 percent of subjects responding to the print survey and approximately 60 percent of the subjects responding to the online survey do not have time to respond to surveys. The data also indicated that 14.8 percent of teachers responding to the online format were suspicious of online surveys compared to 8 percent of the teachers responding to the print format. Just 3 percent of subjects responding to the online survey indicated that they were not comfortable using technology compared to 17 percent of the subjects responding to the print format survey.

One might have expected that the length of the survey instrument could have been a problem and a reason for non-response. However, only one teacher or 1.4 percent of the accepting sample of the 67 online non-respondents indicated that length was a reason for not responding.

The expectation was that more teachers would have been suspicious of online surveys because of the scams and viruses that present a constant threat to online Internet users. Of those surveyed online, 14.8 percent responded that they were suspicious of online surveys while only 8 percent of the random survey using print format were suspicious of online surveys.

Overall, the non-respondents were too busy to complete the online Teacher Beliefs Inventory. Despite the low response rate for this study, the online format of delivery was deemed to be best suited for survey research in the 21st century. The reasons found for recommending online surveys: 1) accessibility for the full spectrum of respondents (508 compliant); (2) digital record that reduces researcher error; (3) credibility of data collection (each submission is electronically date stamped along with separate IPO (web address) for each submission; and (4) confidentiality.

Follow-up Interview for Non-Respondent Survey

Thank you emails were sent to the subjects who completed and submitted the online survey. The respondents were asked to voluntarily participate in a follow-up interview online using instant messenger, email or telephone. Three subjects emailed the researcher to volunteer for the interviews. The volunteers wanted to know the questions before talking or going online. The interview questions or prompts (protocol) were emailed to the three teachers. Different online meetings were scheduled and then cancelled because of the subjects' busy lives. Only one teacher sent an email with her written answers to the questions.

Approximate Timetable for the Study

The study was conducted from April 6, 2006 through June 30, 2006 with an online application as the primary mode of communication, and the option for a paper and pencil version. Incentives were offered online. Table 3.10 provides the timetable for the research study.

Contact	Date
Online searches and telephone calls to obtain teachers' email addresses	March 27 - April 7, 2006
Email invitations Sent	April 6 - April 7, 2006
Print Packets sent to teachers without emails	April 7-8 2006
Telephone calls to find 45 unknown emails and bounced emails	May 7-10, 2006
1st email reminder sent	April 13, 2006
2nd email reminder sent	April 19, 2006
Print reminder to teachers without email	April 20, 2006
3rd email reminder sent	April 27, 2006
Print post card reminder sent to non-respondents sent (with an error in link to the survey)	May 4, 2006
4th email (correction of post card error)sent	May 15, 2006
Survey of non-respondent print format sent (random sample of 100 non-respondents)	June 3, 2006
Survey of non-respondents online sent for non-response	June 4-5, 2006
Thank you email to inventory respondents sent	June 14, 2006

Table 3.10 Timetable for the Study

Data analysis

The study was conducted during late spring 2006. The analyses were performed using SPSS. *Descriptive Quantitative Statistics: Frequency Distributions, Means, Standard Deviations, Correlation Matrices, Principal Component Analyses, One-Sample T Test, and Multiple Regression Analysses.*

Frequency distributions were created for appropriate predictor variables to provide a visual representation of the data and profile of the participating sample of respondents. Means and standard deviations were determined for appropriate data. Descriptive statistical techniques were used to describe the factors being studied and the Pearson product moment correlation was used to determine relationships between predictor variables and the criterion variable. It described the magnitude and the direction of the relationship. A correlation matrix was used to determine those predictor variables that correlate with the criterion variable.

Bartz (1999) (as cited in Gliem, 2004) provided the convention (adjectives) for describing the magnitude of the relationships among the predictor variables and the criterion variable in Table 3.11.

Value of r	**Adjective**
.80 or higher	Very High
.60 to .80	Strong
.40 to .60	Moderate
.20 to .40	Low
.20 or lower	Very Low

Table 3.11 Bartz (1999) Conventions (adjectives) for Describing Magnitude of Relationship

Multiple regression analysis, a form of general linear modeling, was used to examine the relationships among the predictor variables and the criterion variable, Teachers’ Sense of Inclusion Efficacy. The analysis examined the relationships among the predictor variables, Teachers’ Sense of Efficacy, Collective Inclusion Efficacy, Attitudes, Technology Use and Need, Quality of Teacher Preparation Programs, Characteristics of Teachers, and Characteristics of Teaching Assignment, with the criterion variable, *Teachers' Sense of Inclusion Efficacy*.

CHAPTER IV

ANALYSIS OF DATA

This chapter provides the analysis of the data collected for the research study in the spring 2006. This survey research, conducted for descriptive and exploratory purposes, attempted to answer the research questions concerning relationship among several predictor variables and Teachers' Sense of Inclusion Efficacy. The online survey instrument collected data to measure the teachers' perceived levels of inclusion efficacy, teacher efficacy, collective inclusion efficacy, attitudes toward inclusion, ability to use technology, need for technology, and the quality of teacher preparation programs, along with other variables identified as teacher or teaching assignment characteristics. A random sample of 1540 teachers, teaching regular education and special education students in Ohio schools, surveyed online resulted in a final accepting sample of 227 respondents. In Chapter III, the researcher compared the accepting sample (227) to all Ohio teachers, teaching in the same positions codes, with the new data provided by the Ohio Department of Education (ODE). The data indicated that the two samples were similar.

The data provided and analyzed in this chapter used frequencies, percentages, means, standard deviations, correlation coefficients, reliabilities, principal component analyses, and multiple regression analyses. The response rate of 16.3 percent for the online survey resulted in the researcher using *descriptive quantitative statistics* to characterize the sample of 227 teachers instead of *inferential statistics* to generalize to the population, because the researcher could not be confident the 227 respondents were representative of the population. However, the information and effect sizes gleaned from this study provide direction, support for new scales that measure personal and collective efficacy for inclusion, and implications for future research.

The analysis included the relationships among the predictor variables and the criterion variable and the interrelationships of predictor variables to answer the research questions. The scale assessing the criterion variable, *Teachers Sense of Inclusion Efficacy,* was adapted from the 12-item Teachers' Sense of Efficacy Scale (Tschannen-Moran & Woolfolk Hoy, 2001) and the scale assessing the predictor variable, *Collective Inclusion Efficacy*, was adapted from the 12-item Collective Efficacy Scale (Goddard, 2002).

This chapter provides the data in two sections. In the first section, the samples are identified using descriptive quantitative statistics to provide context and to situate these teachers in their classrooms in Ohio schools, using data obtained on teacher and teaching assignment characteristics. In section two, data were analyzed using descriptive quantitative statistics to answer the research questions using principal component analyses, reliabilities, frequencies, means, percentages, multiple regression analyses and a one-sample t test.

Contextual and Situational Descriptions

Sample

A random sample of 1540 teachers obtained using a frame of 19,013 Ohio teachers, resulted in an accessible sample of 1359 teachers who were actually teaching in Ohio. The online survey, conducted in April and May 2006, resulted in an accepting sample of 227 teachers. Only 475 out of 1540 teachers clicked on the survey link and 227 of these teachers completed and submitted the *Teacher Beliefs Inventory* online. In order to explore reasons for this low response rate, the researcher conducted a mail/print survey of a random sample of 100 non-respondents with the remaining non-respondents surveyed online. The analysis revealed that the majority of non-respondents, who participated, expressed “no time” in their busy lives to complete the survey online. A small percentage expressed suspicion of online surveys and being uncomfortable using technology. Exponential growth of online fraud and identity theft has caused many Americans to become increasingly skeptical of online surveys. The frame might also explain the low response rate inasmuch as 52.5% of those surveyed were not the technologically literate *millennials* that the researcher expected to find in the subjects.

Frame error (years of teaching experience) provided by the Ohio Department of Education resulted in a data sample of only 108 teachers with three or fewer years of teaching experience and the remaining 119 teachers in the accepting sample with more than three years of teaching experience. The Ohio Department of Education (ODE) provided additional data to describe the entire population of teachers in Ohio in the same teaching position codes. It was determined that the accepting sample of 227 teachers were similar to the entire population of teachers in Ohio teaching in the same position codes.

All three samples described in the first section of this chapter provided context and situated the entire sample of teachers. The entire sample, referred to as the *accepting sample* (227), includes all teachers; the second sample, the *data sample* referred to the 108 teachers with three or fewer years of teaching experience, and the third sample, the *comparison sample* referred to the 119 teachers with more than three years of teaching experience.

In the second section of this chapter, the entire accepting (227) sample was analyzed to answer the research questions because the researcher created a new variable, *Teaching Experience*. The new predictor variable was included in the multiple regression analysis to determine the saliency of the difference in teaching experience.

Teacher Characteristics

The teacher characteristics of gender, race, education, years of teaching experience, and Praxis exams were analyzed to determine the relationship with the criterion variable, *Teachers' Sense of Inclusion Efficacy*.   In this first section, the descriptive information looks at all three samples (accepting sample, 227, data sample, 108, and the comparison sample 119) to provide a clearer context for the teachers in the study. A reference to the Ohio Department of Education (ODE) target population compared to the accepting sample (227) (see Tables 4.1 and 4.3) is at the end of each discussion because only the accepting sample was used in the analyses in section two.

Year of Experience

An accepting sample of 227 teachers responded to the survey. The data sample, the 108 teachers with three or fewer years of teaching experience, represented 47.5 percent of the respondents. The remaining respondents in the comparison sample, the 119 teachers with more than 3 years of teaching experience, represented 52.5 percent of all respondents.

Ohio Department of Education (ODE) comparison did not have information on the percentages by years of experience (see Table 4.1).

Gender

The gender of the respondents was 74.7 percent female and 25.3 percent male for the accepting sample. There was a slight difference in the data sample with 73.6 percent female and 26.4 percent male. The experienced teachers in the comparison sample had 75.4 percent female and 24.6 percent male.

The accepting sample (227) had approximately the same percentages by gender as those found in the target population of Ohio teachers (ODE) in the same teaching position codes (see Table 4.1).

Race

The researcher found that the accepting sample had a lower percentage of African Americans/Black respondents with 3.1 percent compared to the more experienced teachers in the comparison sample with 5.1 percent. The data sample of teachers with three or fewer years of experience represented only .9 percent African American/Black respondents.

In the accepting sample of 227, the data revealed .4 percent Alaskan/American Indian, .4 percent Asian/Pacific Islander, and 1.3 percent Hispanic. Hispanics represented the second largest minority group with 1.3 percent in the accepting sample, .9 percent in the data sample, and 1.7 percent in the comparison sample Caucasians represented 93 percent in the accepting sample, 94.4 percent in the data sample and 91.5 percent in the comparison sample compared to the ODE sample of 93.9 percent.

The accepting sample (227) had a slightly higher percentage of races other than Caucasian compared to those found in the target population of Ohio teachers (ODE) in the same teaching position codes (see Table 4.1).

Licensure: Regular (General) Education or Special Education

The percentage of teachers licensed in regular (general) education was 81.9 percent in the accepting sample compared to 85 percent in the data sample and 78.8 percent in the comparison sample. Teachers licensed in special education included 18.1 percent of the accepting sample, 15 percent of the data sample and 21.2 percent of experienced teachers.

ODE information on licensure) was unavailable.

Licensure in Present Teaching Position

The accepting sample had 89.4 percent with their licensure in their present teaching positions. The data sample of teachers with three or fewer years of experience was 85.2 percent, with 94.0 percent found in the sample of teachers with more than three years of teaching experience. More experienced teachers had the licensure required for their present teaching positions.

ODE information on licensure in present teaching positions was unavailable.

Education

The accepting sample (227) had 60.2 percent with Bachelors degrees and 38.8% with Masters degrees. Seventy-one percent of less experienced teachers (data sample) had earned their bachelor’s degree, and only 25 percent had earned a masters degree. Of the more experienced teachers, 44.1 percent had earned Bachelors degrees and 51.7 percent had earned Masters degrees.

Compared to the ODE target population, the accepting sample had fewer Masters degrees.

Praxis Assessments

The data indicate that 89.0 percent of the accepting sample (227) had passed the Praxis II (content) exam. Ninety-three percent of the data sample of teachers and only 84.8 percent of more experienced teachers in the comparison sample had passed the Praxis II (content).

The percentage of teachers in the accepting sample (227) who had passed the Praxis II (content) in their present teaching positions was slightly lower with only 87.3 percent. The teachers with three or fewer years of teaching experience had 92.1 percent, only a decrease of 1.1 percent, while experienced teachers had 82.4 percent or a decrease of 2.4 per cent.

The teachers passed Praxis II PLT in lower percentages. The accepting sample had 62.1 percent passing this exam, with 23.8 percent of the teachers failed to answer the question. The experienced teachers had 72.6 percent passing with 28.8 percent not responding. The less experienced teachers (data sample) had the highest percentage with 89.8 percent passing and only 18.5 percent not responding to the question.

Large numbers of teachers also failed to respond to the questions regarding Praxis III. The accepting sample had 69.54 percent passing Praxis III with 23.8 percent failing to respond to the question. The experienced teachers had 63.8 percent passing Praxis III with 32.2 percent failing to respond to the question. The less inexperienced teachers (data sample) had 74.2 percent passing Praxis III, and only 13.9 percent failed to respond to the question.

ODE information on Praxis Assessments was unavailable.

Items on the *Teacher Beliefs Inventory* related to Praxis were included because the expectation was that the teachers with three or fewer years of teaching experience would have been required to take each of these assessments. Teachers with more experience had a higher percent of failure to respond to the Praxis items, perhaps because the Praxis II exams were not required when many of the experienced teachers entered the profession and the Praxis III assessment was not required when most of the experienced teachers entered the profession.

NIMAS and NIMAC

New legislative mandates under the Individuals with Disabilities Improvement Act (IDEA) 2004 have established the National Instructional Materials Accessibility Standard (NIMAS) and endorsed and funded the National Instructional Materials Access Center (NIMAC). The law established the development of the new standard (NIMAS) to provide instructional, curriculum materials, and content in accessible, universally designed formats for students with disabilities.

Teachers who are aware of legislation that affects their teaching and their students learning would have some understanding of the terminology. The inclusion of students with disabilities in the regular (general) education classrooms has been part of the impetus for the changes in the law. Recent graduates should have answered yes on these questions because of their recent learning at the college or university and/or their computer literacy. New teachers did not have greater understanding of the meaning of NIMAS or NIMAC (see Table 4.1) compared with experienced teachers.

VARIABLE	Ohio Department of Education (ODE) All Years n = 128,353		Accepting Sample All Years n = 227		Data Sample < = 3 Years n = 108		Comparison Sample > 3 Years n = 119	
	n	Percent	n	Percent	n	Percent	n	Percent
Teaching Experience								
Years	128,353.0	100.0	227	100.0	108	47.5	119	52.5
Gender								
Male	33,633.5	26.2	57	25.1	28	26.4	29	24.6
Female	94,719.7	73.8	168	74.0	78	73.6	89	75.4
Race								
AfricanAmerican/Black	687.6	.5	7	3.1	1	0.9	6	5.4
Alaskan/Amer. Indian	68.7	.0	1	0.4	1	0.9	0	0.0
Asian/Pacific Islander	406.9	.0	1	0.4	1	0.9	0	0.0
Caucasian	120,267.4	98.4	211	93.0	102	94.4	108	91.2
Hispanic	738.6	0.6	3	1.3	1	0.9	2	1.8
Education (degrees)								
Bachelors	57,673.5	46.0	133	60.2	80	74.1	52	44.0
Masters	67,071.2	53.6	88	38.8	27	25.0	61	51.7
Doctorate	424.3	.3	0	0.0	0	0.0	0	0.0
Licensure								
Regular Education	n/a	n/a	185	81.9	91	85.0	93	78.8
Special Education	n/a	n/a	41	18.1	16	15.0	25	21.2
Licensure in present position								
Yes	n/a	n/a	202	89.4	92	85.2	110	94.0
Praxis Exams								
Praxis II (content)								
Yes	n/a	n/a	186	89.0	96	93.2	89	84.8
Missing*	n/a	n/a	18	7.9	5	4.6	13	11.0
Praxis II (content) in present position								
Yes	n/a	n/a	178	87.3	93	92.1	84	82.4
Missing	n/a	n/a	23	10.1	7	6.5	16	13.6
Praxis II PLT								
Yes	n/a	n/a	141	62.1	79	89.8	61	72.6
Missing	n/a	n/a	54	23.8	20	18.5	34	28.8
Praxis III								
Yes	n/a	n/a	120	69.4	69	74.2	51	63.8
Missing	n/a	n/a	54	23.8	15	13.9	38	32.2
NIMAS								
No	n/a	n/a	171	77.4	87	82.0	84	73.7
Somewhat	n/a	n/a	45	20.4	16	15.1	28	24.6
Yes	n/a	n/a	5	2.3	3	2.8	2	1.8
NIMAC								
No	n/a	n/a	174	78.7	89	84.0	85	74.6
Somewhat	n/a	n/a	44	19.7	16	15.1	27	23.7
Yes	n/a	n/a	3	1.4	1	.9	2	1.8

Table 4.1: Frequency and Valid Percent for Teacher Characteristics: Gender, Race, Licensure, Education, Teaching Experience, and Praxis Exams, NIMAS and NIMAC.

*Missing data indicates that the respondents failed to answer the questions.

Information on responses to NIMAS and NIMAC by licensure are found in Table 4.2. The special education teachers, who service and support students with disabilities, should have greater understanding of the terminology inasmuch as they are often the ones, who assist in removing the barriers to learning for these students. Surprisingly, less than three percent of special education and general education teachers had a definite understanding of the NIMAS and NIMAC. Approximately thirty percent of these teachers reported to have some understanding of the terms. Data indicate that two-thirds of special education are not aware of new accessible formats available for instructional and curriculum content for students with disabilities who qualify under the new law.

Eighty percent of general education teachers were unaware of the new standard or the new instructional access center. This seemed more consistent given the number of students with disabilities included in the general education classrooms. As more teachers include students with disabilities in their classroom for instruction, teachers will become familiar with the flexible, alternative options to access curriculum content using new and innovative technology.

VARIABLE		**PERCENTAGE**	
	No	**Somewhat**	**Yes**
NIMAS			
Special Education	65.8	31.6	2.6
General Education	80.1	17.6	2.3
NIMAC			
Special Education	64.1	33.3	2.6
General Education	82.3	16.6	1.1

Table 4.2: Percentage Understanding of NIMAS and NIMAC: Special Education and General Education Teachers

Summary

The accepting sample of 227 was somewhat representative of the target population of Ohio teachers (ODE) provided for comparison after the study determined that there was frame error concerning years of teaching experience. The addition of the new variable, teaching experience (years) accounted for this frame error and was used in the multiple regression analyses. The researcher was unable to use inferential statistics to generalize to all Ohio teachers because of the response rate of 16.3 percent that resulted in the final accepting sample of 227 out of an accessible sample of 1386.

Characteristics of Teaching Assignments

The classroom variables include the following: School location, grades taught, number of students with disabilities in the classroom, number of students with individualized education plans (IEPs), number of students with IEPs included in the classroom for instruction, and the specific disabilities of students included in the classroom for instruction. The descriptive statistics provide information concerning the accepting sample, the data sample of teachers with three or fewer years of experience and the comparison sample of teachers with more than three years of teaching experience.

School Location

Urban. Of the accepting sample of 227 subjects, 23.3 percent were located in schools in urban areas while 18.5 percent of the data sample was located in urban schools. Twenty-eight percent of experienced teachers in the comparison sample taught in urban schools.

Rural. Twenty-six percent of the accepting sample had teachers located in rural schools, while 22.9 percent of the experienced teachers were in rural areas. The teachers with three or fewer years of experience had the highest representation with 26.7 percent in rural schools.

Suburban. The largest percentage of teachers in suburban schools was 52.8 percent of the data sample of teachers with less experience. The accepting sample had 49.3 percent located in suburban schools and a slightly lower percent 46.6 of experienced teachers were located in the suburban schools.

The accepting sample had a higher percentage of teachers 26.7 percent in urban schools compared to only 3.1 percent for ODE, with 50.0 percent located in suburban schools compared to 29.6 percent for ODE, along with fewer rural schools (26.3 percent compared to the 67.8 percent (ODE). The data provided by ODE represent the percentage of school districts that are urban, rural, and suburban—not the percentage of teachers in these districts throughout the state (see Table 4.3).

Grade Levels

The respondents who chose to participate in the survey research were representative of all grade levels. The percent comparison among the three samples did not exceed 1 percent. In the accepting sample of all teachers, 44.5 percent of the teachers in the accepting sample, 44.4 inexperienced teachers, and 44.1 percent of the experienced teachers were teaching in grades 9 – 12. The closeness of the three samples in percentage of teachers teaching in all the other grade levels remained within 1 percent, with the exception of those teachers teaching students system-wide in grades P-12.

The inclusion of all teaching position codes for teachers (e.g. history, music and physical education, and special education tutors) who teach students with or without disabilities was important for the study to represent the voice of all teachers.

ODE data on teachers teaching in different grade levels was unavailable.

VARIABLE	Ohio Department Of Education (ODE) All Years n = 128,353		Accepting Sample All Years n = 227		Data Sample < = 3 Years n = 108		Comparison Sample > 3 Years n = 119	
	n	Percent	n	Percent	n	Percent	n	Percent
Location								
Urban	16.0	3.1	53	23.7	20	18.5	33	28.7
Rural	344.0	67.8	59	26.3	31	26.7	27	23.5
Suburban	152.0	29.6	112	50.0	57	52.8	55	47.8
Missing data	n/a	n/a	3	1.3	0	0.0	3	2.5
Grades								
P-3	n/a	n/a	49	21.6	24	22.2	25	21.4
4-6	n/a	n/a	27	11.9	13	12.0	14	12.0
7-8	n/a	n/a	38	16.7	19	17.6	19	16.2
9-12	n/a	n/a	101	44.5	48	44.4	52	44.4
P-12	n/a	n/a	11	4.8	4	3.7	7	5.9

Table 4.3: Frequency and Percentage of Characteristics of Assignment: Location, Grades, Number of Student with Disabilities, Number of Student with and without Individualized Education Plans (IEPs), and Number of Students with Disabilities Included in Regular Classroom. *Missing data indicates that the respondents failed to answer the questions and n/a indicates ODE data unavailable.

Number of Students with Disabilities and with Individualized Education Plans (IEPs)

The means, standard deviations and the number of respondents from the accepting, data or comparison sample of teachers are provided in Table 4.4. The mean number of students with disabilities was lower for the regular education teacher, ranging from 5.67 to 6.61, with the special education teacher having a higher number of students with disabilities, ranging from 17.52 to 21.0. The number of students with individualized education plans (IEPs) was only slightly lower for both groups.

VARIABLE	ACCEPTING SAMPLE All Years			DATA SAMPLE < = 3 Years			COMPARISON SAMPLE > 3 Years		
	N	Mean	SD	N	Mean	SD	N	Mean	SD
Number of Student with Disabilities									
Regular Education	179	6.43	7.87	87	6.19	8.36	91	6.61	7.46
Special Education	40	18.39	18.39	15	21.00	24.04	25	18.12	14.46
Number of Students with IEPs									
Regular Education	179	5.89	7.40	87	5.67	7.84	91	6.01	7.03
Special Education	40	18.87	18.39	15	21.00	24.04	25	17.60	14.41
Number of Students with IEPs Included									
Regular Education	179	6.00	7.41	87	5.90	7.92	91	6.08	6.94
Special Education	40	18.47	18.17	15	20.06	24.32	25	17.52	13.75

Table 4.4: Means and Standard Deviations for Characteristic of Assignment: Number of Students with Disabilities, Number of Students with Disabilities with Individualized Education Plans (IEPs), and the Number of Students with Disabilities with IEPs Included in the General Education Classroom.

Specific Disabilities Included in the Classroom for Instruction

The specific disabilities of the students who are being included in the general education classroom are found in Tables 4.5 and 4.6. The teachers responded to the list of specific disabilities based on their own perceptions of inclusion of these students with disabilities in their classrooms for instruction. The percentage of students included in the general education classroom was not different than expected based on the literature (McLeskey, 2003).

In general, teachers are not including students with disabilities in the general education classroom and when they do, the specific disabilities are often those that require minimal adaptation or accommodations for inclusion. There is a considerable difference in the percentages of students being included depending upon the specific disability.

Included

The students with specific disabilities, *cognitive disabilities, and speech and language impairments* were “frequently included” in the regular education classroom for instruction only 28.6 percent to 30.4 percent of the time. Students with *learning disabilities* had the highest percent of inclusion in the regular education classroom being “frequently included” only 52.00 percent of the time (see Table 4.5 or 4.6)

Excluded

The students with eleven of the fourteen specific disabilities, *autism, blind, Deaf, developmental disability, emotional disturbances, multiple disability*, *orthopedic disability*, *other health impairment*, *traumatic head injury,* and *visual impairment*, were “frequently included” in the regular education classroom for instruction from 2.00 percent to 20.00 percent of the time (see Table 4.5 and 4.6). Students with these specific disabilities were in effect, excluded from 80.00 percent to 98.00 percent of the time.

VARIABLE	PERCENTAGE			
	N/A	Rarely	Occasionally	Frequently
Autism				
Regular Education	71.9	10.5	8.2	9.4
Special Education	39.5	15.8	21.1	23.1
Blind				
Regular Education	90.0	4.1	1.8	4.1
Special Education	77.8	13.9	5.6	2.8
Cognitive Disability				
Regular Education	35.1	14.0	20.5	30.4
Special Education	5.0	5.0	17.5	72.5
Deaf				
Regular Education	86.4	7.1	4.1	2.4
Special Education	72.2	13.9	5.6	8.3
Developmental Disability				
Regular Education	47.1	14.1	18.8	20.0
Special Education	20.0	2.5	17.5	60.0
Emotional Disturbances				
Regular Education	37.9	20.1	19.0	23.0
Special Education	12.5	12.5	45.0	30.0
Hearing Impaired				
Regular Education	66.1	12.3	14,0	7.6
Special Education	59.5	16.2	10.8	13.5
Multiple Disability				
Regular Education	78.4	10.5	5.8	5.3
Special Education	35.1	21.6	21.6	21.6
Orthopedic Disability				
Regular Education	70.4	16.0	5.9	7.7
Special Education	43.2	21.6	21.6	13.5
Other Health Impairment				
Regular Education	54.1	20.6	13.5	11.8
Special Education	24.3	18.9	16.2	40.5
Specific Learning Disability				
Regular Education	16.8	5.8	25.4	52.0
Special Education	7.5	2.5	12.5	77.5
Speech and Language Impairments				
Regular Education	36.6	17.1	17.1	28.6
Special Education	7.2	6.3	20.0	62.5
Traumatic Head Injury				
Regular Education	88.8	8.2	0.6	2.4
Special Education	57.9	18.4	13.2	10.5
Visual Impairment				
Regular Education	65.7	15.7	5.8	12.8
Special Education	51.3	20.5	17.9	10.3

Table 4.5: **Percentages of Students with Specific Disabilities Included in the Classroom for Instruction.** Responses based on 1 = N/A 2= Rarely 3 = Occasionally 4 = Frequently

Is Inclusion an Illusion?

Kluth, Villa, and Thousand (2002) found that states are not in compliance with the law (IDEA, 1997). The responses by teachers who participated in this study indicate that the trend of segregation and exclusion for students with disabilities continues with 11 of 14 specific disabilities excluded from classroom instruction (Table 4.6). McLeskey, Hoppey, Williamson and Rentz (2004) suggest that inclusion is an illusion.

Teachers	**INCLUDED LESS THAN 25%** ***FREQUENTLY INCLUDED*** Specific Disability	Percent	**INCLUDED GREATER THAN 25%** ***FREQUENTLY INCLUDED*** Specific Disability	Percent
Regular Education	Autism	9.40	Learning Disability	52.00
Regular Education	Blind	4.10	Speech and Language	28.60
Regular Education	Deaf	2.40	Cognitive Disability	30.40
Regular Education	Developmental Disability	20.00		
Regular Education	Disability	23.00		
Regular Education	Hearing Impaired	7.60		
Regular Education	Multiple Disabilities	5.30		
Regular Education	Orthopedic Disability	7.70		
Regular Education	Other Health Impair.	11.80		
Regular Education	Traumatic Head Injury	2.40		
Regular Education	Visual Impairment	12.80		

Table 4.6: Percentages of Students with Specific Disabilities Included in the Regular Education Classroom for Instruction. Responses based on 1 = N/A 2= Rarely 3 = Occasionally 4 = Frequently**.** The Specific Disabilities Defined by Ohio Department of Education (ODE)
*The total percent of specific disabilities Frequently INCLUDED in the REGULAR EDUCATION CLASSROOM for instruction

Analysis of Research Questions

The random sample of 1540 teachers resulting in an accessible sample of 1386 and a total of 227 in the accepting sample who responded to the Teacher Beliefs Inventory online. This was a very diverse group representing all grades, levels of education, the full spectrum of special education and general education teaching positions codes, the full range of races and gender among teachers based on the comparison with data provided by the Ohio Department of Education. For these reasons, the entire sample of 227 teachers was analyzed using descriptive quantitative statistics to answer the research questions that follow, and to gain more insight into teachers' beliefs about teaching every student in the 21st century.

Research Question 1: What is the relationship between Teachers' Sense of Efficacy and the Teachers' Sense of Inclusion Efficacy?

The researcher was interested in teachers' sense of efficacy (TSES) to teach every student in the 21st century. Do teachers feel less efficacious when faced with the inclusion of students with disabilities in their general education classroom? The Teachers' Sense of Efficacy Scale, TSES (Tschannen-Moran & Woolfolk Hoy, 2001) was the instrument best suited to determine if teachers who have a vigorous sense of efficacy for teaching students without disabilities have the same efficacy for teaching students with disabilities.

The adapted inclusion efficacy instrument was based on the 12 item short form of the Teachers' Sense of Efficacy Scale, TSES (Tschannen-Moran & Woolfolk Hoy, 2001) to measure the criterion variable, the **Teachers Sense of Inclusion Efficacy, I-TSES.** First, the TSES scale was adapted to answer this research question and to determine whether the teachers' sense of efficacy differed from the teachers' sense of inclusion efficacy. The Teachers' Sense of Inclusion Efficacy Scale was a mirror of the 12-item TSES scale with only the word "student(s)" changed to "student(s) with disabilities" and with 5 items on technology added to the instrument. Both the TSES and the I-TSES were included in the Teacher Beliefs Inventory.

First, Cronbach's Alpha was used to measure the internal consistency of the instrument. The Cronbach's Alpha coefficients were determined for each of the scales and the subscales based on dimensions identified in the principal component analysis and the scores of the participants in this study.

Second, principal component analysis (PCA) was used to determine how many underlying constructs (dimensions) account for the variance in the scales, TSES (12 items), and the I-TSES (17 items), based on how this sample of teachers responded to the questions. Tschannen-Moran and Woolfolk Hoy (2001) have consistently found three components emerge: (1) Efficacy in Student Engagement, (2) Efficacy in Instructional Strategies, and (3) Efficacy in Classroom Management. The goal of PCA is parsimony, to detect simple structure and to determine whether there is evidence of the hypothesized components based on data collected from the sample of respondents. The choice of rotation allows for easier interpretation, and transforms a set of correlated variables into a new smaller set of uncorrelated components that retain most of the information from the original set (Hair, Anderson, Tatum, & Black, 1998).

Third, the *one-sample t test* examined the difference between the 12-item Teachers' Sense of Inclusion Efficacy Scale (I-TSES) and the 12-item Teachers' Sense of Efficacy Scale (TSES) to determine whether the TSES and the I-TSES were measuring the same sense of efficacy.

Fourth, multiple regression analysis determined the saliency of the predictive variable TSES and its relationship with the criterion variable 17- item I-TSES (with technology items).

Instrument Reliability

Teachers' Sense of Efficacy Scale (TSES)

The reliabilities for Teachers' Sense of Efficacy Scale (TSES) and for the subscales of classroom management, instructional strategies and student engagement previously identified by Tschannen-Moran and Woolfolk Hoy (2001) are provided in Table 4.6. The reliabilities for the scores based on the sample of teachers who responded in this study compared to those reported in 2001. Student engagement had a reliability of .81 in 2001, compared to .84. Instructional Strategies had a .81 in 2001 compared to a reliability = .88. Classroom management had a reliability of .86 in 2001 compared to .91 in this study. TSES total scale had an Cronbach's alpha of .90 in 2001 compared to .92 in this study.

Teachers' Sense of Inclusion Efficacy Scale** (without Technology) **(I-TSES) and TSES

The reliabilities for the scores collected in this study on the adapted scale, *Teachers' Sense of Inclusion Efficacy* (without the 5 Technology items), are found in Table 4.6. I-TSES had a reliability of .862 for Student Engagement compared to the .846 for the TSES, the Instructional Strategies subscale had a reliability of .891compared to TSES .886, and Classroom Management on the I-TSES had a reliability of .876 compared to the TSES with a .911. Overall, Teachers' Sense of Inclusion Efficacy (without technology items) had a reliability of .932 compared to the TSES .925. These scales are comparable because the two scales are identical with the exception of the word "student(s)" changed to "student(s) with disabilities."

Teachers' Sense of Inclusion Efficacy Scale (**with the Technology) **(I-TSES) and TSES

The Teachers' Sense of Inclusion Efficacy compared to the TSES was slightly more reliable with the addition of five technology items (see Table 4.7). The adapted scale measured the teachers' sense of inclusion efficacy and the principal component analysis determined whether the new technology items would factor or load onto the components found in earlier research (Tschannen-Moran & Woolfolk Hoy, 2001). The respondents scores in this study indicate that the new adapted scale factored onto similar components found in the Tschannen-Moran and Woolfolk Hoy (2001) model along with the new factor for technology. Did the I-TSES measure a new construct with the addition of technology that would establish a new component? The data support it.

SCALES	**CRONBACH'S ALPHA**	**MEAN**	**SD**	**NO. ITEMS**
Teachers' Sense of EfficacyScale (TSES)				
Efficacy for Student Engagement	.846	27.39	5.06	4
Efficacy for Instructional Strategies	.886	30.00	4.76	4
Efficacy for Classroom Management	.911	29.54	5.01	4
Total TSES Efficacy	.925	87.00	12.69	12
Teachers Sense of Inclusion Efficacy Scale (I-TSES) *Without Technology Items*				
Efficacy for Student Engagement	.862	25.79	5.61	4
Efficacy for Instructional Strategies	.891	27.38	5.70	4
Efficacy for Classroom Management	.876	26.93	5.16	4
Total ITSES	.932	80.17	14.49	12
Teachers Sense of Inclusion Efficacy Scale (I-TSES) *With Technology Items*				
Efficacy for Student Engagement	.862	25.79	5.61	4
Efficacy for Instructional Strategies	.891	27.38	5.70	4
Efficacy for Classroom Management	.876	26.93	5.16	4
Efficacy for Technology	.935	23.37	10.18	5
Total ITSES	.936	103.55	21.72	17

Table 4.7: TSES and I-TSES Reliabilities Cronbach's Alpha Teachers' Sense of Efficacy (Tschannen-Moran and Woolfolk Hoy, 2001) and the Teachers' Sense of Inclusion Efficacy.

Teachers' Sense of Efficacy Subscales and Factors

There are three subscales or factors found in Teachers' Sense of Efficacy Scale (TSES) (Tschannen-Moran & Woolfolk Hoy, 2001) and Teachers' Sense of Inclusion Efficacy Scale (I-TSES) without technology. Table 4.8 provides the items found in the TSES and the I-TSES for each of the three components or factors that comprise the Teachers' Sense of Efficacy and the Teachers' Sense of Inclusion Efficacy. These items are expected to load onto the same subscales in the principal component analysis based on the data from previous research and because the I-TSES (without the five technology items) (see Table 4.9) was adapted from the original TSES. The items are expected to load onto the same subscales or components along with the addition of a new component, technology.

Student Engagement:	
Item 2	How much can you do to motivate student who show a low interest in school?
Item 3	How much can you do to get students to believe they can do well in school work?
Item 4	How much can you do to help your students to value learning?
Item 11	How much can you do to assist families in helping their children do well in school?
Instruction Strategies:	
Item 5	To what extend can you craft good questions for your students?
Item 9	How much can you use a variety of assessment strategies?
Item 10	To what extent can you provide an alternative explanation or example when students are confused?
Item 12	How well can you implement alternative strategies in your classroom?
Classroom Management:	
Item 1	How much can you do to control disruptive behavior in the classroom?
Item 6	How much can you do to get children to follow classroom rules?
Item 7	How much can you do to calm a student who is disruptive or noisy?
Item 8	How well can you establish a classroom management system with each group of students?

Table 4.8 Subscales within Teachers' Sense of Efficacy Scale (TSES) (Tschannen-Moran & Woolfolk Hoy, 2001)

Student Engagement:

Item 2 How much can you do to motivate student *with disabilities* who show a low interest in school?
Item 3 How much can you do to get students *with disabilities* to believe they can do well in school work?
Item 4 How much can you do to help your students *with disabilities* to value learning?
Item 11 How much can you do to assist families in helping their children *with disabilities* do well in school?

Instruction Strategies:

Item 5 To what extend can you craft good questions for your students *with disabilities*?
Item 9 How much can you use a variety of assessment strategies for students *with disabilities*?
Item 10 To what extent can you provide an alternative explanation or example when students *with disabilities* are confused?
Item 12 How well can you implement alternative strategies when students *with disabilities* are included in your classroom?

Classroom Management:

Item 1 How much can you do to control disruptive behavior of students *with disabilities* in the classroom?
Item 6 How much can you do to get children *with disabilities* to follow classroom rules?
Item 7 How much can you do to calm a student *with disabilities* who is disruptive or noisy?
Item 8 How well can you establish a classroom management system with *students with disabilities* in your classroom?

Technology/Inclusion:

Item 13 *How well can you motivate students with disabilities who require assistive technologies in your classroom?*
Item 14 *To what extent can you implement accommodations for assistive and accessible technology for students with disabilities in your classroom?*
Item 15 *How much can you do to provide students with disabilities who require text readers and accessible digital content, access to the curriculum content?*
Item 16 *How much can you do to provide universally designed digital assessments to evaluate learning by students with disabilities in your classroom?*
Item 17 *How much can you do to provide the curriculum content in specialized formats (Braille, Digital, audio) for students with qualifying disabilities who require them?*

The new subscale found in the I-TSES is based on the construct of accessible, assistive technology

Table 4.9 Subscales within Teachers' Sense of Inclusion Efficacy Scale (I-TSES) with Technology

Principal Component Analysis: TSES

Teachers' Sense of Efficacy Scale, TSES

The principal component analysis (PCA), used for data reduction, enabled the researcher to also examine the *Teachers' Sense of Efficacy* to determine whether the same three-factor model had been maintained based on the responses by participants in this study.

Three Factor Model

Eigenvalues

The results of the PCA using eigenvalues > or = to 1.0 resulted in the subscales of the TSES being comprised of the same subscales as found in data from other research. The amount of variance extracted by the three components accounted for 76.69 percent of the total variance and the Scree plot (see Appendix G) supports the three-component model. Component one with an eigenvalue of 6.73 accounts for 56.10 percent of the variance, component two with an eigenvalue of 1.33 accounts for 11.15 percent of the variance, and component three with an eigenvalue of 1.13 accounts for 9.43 percent of the variance with a total of 76.69 percent for the total variance (Table 4.10).

COMPONENT	**INITIAL EIGENVALUES**		
	Total	% Variance	Cumulative %
1	6.73	56.10	56.10
2	1.33	11.15	67.26
3	1.13	9.43	76.69
4	.64	5.36	82.05
5	.42	3.57	85.63

Table 4.10: TSES: Extraction Method: Principal Component Analysis

Rotation

In conducting the principal component analysis, both orthogonal and oblique rotations were completed. Following these analyses, the orthogonal rotation was selected because of the following: (1) low correlations between factors as shown in the oblique rotation, (2) the orthogonal rotation provided simple structure, and (3) the orthogonal rotation provided substantial and meaningful structure. The following components would represent the three-factor model of TSES based on the data obtained.

Rotated Component Matrix

ITEM	**COMPONENT**		
	1	2	3
TSES 1		.836	
TSES 2			.813
TSES 3			.865
TSES 4			.836
TSES 5	.648		
TSES 6		.806	
TSES 7		.774	
TSES 8		.794	
TSES 9	.771		
TSES 10	.827		
TSES 11	.641		
TSES 12	.846		

Table 4.11: **TSES: Extraction Method: Principal Component Analysis**
Rotation Method: Varimax with Kaiser Normalization

In the three-model structure analyzed for the Teachers' Sense of Inclusion Efficacy (TSES), the items loaded onto the expected three components (subscales) based on data from this study. Item 11 *How much can you assist families in helping their children do well in school?"* loaded onto the subscale instructional strategies instead of student engagement (see Table 4.12).

Component 1: Instructional Strategies
Item 5 To what extend can you craft good questions for your students?
Item 9 How much can you use a variety of assessment strategies?
Item 10 To what extent can you provide an alternative explanation or example when students are confused?
Item 12 How well can you implement alternative strategies in your classroom?
Item 11 How much can you do to assist families in helping their children do well in school?

Component 2: Classroom Management
Item 1 How much can you do to control disruptive behavior in the classroom?
Item 6 How much can you do to get children to follow classroom rules?
Item 7 How much can you do to calm a student who is disruptive or noisy?
Item 8 How well can you establish a classroom management system with each group of students?

Component 3: Student Engagement
Item 2 How much can you do to motivate student who show a low interest in school?
Item 3 How much can you do to get students to believe they can do well in school work?
Item 4 How much can you do to help your students to value learning?

**Item 11 was expected to have loaded onto component three based on previous research, however, the participants in this study answered the questions resulting in item 11 loaded onto component one.*

4.12: TSES COMPONENTS based on 3-factor model Extraction Method: Principal Component Analysis. Rotation Method: Varimax

Principal Component Analysis: I-TSES

The principal component analysis (PCA), used for data reduction, enabled the researcher to examine the new adapted *Teachers' Sense of Inclusion Efficacy* to determine whether the addition of the five technology items were factors that should be included in the instrument to measure the Teachers' Sense of *Inclusion* Efficacy.

Variance. Each of the 17 variables (items) in the observed variable set is standardized (mean = 0; variance = 1.0), therefore, the total variance in the observed variable set is equal to the number of variables in the observed set. Total variance = 17. The eigenvalue statistic indicated that the amount of variance extracted by each component resulted in three components, which did not include all of the expected three factors of the TSES.

Three Factor Model: I-TSES

Eigenvalues

The results of the PCA using eigenvalues > or = to 1.0 resulted in TSES being comprised of three subscales. The amount of variance extracted by the three components accounted for 71.99 percent of the total variance and the Scree plot (see Appendix G) supported the three-component model. Component one with an eigenvalue of 8.73 accounts for 51.3 percent of the variance, component two with an eigenvalue of 2.41 accounts for 14.18 percent of the variance, and component three with an eigenvalue of 1.09 accounts for 6.45 percent of the variance for a total of 71.99 percent of the total variance (Table 4.13).

COMPONENT		**INTIAL EIGENVALUES**	
	Total	% Variance	Cumulative %
1	8.73	51.35	51.35
2	2.41	14.18	65.53
3	1.09	6.45	71.99
4	.97	5.71	77.70
5	.49	2.92	80.63

Table 4.13: I-TSES: Extraction Method: Principal Component Analysis

Rotation

The final decision concerning the three-component model structure was determined based on the principal component analysis. The component structure must not only be simple, it must also be interpretable. Was the component structure simple? Was the component structure substantively meaningful and was the component structure conceptually sound?

In conducting the principal component analysis, both orthogonal and oblique rotations were completed. Following these analyses, the orthogonal rotation was selected because of the following: (1) low correlations between factors as shown in the oblique rotation, (2) the orthogonal rotation provided simple structure, and (3) the orthogonal rotation provided substantial and meaningful structure. The following components would represent the three-factor model of TSES based on the data obtained.

Rotated Component Matrix

ITEM	**COMPONENT**		
	1	**2**	**3**
I-TSES 1	**.843**		
I-TSES 2	**.704**		
I-TSES 3	**.650**		.444
I-TSES 4	**.616**		
I-TSES 5			**.665**
I-TSES 6	**.830**		
I-TSES 7	**.741**		
I-TSES 8	**.663**		
I-TSES 9			**.731**
I-TSES 10			**.800**
I-TSES 11			**.677**
I-TSES 12			**.677**
I-TSES 13		**.755**	
I-TSES 14		**.780**	
I-TSES 15		**.909**	
I-TSES 16		**.914**	
I-TSES 17		**.844**	

Table 4.14: I-TSES Extraction Method: Principal Component Analysis
Rotation Method: Varimax with Kaiser Normalization

Based on the data obtained from the respondents in this study, the components represented a mixture of the original three-factor model of the TSES with technology being one of the three components of the I-TSES (Table 4.14). Some items normally found in the three subscales of TSES loaded under two different components. Classroom Management (items 1, 6, 7, and 8) loaded with Student Engagement (items 2, 3, and 4) under component one. One item representing Student

Engagement (item 11) loaded with Instructional Strategies (items 5, 9, 10, and 12) under component number three. The technology (for inclusion) items 13, 14, 15, 16, and 17 loaded under component number two.

Four Component Model: I-TSES

The three-factor model provided simple structure, but the researcher viewed this model as conceptually unsound based on data from previous research, which supported the items loading onto three specific subscales excluding the technology items (Tschannen-Moran & Woolfolk Hoy, 2001). The literature strongly supports the three separate factors of Student Engagement, Instructional Strategies and Classroom Management, which failed to load onto the three components in the three-factor model of the Teachers' Sense of Inclusion Efficacy (I-TSES).

In analyzing the eigenvalues (Table 4.15), the fourth component had a value of .97 that would account for 77.70 cumulative percent of the variance explained by a four-component model. Thus, a second principal component analysis was conducted using the four-component model structure instead of using eignenvalues greater than 1.0.

The eigenvalues are the same (see Table 4.15), but the components and the items that loaded onto the different components changed. The Scree plot (see Appendix G) supported the four-component model. The results of the PCA extracting four components accounted for 77.70 percent of the total variance and supports the four-component model.

Component one with an eigenvalue of 8.73 accounts for 51.3 percent of the variance. Component two with an eigenvalue of 2.41 accounts for 14.18 percent of the variance. Component three with an eigenvalue of 1.09 accounts for 6.45 percent of the variance. And, component four with an eigenvalue of .97 accounts for 5.718 percent of the variance with a total of 77.70 percent for the total variance.

COMPONENT	INITIAL EIGNEVALUES		
	Total	% Variance	Cumulative %
1	8.73	51.35	51.35
2	2.41	14.18	65.53
3	1.09	6.45	71.99
4	.97	5.71	77.70
5	.49	2.92	80.63

Table 4.15: I-TSES: Extraction Method: Principal Component Analysis

Rotation

In conducting the principal component analysis, both orthogonal and oblique rotations were completed. Following these analyses, the orthogonal rotation was selected because of the following: (1) low correlations between factors as shown in the oblique rotation, (2) the orthogonal rotation provided simple structure, and (3) the orthogonal rotation provided substantial and meaningful structure. The following components would represent the four-factor model of I-TSES based on the data obtained. Examining an orthogonal rotated component matrix (Table 4.16), the data obtained resulted in four components.

Rotated Component Matrix

ITEM	**COMPONENT**			
	1	2	3	4
I-TSES 1			.794	
I-TSES 2				.738
I-TSES 3				.845
I-TSES 4				.791
I-TSES 5		.622		
I-TSES 6			.816	
I-TSES 7			.776	
I-TSES 8		.444	.682	
I-TSES 9		.732		
I-TSES 10		.821		
I-TSES 11		.638		
I-TSES 12		.781		
I-TSES 13	.754			
I-TSES 14	.779			
I-TSES 15	.908			
I-TSES 16	.913			
I-TSES 17	.844			

Table 4.16: I-TSES Extraction Method: Principal Component Analysis
Rotation Method: Varimax

In Table 4.17, the four-model components represent the full three-factor model of the TSES along with the technology component found in the I-TSES. The items did not load high on more than one component. The three-factor model of the original TSES (subscales) remained intact (with the exception of item 11, using data from this study. The five items measuring Technology remained intact and all of these items loaded onto component number one.

The four-component model had simple structure, was parsimonious, was interpretable and conceptually meaningful. Item 11 “*How much can you assist families in helping their children do well in school?*” loaded onto the subscale instructional strategies instead of student engagement, but it did the same in the TSES principal components analysis. The respondents viewed item 11 the same way in both scales.

Component 1: Technology (for inclusion)

Item 13 How well can you motivate students with disabilities who require assistive technologies in your classroom?
Item 14 To what extent can you implement accommodations for assistive and accessible technology for students with disabilities in your classroom?
Item 15 How much can you do to provide students with disabilities who require text readers and accessible digital content, access to the curriculum content?
Item 16 How much can you do to provide universally designed digital assessments to evaluate learning by students with disabilities in your classroom?
Item 17 How much can you do to provide the curriculum content in specialized formats (Braille, digital, audio) for students with qualifying disabilities who require them?

Component 2: Instructional Strategies

Item 5 To what extend can you craft good questions for your students with disabilities?
Item 9 How much can you use a variety of assessment strategies for students with disabilities?
Item 10 To what extent can you provide an alternative explanation or example when students with disabilities are confused?
Item 12 How well can you implement alternative strategies when students with disabilities are included in your classroom?

Component 3: Classroom Management

Item 1 How much can you do to control disruptive behavior of students with disabilities in the classroom?
Item 6 How much can you do to get children with disabilities to follow classroom rules?
Item 7 How much can you do to calm a student with disabilities who is disruptive or noisy?
Item 8 How well can you establish a classroom management system with students with disabilities in your classroom?

Component 4: Student Engagement

Item 2 How much can you do to motivate student with disabilities who show a low interest in school?

Item 3 How much can you do to get students with disabilities to believe they can do well in school work?
Item 4 How much can you do to help your students with disabilities to value learning?
Item 11 How much can you do to assist families in helping their children with disabilities do well in school?

**Item 11 should have loaded onto component four, but it loaded onto component two, which represents Instructional Strategies in TSES. The respondents may have viewed this item differently.*

Table 4.17: **I-TSES COMPONENTS based on a 4-factor model Extraction Method: Principal Component Analysis**. Rotation Method: Varimax 4 Component Model

Summary

The scores from the respondents in this study resulted in Teachers' Sense of Inclusion Efficacy (I-TSES) (with technology) with a reliability of .936, while Teachers' Sense of Inclusion Efficacy (I-TSES) (without technology) had a reliability of .932, and Teachers' Sense of Efficacy (TSES) had a reliability of .925.

The principal component analyses supported a three-component model structure for the TSES and a four-component model structure for I-TSES (with technology items). These are the appropriate models based on the data obtained in the study.

One-Sample T Test

TSES and I-TSES (without technology)

The *one-sample t test* determined whether the 12-item TSES (See Table 4.7) and 12-item I-TSES (see Table 4.8) were measuring the same efficacy. The two scales are exact duplicates except for the change in the term for "student(s)" to "student(s) with disabilities" and where the term "children" was used, it was changed to "children with disabilities." Was the difference between the two means large enough to indicate that the two scales were *not* measuring the same efficacy?

The one-sample t test provided information concerning the significance of the difference between the means of these two scales (Table 4.17). Jacob Cohen (1988, 1992) (as cited in King and Minium, 2003) "has suggested that small, medium, and large effects may be defined as corresponding to values of d of .2, .5 and .8 respectively" (p. 268). The difference between these two means indicated a medium effect size of .6 (see Table 4.18).

Scales	**N**	**Mean Difference**	**SD**	**Std Error**	**Effect Size Cohen's d**
TSES _ I-TSES DIFFERENCE	222	-.5651	1.019	.068	.6

Table 4.18: TSES and I-TSES One-Sample T Test.

Summary

The results of the one-sample t test indicated that the two scales are not measuring the same efficacy. Changing the term “students” to “students with disabilities” or “children” to “children with disabilities” provided a new scale to measure of the Teachers’ Sense of Inclusion Efficacy that was distinctly different from the Teachers’ Sense of Efficacy.

Multiple Regression Analysis

In multiple regression analysis, several assumptions about the relationships between the criterion and predictor variables are made that affect the statistical procedure and apply to both the predictor and criterion variables and to the entire relationship. The assumptions examined include the following: linearity, constant variance of the error terms, independence of the error terms, and normality of the error term distribution (Hair, Anderson, Tatham and Black (1998).

The data from the accepting sample of 227 were used in the multiple regression analysis. The accepting sample closely resembled the Ohio teachers in the same teaching position codes provided by the ODE for comparison. The researcher determined that the *accepting sample* of respondents was the one best suited for the multiple regression analysis to answer the research questions. A new variable, teaching experience, would account for the differences between the accepting and data sample, caused by the frame error. This new variable, years of teaching experience, was dummy coded and used in the multiple regression to investigate its saliency as a predictor variable in measuring the criterion variable, Teachers’ Sense of Inclusion Efficacy. The multiple regression analysis included this variable looking at teachers with three years or fewer years of experience and teachers with more than 3 years of teaching experience.

Variables and Symbols Used for the Interval Data

Table 4.18 provides the symbols for the criterion and some of the predictor variable found in the multiple regression analysis. For example, the symbol **I-TSES** was used to represent the criterion variable, the Teachers' Sense of *Inclusion* Efficacy. This table does not include the characteristics of teachers and the teaching assignments. These variables are listed in Table 4.19.

SYMBOL	VARIABLE REFERENCED	TYPE OF VARIABLE
I-TSES	Teachers' Sense of Inclusion Efficacy	Criterion
TSES	Teachers' Sense of Efficacy	Predictive
I-Collective	Collective Inclusion Efficacy	Predictive
Attitude	Attitudes Against Inclusion	Predictive
TechUse	Teachers' Perceived Level of Ability to Use TECH	Predictive
TechNeed	Teachers' Perceived Level of Need for TECH	Predictive
Q-T-Prep	Quality of Teacher Preparation	Predictive
> 3 yrs*	Teachers in the sample (119) with more than three years of teaching experience.	Predictive

Table 4.19: Symbols Representing Some of the Criterion and Predictor Variables Referenced
*****Dummy Coded Predictor Variables: Reference groups for the predictor variable: Years of Teaching Experience < = 3.

Multiple Regression Analysis

The means and standard deviations for the predictor and criterion variables in the study are found in table 4.20.

VARIABLE	MEAN	SD	N
I-TSES	100.41	20.24	131
TSES	88.40	11.94	131
I-Collective	66.64	13.56	131
Attitude	17.90	3.88	131
TechUse	26.44	8.71	131
Quality of Teacher Preparation (Q-T-Prep)	23.76	8.62	131
TechNeed	26.29	9.27	131
Male	.29	.45	131
Female*			
Years of Teaching Experience > 3	33	.47	131
Years of Teaching Experience < = 3*			
African American/Black	.03	.17	131
Alaskan/American Indian	.00	.00	131
Asian/Pacific Islander	.00	.00	131
Hispanic	.02	.15	131
Caucasian*			
Special Education	.15	.36	131
General Education*			
Licensure for Present Position	.90	.30	131
Licensure Not for Present Position*			
Praxis II (Content) Yes	.91	.27	131
Praxis II No*			
Praxis II (Content) Passed for Present Position	.88	.31	131
Praxis II Not for Present Position*			
Praxis II PLT	.89	.30	131
Praxis II PLT No*			
Praxis III Passed	.78	.41	131
Praxis III No*			
Masters Degree	.37	.48	131
Bachelors Degree*			
Grades P-3	.23	.42	131
Grades 4-6	.14	.35	131
Grades 7-8	.15	.36	131
Grades P-12	.03	.19	131
Grades 9-12*			
Specific Disabilities Included	1.92	.64	131
Urban	.21	.41	131
Rural	.24	.43	131
Suburban*			
Number of Students with Disabilities	8.06	10.63	131
Number of Students with IEPs	7.26	10.27	131
Number of Students with IEPs Included	7.54	10.13	131

Table 4.20: FULL MODEL Means and Standard Deviations for Multiple Regression Analysis
*Reference groups for the predictor variables that have been dummy coded for inclusion in the multiple regression analysis: Gender: Female; Years of Teaching Experience < = 3; race Caucasian; Licensure: General Education; Licensure not for present position, Yes; Praxis Exams: Praxis II No, Praxis II not for present position, Praxis II PLT No, Praxis III No; Degrees: Bachelors Degree; Classroom Grade: Grades 9-12, and Location: Suburban.

The full model for the multiple regression analysis was used to answer all research questions. The size of the matrix was quite large with all of the predictor variables included in the multiple regressions analysis and the full correlation matrix is found in Appendix F. Smaller matrices are provided for each research question with the appropriate predictor variables. Table 4.21 provides the correlation matrix for the Teachers' Sense of Inclusion Efficacy (I-TSES) and the Teachers' Sense of Efficacy (TSES) and some of the other predictor variables.

The data (see Table 4.21) indicate a correlation .637 between the predictor variable, Teachers Sense of Efficacy (TSES) and the criterion variable, Teachers Sense of Inclusion Efficacy (ITSES). Bartz (1999) suggests values of .60 to .80 are indicative of strong relationships (p. 184).

Variable	**I-TSES**	**TSES**	**I-Collective**	**Attitude**	**TECH USE**	**Q-T PREP**	**TECH NEED**	**Male**	**> 3 Yrs**
I-TSES	1.000								
TSES	.637	1.000							
I-COLLECTIVE	.455	.282	1.000						
Attitude	.511	.273	.215	1.000					
TECH USE	.269	.149	.252	.029	1.000				
Q-T-Prep	.207	.165	.258	.028	.086	1.000			
TECH NEED	.134	.049	-.012	.088	.356	.067	1.000		
Male	.101	.049	.114	-.114	.088	.103	.005	1.000	
> 3 Yrs	.001	.003	.071	.014	.031	-.151	-.081	-.020	1.000

Table 4.21: **Correlations Matrix for Multiple Regression**
The correlation matrix shown above provides only applicable sections appropriate for this question. The full correlation matrix is provided in APPENDIX F

Interpretation of the full model (Table 4.22) indicates an R-value of .817 (coefficient of multiple correlation). There is a strong relationship between I-TSES (criterion variable) and the linear combination of all of the predictor variables. The R^2 (coefficient of determination) for the full model was .667 or the proportion of variance in the I-TSES (criterion variable) explained by the linear combination of the predictor variables. Sixty-six percent of the variance in I-TSES accounted for by the linear combination of the predictor variables. This value indicates a goodness of fit for the linear regression model. The multiple regression analysis indicated *Teachers' Sense of Efficacy* (TSES) and *Teachers Sense of Inclusion Efficacy* (I-TSES) had a strong relationship with a correlation coefficient of .637. Multicollinearity was not a problem and the predictor variables were not linear combinations of the other independent variables. The tolerance of .688 and the variance inflation factor (VIF) of 1.496 indicate that there were no problems of multicollinearity among the predictor variables. The standard error also indicated goodness of fit for the full model. All assumptions about residuals for the full model included: residuals are independent, residuals have a mean of zero, residuals are normally distributed, residuals have a constant variance, and residuals not correlated with the predictor variables.

Unstandardized B for TSES in the full model equals .799. For a one-unit increase in TSES (Teachers' Sense of Efficacy), there is an expected increase in the criterion variable, Teachers' Sense of Inclusion Efficacy (I-TSES) of .799 points, when all other predictor variables held constant.

The Beta coefficient for the TSES was .471. Based on the Beta coefficients, the standardized scores allow the researcher to look at the relative importance of the predictor variables. This was essential to the analysis because the scales measuring the different predictor variables are all different. The Beta score for TSES represents a moderate to strong influence of TSES on the criterion variable the Teachers' Sense of Inclusion Efficacy Scale (I-TSES).The Beta score represents a standardized partial regression coefficient.

The partial correlation coefficient .555 indicates a moderate and unique correlation between the predictor variable and the criterion variable while controlling for the effect of the other predictor variables in the model.

The sample of respondents (227) to this online survey research with a response rate of 16.3 percent was not sufficient to allow for the use of inferential statistics, because the researcher could not be confident that respondents were representative of the population.

FULL MODEL	**Unstandardized Coefficients** B	**Standard Error**	**Standardized Coefficients** Beta	**Correlation Partial**
(constant)	-26.691	12.799		
TSES	.799	.118	.471	555
I-Collective	.260	.105	.174	.237
Attitude	1.742	.360	.335	.431
TechUse	.302	.157	.130	.186
Q-TeachPrep	.111	.165	.047	.066
TechNeed	-.013	.152	-.006	-.008
Male*	4.789	3.085	.109	.151
> 3 Years Teaching	-2.563	2.810	-.061	-.090
African American/Black*	-.305	8.155	-.003	-.004
Hispanic	-2.084	8.751	-.015	-.023
Special Education	3.046	4.423	.054	.068
Licensure for Present Position*	-9.178	4.666	-.136	-.190
Praxis II Yes*	-4.301	9.959	-.059	-.043
Praxis II Present Position*	9.373	8.313	.148	.110
Praxis II PLT*	-7.706	7.442	-.122	-.102
Praxis III Passed*	1.384	4.426	.028	.031
Masters Degree*	-.807	2.573	-.019	-.031
Grades P-3	2.776	3.740	.059	.079
Grades 4-6	2.662	3.949	.046	.065
Grades 7-8	-2.250	3.732	-.040	-.059
Grades P-12*	-5.730	7.122	-.054	-.079
Specific Disabilities Included	3.102	2.418	.098	.125
Urban*	2.300	3.516	.047	.064
Rural	-3.137	3.207	-.067	-.096
No. of Students w/ Disabilities	.242	.352	.127	.068
No.of Students w/ IEPs	-.194	.602	-.098	-.032
No. of Students w/ IEPs Incl	-.006	.552	-.003	-.001

R = .817, R^2 = .667, Standard Error of the Estimate = 13.12

Table 4.22: FULL MODEL Multiple Regression: Regression values of Teachers Sense of Efficacy (TSES); Collective Inclusion Efficacy (I-Collective); Attitudes Against Inclusion (Attitude); Quality of Teacher Prep (Q-T-Prep); Ability to Use Technology (TechUse); and Need for Technology (TechNeed); Years of Teaching Experience; Characteristics of Teachers and the Characteristics of Teaching Assignment on the levels of the dependent variable: Teachers' Sense of Inclusion Efficacy (I-TSES).

*****Dummy Coded Predictor Variables: Reference groups for the predictor variables that have been dummy coded for inclusion in the multiple regression analysis: Gender: Female; Years of Teaching Experience < = 3; Race Caucasian; Licensure: General Education; Licensure not for present position, Yes; Praxis Exams: Praxis II No, Praxis IInot for present position, Praxis II PLT No, Praxis III No; Degrees: Bachelors Degree; Classroom Grade: Grades 9-12, and Location: Suburban.

Research Question 2: What is the relationship between Collective Inclusion Efficacy and the Teachers' Sense of Inclusion Efficacy?

The researcher was interested in the interdependency and the cyclical nature of the teachers' sense of efficacy (TSES) (Tschannen-Moran & Woolfolk Hoy, 2001) and Collective Efficacy (Goddard, 2002). What is the relationship between the Teachers' Sense of Inclusion Efficacy and Collective Inclusion Efficacy? Does the same interdependency and cyclical relationship exist between the two for the task of inclusion of students with disabilities? Do teachers feel less efficacious when they faced with the inclusion of students with disabilities in their general education classroom if they are lacking the collective group support for inclusion and goal attainment to improve the performance of students with disabilities?

The Collective Efficacy scale was adapted in the same way that the TSES was adapted to measure efficacy for the task of inclusion. The adaptations made to the 12-item Collective Efficacy (Goddard, 2002) were changing the word "student(s)" to "student(s) with disabilities" and "children" to "children with disabilities." Two questions were altered somewhat more to make them more applicable, otherwise the 12 items in Goddard's Collective Efficacy Scale (2002) retained the same wording. Just as was the case in the adapted TSES, there were 5 items related to inclusion of students with disabilities and technology (assistive, accessible and universally designed) added to the Collective Efficacy scale related to the group [group competence and task analysis] (Goddard, 2002).

The first part of the analysis determined reliability based on the scores of the respondents who participated in the study. Reliability tests determined Cronbach's Alpha for the scores on the total scale and the subscales. Second, the principal component analysis evaluated the Collective Inclusion Efficacy to determine how the participants responded to the questions and to determine how the items factored onto the components. Goddard (2002) had identified four factors: Efficacy for Group Competence (positive), Efficacy for Group Competence (negative), Efficacy for Task Analysis (positive) and Efficacy for Task Analysis (negative). Third, multiple regression analysis determined the saliency of the predictive variable Collective Inclusion Efficacy and its relationship with the criterion variable I-TSES.

Instrument Reliability

Collective Inclusion Efficacy

SPSS software was used to conduct all statistical calculations and procedures. Cronbach's Alpha for reliability was calculated to determine internal consistency. The technology questions added to these scales increased reliability. The reliabilities in Table 4.23 provided the reliabilities for the subscales that had been previously identified (Goddard, 2002) along with the reliabilities for the new subscale on technology/inclusion.

The reliability for the Collective Inclusion Efficacy scale was alpha = .765. The reliabilities based on the scores for subjects in this study on the subscales range from a low of .605 (TA+) and .644 (TA-), with somewhat higher alpha scores for group competence ranging from .670 (GC-) and .740 (GC+). The reliability for the subscale of technology was alpha = .816. The reliability for the Collective Inclusion Efficacy scale was alpha = .765.

SCALES	CRONBACH'S ALPHA	MEAN	SD	NO. OF ITEMS
Collective Inclusion Efficacy Scale				
Efficacy for Group Competence +	.740	12.18	3.11	3
Efficacy for Group Competence -	.670	12.26	3.39	3
Efficacy for Task Analysis +	.605	9.84	3.19	3
Efficacy for Task Analysis -	.644	27.93	3.00	3
Efficacy for Technology	.816	17.23	6.11	5
Total Collective Inclusion Efficacy (withTech)	.765	79.46	11.22	17

Table 4.23: Collective Inclusion Efficacy Reliability Cronbach's Alpha

There are four subscales or factors found in the Collective Efficacy Scale (Goddard, 2002), and the same four subscales were expected to be found in the Collective Inclusion Efficacy scale. The items that comprise Collective Efficacy (Goddard, 2002) and the technology items are found in Table 4.24.

Efficacy for Group Competence GC +
Item 1: Teachers in this school are able to get through to the most difficult students.
Adapted Item 1: Teachers in this school are able to get through to the most difficult students *with disabilities.*
Item 2: Teacher here are confident they will be able to motivate their students.
Adapted Item 2: Teacher here are confident they will be able to motivate *students with disabilities.*
Item 5: Teachers in this school really believe that every child can learn.
Adapted Item 5: Teachers in this school really believe that every child *with disabilities* can learn *in the regular education classroom.*

Efficacy for Group Competence GC -
Item 3: If a child does not want to learn teachers here give up.
Adapted Item 3: If a child *with disabilities* does not want to learn teachers *in this school* give up.
Item 4: Teachers here don't have the skills needed to produce meaningful student learning.
Adapted Item 4: Teachers here do not have the *assistive and adaptive technology* skills needed to produce meaningful learning *for students with disabilities*.
Item 9: Teacher in this school do not have the skills to deal with students with disciplinary problems.
Adapted Item 9: Teacher in this school do not have the skills to deal with students *with disabilities* with disciplinary problems.

Efficacy for Task Analysis TA -
Item 8: Students here just aren't motivated to learn.
Adapted Item 8: Students *with disabilities* here just are not motivated to learn.
Item 11: Learning is more difficult at this school because students are worried about their safety.
Adapted Item 11: Learning is more difficult at this school because students *with disabilities* are worried about their safety.
Item 12: Drug and alcohol abuse in the community make learning difficult for students.s
Adapted Item 12: Drug and alcohol abuse in the community make learning difficult for students *with disabilities.*

Efficacy for Task Analysis TA +
Item 6: These students come to school ready to learn.
Adapted Item 6: Students *with disabilities* come to school ready to learn.
Item 7: Home life provides so many advantages the students here are bound to learn.
Adapted Item 7: Home life provides so many advantages that students *with disabilities* here are bound to learn.
Item 10: The opportunities in this community help ensure that these students will learn.
Adapted Item 10: The opportunities in this community help ensure that students *with disabilities* will learn.

Efficacy for Technology (for inclusion)
Item 13: Teachers here support each other to teach students with disabilities in the regular education classroom.
Item 14: Teachers in this school have the assistive technology and accessible digital content needed to teach students with disabilities in the regular education classroom.
Item 15: The school supports the inclusion of students with disabilities in the regular education classrooms by providing the computers for students who require them to access the curriculum content.
Item 16: The school supports the teachers here who teach students with disabilities by giving them smaller classes.
Item 17: Teachers here have the computers, software, training, and support needed to use technology to teach students with disabilities.

Table 4.24: Subscales Within the Collective Inclusion Efficacy Based on Goddard (2002)
**The exact numbering of these items does not correlate directly with Goddard's (2002) numbering, however, they do correlate directly with the content of the items. One of the items was merely included in a different order.*

Principal Component Analysis

Collective Inclusion Efficacy

The principal component analysis (PCA), used for data reduction, enabled the researcher to examine the new adapted *Collective Inclusion Efficacy* to determine whether the addition of the five technology items were factors that should be included in the instrument to measure the Collective Inclusion Efficacy.

Variance. Each of the 17 variables (items) in the observed variable set is standardized (mean = 0; variance = 1.0), therefore, the total variance in the observed variable set is equal to the number of variables in the observed set. Total variance = 17. The eigenvalue statistic indicated that the amount of variance extracted by each component resulted in three components, which did not include all of the expected three factors of the TSES (Table 4.25).

Five-Factor Model

Eigenvalues

The results of the PCA using eigenvalues > or = to 1.0 resulted included the four subscales of the original *Collective Efficacy* scale and the five technology items that made up the *Collective Inclusion Efficacy* scale. The amount of variance (see Table 4.24) extracted by the five components accounted for 65.98 percent of the total variance and the Scree plot (see Appendix G) supports the five-component model. Component one with an eigenvalue of 5.55 accounts for 32.69 percent of the variance. Component two with an eigenvalue of 1.84 accounts for 10.83 percent of the variance. Component three with an eigenvalue of 1.41 accounts for 8.30 percent of the variance. Component four with an eigenvalue of 1.33 accounts for 7.88 percent of the variance. And, component five with an eigenvalue of 1.06 accounts for 6.289 percent of the variance, with a total of 65.98 percent for the total variance.

COMPONENT	INITIAL EIGENVALUES		
	Total	% Variance	Cumulative %
1	5.55	32.69	32.69
2	1.84	10.83	43.53
3	1.41	8.30	51.84
4	1.33	7.85	59.69
5	1.06	6.28	65.98
6	.88	5.23	71.21

Table 4.25: Collective Inclusion Efficacy: Extraction Method: Principal Component Analysis

Rotation

In conducting the principal component analysis, both orthogonal and oblique rotations were completed. Following these analyses, the orthogonal rotation was selected because of the following: (1) low correlations between factors as shown in the oblique rotation, (2) the orthogonal rotation provided simple structure, and (3) the orthogonal rotation provided substantial and meaningful structure.

Examining an orthogonal rotated component matrix (Table 4.26), the data obtained resulted in five components. The five components would represent the original four-component model identified by Goddard (2002) in Collective Efficacy along with the fifth component (five technology items) found in the *Collective Inclusion Efficacy*. Item four was loading on to more than one component (technology, component one, and negative group competence, component 5). This item had more of a change from “students” to “students with disabilities” see Table 4.26. The use of the words “assistive or adaptive technology” may have created confusion and item four factored onto both technology and negative group competence. Item three also had high loadings on more than one component (positive group competence, component two and negative group competence, component five). All of the other items load high on only one component.

Rotated Component Matrix

ITEM	**COMPONENT**				
	1	2	3	4	5
I-COLL1		.818			
I-C0LL 2		.766			
I-COLL3		-.526			.441
I-COLL4	-.477				.698
I-COLL 5		.603			
I-COLL 6				.725	
I-COLL 7				.709	
I-COLL 8				-.661	
I-COLL 9					.675
I-COLL10			.504		
I-COLL 11			.809		
I-COLL 12			.788		
I-COLL 13		.635			
I-COLL 14	.786				
I-COLL 15	.703				
I-COLL 16	.661				
I-COLL 17	.859				

Table 4.26: Collective Inclusion Efficacy. Extraction Method: Principal Component Analysis
Rotation Method: Varimax with Kaiser Normalization

Principal component analysis determined that the same factor loadings occurred even with the minor adaptations made by the researcher in the development of the new adapted instrument. In Table 4.26, some of the items were more sensitive and item three and item four loaded on to components other than those identified by Goddard (2002). The technology items all load onto one component under this five-factor model.

Component 1 Technology

Item 14: Teachers here support each other to teach students with disabilities in the regular education classroom.
Item 15: The school supports the inclusion of students with disabilities in the regular education classrooms by providing the computers for students who require them to access the curriculum content.
Item 16: The school supports the teachers here who teach students with disabilities by giving them smaller classes.
Item 17: Teachers here have the computers, software, training, and support needed to use technology to teach students with disabilities.

Component 2 Group Competence (positive)

Item 1: Teachers in this school are able to get through to the most difficult students with disabilities.
Item 2: Teachers here are confident they will be able to motivate students with disabilities.
Item 5: Teachers in this school believe that every child with disabilities can learn in the regular education classroom
Item 13: Teachers here support each other to teach students with disabilities in the regular education classroom.
Item 3: If a child with disabilities does not want to learn teachers in this school give up.

Component 3 Task Analysis (positive and negative)

Item 10: The opportunities in this community help ensure that students with disabilities will learn.
Item11: Learning is more difficult at this school because students with disabilities are worried about their safety.
Item 12: Drug and alcohol abuse in the community make learning difficult for students with disabilities.

Component 4 Task Analysis (positive and negative)

Item 6: Students with disabilities come to school ready to learn.
Item 7: Home life provides so many advantages that students with disabilities here are bound to learn.
Item 8: Students with disabilities here just are not motivated to learn.

Component 5 Group Competence (negative)

Item 4: Teachers here do not have the assistive and adaptive technology skills needed to produce meaningful learning for students with disabilities.
Item 9: Teacher in this school do not have the skills to deal with students *with disabilities* with disciplinary problems.

Item 3 and 4, Negative Group Competence, loaded on to more than one component.

Table 4.27: Five-Component Model of Collective Inclusion Efficacy

Based on the data from this research, the five-component model provided simple structure, was parsimonious, and was interpretable. Goddard (2002) suggests four components as viable and the addition of the technology items made it an equally effective as a five-component model.

Multiple Regression Analysis

Collective Inclusion Efficacy

The full model for the multiple regression analysis was used to answer the research questions. What is the relationship between Collective Inclusion Efficacy and the Teachers' Sense of Inclusion Efficacy? Does the cyclical and interdependency exist between the Teachers' Sense of Inclusion Efficacy and Collective Inclusion Efficacy?

The full correlation matrix for the I-TSES (Teachers' Sense of Inclusion Efficacy Scale) and the Collective Inclusion Efficacy (I-TSES) and the other predictor variables was not provided in Chapter 4. The size of the matrix was understandably large based on the number of the predictor variables included in the multiple regressions analysis, and the full matrix has been provided in Appendix F. In the following, Table 4.28, the means and standard deviations for the predictor and criterion variables in the study are provided.

VARIABLE	MEAN	SD	N
I-TSES	100.41	20.24	131
TSES	88.40	11.94	131
I-Collective	66.64	13.56	131
Attitude	17.90	3.88	131
TechUse	26.44	8.71	131
Quality of Teacher Preparation (Q-T-Prep)	23.76	8.62	131
TechNeed	26.29	9.27	131
Male	.29	.45	131
Female*			
Years of Teaching Experience > 3	33	.47	131
Years of Teaching Experience < = 3*			
African American/Black	.03	.17	131
Alaskan/American Indian	.00	.00	131
Asian/Pacific Islander	.00	.00	131
Hispanic	.02	.15	131
Caucasian*			
Special Education	.15	.36	131
General Education*			
Licensure for Present Position	.90	.30	131
Licensure Not for Present Position*			
Praxis II (Content) Yes	.91	.27	131
Praxis II No*			
Praxis II (Content) Passed for Present Position	.88	.31	131
Praxis II Not for Present Position*			
Praxis II PLT	.89	.30	131
Praxis II PLT No*			
Praxis III Passed	.78	.41	131
Praxis III No*			
Masters Degree	.37	.48	131
Bachelors Degree*			
Grades P-3	.23	.42	131
Grades 4-6	.14	.35	131
Grades 7-8	.15	.36	131
Grades P-12	.03	.19	131
Grades 9-12*			
Specific Disabilities Included	1.92	.64	131
Urban	.21	.41	131
Rural	.24	.43	131
Suburban*			
Number of Students with Disabilities	8.06	10.63	131
Number of Students with IEPs	7.26	10.27	131
Number of Students with IEPs Included	7.54	10.13	131

Table 4.28: FULL MODEL Means and Standard Deviations for Multiple Regression Analysis

*Reference groups for the predictor variables that have been dummy coded for inclusion in the multiple regression analysis: Gender: Female; Years of Teaching Experience < = 3; race Caucasian; Licensure: General Education; Licensure not for present position, Yes; Praxis Exams: Praxis II No, Praxis II not for present position, Praxis II PLT No, Praxis III No; Degrees: Bachelors Degree; Classroom Grade: Grades 9-12, and Location: Suburban.

The full model for the multiple regression analysis was used to answer all research questions. Table 4.29 provides the correlation matrix for the I-TSES (Teachers' Sense of Inclusion Efficacy Scale) and the Collective Inclusion Efficacy (I-TSES) and the other predictor variables based on the accepting sample. The size of the matrix was understandably large based on all of the predictor variables included in the multiple regressions analysis. The complete correlation matrix is found in Appendix F.

The data indicate a moderate correlation between the Collective Inclusion Efficacy and the Teachers' Sense of Inclusion Efficacy. The relationship between Collective Inclusion Efficacy on the I-TSES was moderate with a correlation coefficient of .455. Bartz (1999) suggests values of .40 to .60 are indicative of moderate relationships (p. 184).

VARIABLE	I-TSES	TSES	I-Collective	Attitude	TECH USE	Q-T PREP	TECH NEED	Male	> 3 Yrs
I-TSES	1.000								
TSES	.637	1.000							
I-COLLECTIVE	.455	.282	1.000						
Attitude	.511	.273	.215	1.000					
TECH USE	.269	.149	.252	.029	1.000				
Q-T-Prep	.207	.165	.258	.028	.086	1.000			
TECH NEED	.134	.049	-.012	.088	.356	.067	1.000		
Male	.101	.049	.114	-.114	.088	.103	.005	1.000	
> 3 Yrs	.001	.003	.071	.014	.031	-.151	-.081	-.020	1.000

Table 4.29: **Correlations Matrix for Multiple Regression**
The correlation matrix shown above provides only applicable sections appropriate for this question. The full correlation matrix is provided in APPENDIX F.

Interpretation of the full model (Table 4.30) indicate an R value of .817 (Coefficient of multiple correlation). There is a very high relationship between Teachers' Sense of Inclusion Efficacy (criterion variable) and the linear combination of the predictor variables. The R^2 (Coefficient of determination) for the full model was .667 or the proportion of variance in the I-TSES (criterion variable) explained by the linear combination of the predictor variables. Sixty-six percent of the variance in I-TSES accounted for by the linear combination of the predictor variables. This value indicates a goodness of fit for the linear regression model. Multicollinearity was not a problem and the predictor variables were not linear combinations of the other independent variables. The tolerance .656 and the variance inflation factor (VIF) 1.524 indicate that there were no problems of multicollinearity among the predictor variables. All assumptions about residuals for the full model included: residuals are independent, residuals have a mean of zero, residuals are normally distributed, residuals have a constant variance, and residuals not correlated with the predictor variables. The standard error also indicated goodness of fit for the full model.

Unstandardized B for Collective Inclusion Efficacy in the full model equals .260. For a one-unit increase in Collective Inclusion Efficacy, there is an expected increase in the Teachers' Sense of Inclusion Efficacy (I-TSES) (criterion variable) of .260 points, when all other predictor variables held constant.

The Beta coefficient for the Collective Inclusion Efficacy was .174. Based on the Beta coefficients, the standardized scores allow the researcher to look at the relative importance of the predictor variables. This was essential to the analysis because the scales measuring the different predictor variables are all different. The Beta score for Collective Inclusion Efficacy represents a very low influence of the predictor variable Collective Inclusion Efficacy on the criterion variable the Teachers' Sense of Inclusion Efficacy Scale (I-TSES). The Beta score represents a standardized partial regression coefficient.

The partial correlation coefficient .237 indicates low and unique correlation between the predictor variable and the criterion variable, while controlling for the effect of the other predictor variables in the model.

The sample of respondents (227) to this online survey research with a response rate of 16.3 percent was not sufficient to allow for the use of inferential statistics, because the researcher could not be confident that respondents were representative of the population.

FULL MODEL	**Unstandardized Coefficients** B	**Standard Error**	**Standardized Coefficients** Beta	**Correlation Partial**
(constant)	-26.691	12.799		
TSES	.799	.118	.471	555
I-Collective	.260	.105	.174	.237
Attitude	1.742	.360	.335	.431
TechUse	.302	.157	.130	.186
Q-TeachPrep	.111	.165	.047	.066
TechNeed	-.013	.152	-.006	-.008
Male*	4.789	3.085	.109	.151
> 3 Years Teaching	-2.563	2.810	-.061	-.090
African American/Black*	-.305	8.155	-.003	-.004
Hispanic	-2.084	8.751	-.015	-.023
Special Education	3.046	4.423	.054	.068
Licensure for Present Position*	-9.178	4.666	-.136	-.190
Praxis II Yes*	-4.301	9.959	-.059	-.043
Praxis II Present Position*	9.373	8.313	.148	.110
Praxis II PLT*	-7.706	7.442	-.122	-.102
Praxis III Passed*	1.384	4.426	.028	.031
Masters Degree*	-.807	2.573	-.019	-.031
Grades P-3	2.776	3.740	.059	.079
Grades 4-6	2.662	3.949	.046	.065
Grades 7-8	-2.250	3.732	-.040	-.059
Grades P-12*	-5.730	7.122	-.054	-.079
Specific Disabilities Included	3.102	2.418	.098	.125
Urban*	2.300	3.516	.047	.064
Rural	-3.137	3.207	-.067	-.096
No. of Students w/ Disabilities	.242	.352	.127	.068
No.of Students w/ IEPs	-.194	.602	-.098	-.032
No. of Students w/ IEPs Incl	-.006	.552	-.003	-.001

R = .817, R^2 = .667, Standard Error of the Estimate = 13.12

Table 4.30: FULL MODEL Multiple Regression: Regression values of Teachers Sense of Efficacy (TSES); Collective Inclusion Efficacy (I-Collective); Attitudes Against Inclusion (Attitude); Quality of Teacher Prep (Q-T-Prep); Ability to Use Technology (TechUse); and Need for Technology (TechNeed); Years of Teaching Experience; Characteristics of Teachers and the Characteristics of Teaching Assignment on the levels of the dependent variable: Teachers' Sense of Inclusion Efficacy (I-TSES).

*****Dummy Coded Predictor Variables: Reference groups for the predictor variables that have been dummy coded for inclusion in the multiple regression analysis: Gender: Female; Years of Teaching Experience < = 3; Race Caucasian; Licensure: General Education; Licensure not for present position, Yes; Praxis Exams: Praxis II No, Praxis IInot for present position, Praxis II PLT No, Praxis III No; Degrees: Bachelors Degree; Classroom Grade: Grades 9-12, and Location: Suburban.

Research Question 3: What is the relationship between the teachers' attitudes toward inclusion of students with disabilities in the general education classroom and the Teacher' Sense of Inclusion Efficacy?

Reliability

Attiudes

The four items included in the Teacher Beliefs Inventory had higher reliability in the pre-test than during the actual study. The Cronbach's Alpha of .682 increased to .780 with the removal of item 4 (See Table 4.31).

The predictor variable, Attitudes, measured attitudes toward the inclusion of students with disabilities in the general education classroom. The researcher determined that asking teachers whether they support teaching every student or teaching students with disabilities in their classroom would be counterproductive. Teachers are inclined to believe that they do support inclusion. It would be politically incorrect to say that you could not or would not teach students with disabilities or based on the medical rehabilitative model of disability the teacher may support segregation for rehabilitation. The wording of the items required that they be reverse coded before calculating reliability coefficients. The Cronbach's Alpha = .780

SCALES	CRONBACH'S ALPHA	MEAN	SD	NO. ITEMS
Attitudes	.780	10.45	3.95	3

Table 4.31: Reliabilities Cronbach's Alpha for the following predictor variables: Attitudes

Multiple Regression Analysis

The full model for the multiple regression analysis was used to answer research question 3. The Means and Standard Deviations are found above in Table 4.32.

VARIABLE	MEAN	SD	N
I-TSES	100.41	20.24	131
TSES	88.40	11.94	131
I-Collective	66.64	13.56	131
Attitude	17.90	3.88	131
TechUse	26.44	8.71	131
Quality of Teacher Preparation (Q-T-Prep)	23.76	8.62	131
TechNeed	26.29	9.27	131
Male	.29	.45	131
Female*			
Years of Teaching Experience > 3	33	.47	131
Years of Teaching Experience < = 3*			
African American/Black	.03	.17	131
Alaskan/American Indian	.00	.00	131
Asian/Pacific Islander	.00	.00	131
Hispanic	.02	.15	131
Caucasian*			
Special Education	.15	.36	131
General Education*			
Licensure for Present Position	.90	.30	131
Licensure Not for Present Position*			
Praxis II (Content) Yes	.91	.27	131
Praxis II No*			
Praxis II (Content) Passed for Present Position	.88	.31	131
Praxis II Not for Present Position*			
Praxis II PLT	.89	.30	131
Praxis II PLT No*			
Praxis III Passed	.78	.41	131
Praxis III No*			
Masters Degree	.37	.48	131
Bachelors Degree*			
Grades P-3	.23	.42	131
Grades 4-6	.14	.35	131
Grades 7-8	.15	.36	131
Grades P-12	.03	.19	131
Grades 9-12*			
Specific Disabilities Included	1.92	.64	131
Urban	.21	.41	131
Rural	.24	.43	131
Suburban*			
Number of Students with Disabilities	8.06	10.63	131
Number of Students with IEPs	7.26	10.27	131
Number of Students with IEPs Included	7.54	10.13	131

Table 4.32: FULL MODEL Means and Standard Deviations for Multiple Regression Analysis
*Reference groups for the predictor variables that have been dummy coded for inclusion in the multiple regression analysis: Gender: Female; Years of Teaching Experience < = 3; race Caucasian; Licensure: General Education; Licensure not for present position, Yes; Praxis Exams: Praxis II No, Praxis II not for present position, Praxis II PLT No, Praxis III No; Degrees: Bachelors Degree; Classroom Grade: Grades 9-12, and Location: Suburban.

The following Table 4.33 provides information from the correlation matrix for the I-TSES (Teachers' Sense of Inclusion Efficacy Scale) and the *Attitudes Toward Inclusion* and some of the other variables based on the accepting sample. The size of the matrix was understandably large based on all of the predictor variables included in the multiple regressions analysis and it is provided in Appendix F.

The data indicated a moderate correlation between the Attitudes (Against Inclusion) and the Teachers Sense of Inclusion Efficacy (ITSES). Attitudes had a correlation coefficient of .511. Bartz (1999) suggests values of .40 to .60 are indicative of moderate relationships (p. 184). The predictor variable, ATTITUDE measured the teachers' *Attitudes Toward Inclusion*. Attitudes would have moderate, positive relationship with the Teachers' Sense of Inclusion Efficacy. A high score on these items would indicate a high score on the I-TSES.

Variable	**I-TSES**	**TSES**	**I-Collective**	**Attitude**	**TECH USE**	**Q-T PREP**	**TECH NEED**	**Male**	**> 3 Yrs**
I-TSES	1.000								
TSES	.637	1.000							
I-COLLECTIVE	.455	.282	1.000						
Attitude	.511	.273	.215	1.000					
TECH USE	.269	.149	.252	.029	1.000				
Q-T-Prep	.207	.165	.258	.028	.086	1.000			
TECH NEED	.134	.049	-.012	.088	.356	.067	1.000		
Male	.101	.049	.114	-.114	.088	.103	.005	1.000	
> 3 Yrs	.001	.003	.071	.014	.031	-.151	-.081	-.020	1.000

Table 4.33: Correlations Matrix for Multiple Regression
The correlation matrix shown above provides only applicable sections appropriate for this question. The full correlation matrix is provided in APPENDIX F

Interpretation of the full model (Table 4.34) indicates an R-value of .817 (Coefficient of multiple correlation). There is a strong relationship between Teachers' Sense of Inclusion Efficacy (criterion variable) and the linear combination of the all of the predictor variables. The R^2 (Coefficient of determination) for the full model was .667 or the proportion of variance in the I-TSES (criterion variable) explained by the linear combination of the predictor variables. Sixty-six percent of the variance in I-TSES accounted for by the linear combination of the predictor variables. This value indicates a goodness of fit for the linear regression model.

Multicollinearity was not a problem and the predictor variables were not linear combinations of the other independent variables. The tolerance .677 and the variance inflation factor (VIF) 1.47 indicate that there were no problems of multicollinearity among the predictor variables. All assumptions about residuals for the full model included: residuals are independent, residuals have a mean of zero, residuals are normally distributed, residuals have a constant variance, and residuals not correlated with the predictor variables. The standard error also indicated goodness of fit for the full model.

Unstandardized B for Attitudes in the full model equals 1.762. For a one-unit increase in ATTITUDES, there is an expected increase in the criterion variable, the Teachers' Sense of Inclusion Efficacy (I-TSES) of 1.762 points, when all other predictor variables held constant.

The Beta coefficient for the predictor variable ATTITUDES was .335. Based on the Beta coefficients, the standardized scores allow the researcher to look at the relative importance of the predictor variables. This was essential to the analysis because the scales measuring the different predictor variables are all different. The Beta score for ATTITUDES represents a moderate influence of the predictor variable ATTITUDES on the criterion variable the Teachers' Sense of Inclusion Efficacy Scale (I-TSES). The Beta score represents a standardized partial regression coefficient.

The partial correlation coefficient .431 indicates a moderate and unique correlation between the predictor variable and the criterion variable, while controlling for the effect of the other predictor variables in the model.

The sample of respondents (227) to this online survey research with a response rate of 16.3 percent was not sufficient to allow for the use of inferential statistics, because the researcher could not be confident that respondents were representative of the population.

FULL MODEL	Unstandardized Coefficients B	Standard Error	Standardized Coefficients Beta	Correlation Partial
(constant)	-26.691	12.799		
TSES	.799	.118	.471	555
I-Collective	.260	.105	.174	.237
Attitude	1.742	.360	.335	.431
TechUse	.302	.157	.130	.186
Q-TeachPrep	.111	.165	.047	.066
TechNeed	-.013	.152	-.006	-.008
Male*	4.789	3.085	.109	.151
> 3 Years Teaching	-2.563	2.810	-.061	-.090
African American/Black*	-.305	8.155	-.003	-.004
Hispanic	-2.084	8.751	-.015	-.023
Special Education	3.046	4.423	.054	.068
Licensure for Present Position*	-9.178	4.666	-.136	-.190
Praxis II Yes*	-4.301	9.959	-.059	-.043
Praxis II Present Position*	9.373	8.313	.148	.110
Praxis II PLT*	-7.706	7.442	-.122	-.102
Praxis III Passed*	1.384	4.426	.028	.031
Masters Degree*	-.807	2.573	-.019	-.031
Grades P-3	2.776	3.740	.059	.079
Grades 4-6	2.662	3.949	.046	.065
Grades 7-8	-2.250	3.732	-.040	-.059
Grades P-12*	-5.730	7.122	-.054	-.079
Specific Disabilities Included	3.102	2.418	.098	.125
Urban*	2.300	3.516	.047	.064
Rural	-3.137	3.207	-.067	-.096
No. of Students w/ Disabilities	.242	.352	.127	.068
No.of Students w/ IEPs	-.194	.602	-.098	-.032
No. of Students w/ IEPs Incl	-.006	.552	-.003	-.001

R = .817, R^2 = .667, Standard Error of the Estimate = 13.12

Table 4.34: FULL MODEL Multiple Regression: Regression values of Teachers Sense of Efficacy (TSES); Collective Inclusion Efficacy (I-Collective); Attitudes Against Inclusion (Attitude); Quality of Teacher Prep (Q-T-Prep); Ability to Use Technology (TechUse); and Need for Technology (TechNeed); Years of Teaching Experience; Characteristics of Teachers and the Characteristics of Teaching Assignment on the levels of the dependent variable: Teachers' Sense of Inclusion Efficacy (I-TSES).

*****Dummy Coded Predictor Variables: Reference groups for the predictor variables that have been dummy coded for inclusion in the multiple regression analysis: Gender: Female; Years of Teaching Experience < = 3; Race Caucasian; Licensure: General Education; Licensure not for present position, Yes; Praxis Exams: Praxis II No, Praxis IInot for present position, Praxis II PLT No, Praxis III No; Degrees: Bachelors Degree; Classroom Grade: Grades 9-12, and Location: Suburban.

Research Question 4: What is the relationship between the teachers' ability to use technology and the need for technology and the Teachers' Sense of Inclusion Efficacy?

Teachers are required under the IDEA, 2004 to provide the technology and digital content needed to access the general education curriculum. The teachers' perceived ability to use and the need for technology provides a more in depth look into the teachers' efficacy to teach every student in the 21st century. Did teachers perceive themselves having the ability to use technologies that students with disabilities require to access instructional and curriculum content? Did these same teachers perceive a need for these technologies?

To answer this research question, first, a principal component analysis determined the subscales that might exist within the Use and Need items. Second, reliability coefficients were determined for the teachers' responses on the interval scales for technology use and technology need. Third, multiple regression analysis determined the impact of teachers' level of ability to use and their need for technology on the criterion variable the Teachers' Sense of Inclusion Efficacy (I-TSES).

Technology Use and Need

The Teachers' Perceived Ability to Use Technology Table provides the teachers' perceived level of ability to use technology measured by the Likert type scale: 1 = none, 2 = novice, 3 = advanced, and 4 = expert. The highest average ratings included the following: TECH USE 5*, Multimedia programs with 2.34, and TECH USE 6*, Spelling and Grammar Checking Software with a 2.70. The TECH USE data indicate that teachers do not perceive themselves as technology proficient with 69.5 percent of the teachers rating themselves at less than 2.0 (novice) level of ability to use the technology (Table 4.35).

VARIABLE	N	MEAN	SD	S
TECH USE 1 (alternative keyboard)	217	1.43	.711	.505
TECH USE (ebooks)	218	1.76	.785	.616
TECH USE 3 (electronic concept mapping)	215	1.57	.751	.564
TECH USE 4 (general accessibility options)	213	1.73	.847	.718
TECH USE 5* (multimedia programs)	217	2.34	.964	.929
TECH USE 6* (spelling & grammar checking)	220	2.70	1.038	1.077
TECH USE 7 (text readers and digital text)	218	1.75	.860	.740
TECH USE 8 (text to speech word processors)	218	1.56	.718	.515
TECH USE 9 (text scan & read software)	217	1.57	.762	.580
TECH USE 10 (tutorial and scaffolding software)	219	1.68	.835	.697
TECH USE 11 (universally designed assessments)	216	1.48	.759	.576
TECH USE 12 (universally designed learning)	216	1.45	.694	.482
TECH USE 13 (video streaming and podcasts)	219	1.82	.910	.829
TECH USE 14 (voice recognition software)	218	1.37	.625	.390
TECH USE 15 (word prediction software)	219	1.37	.633	.400

Table 4.35: TECH USE: Teachers' Perceived Ability to Use Technology
Level of ability to use technology: 1 = no ability, 2 = novice, 3 = advanced and 4 = expert

Reliability

TECH USE: *Teachers' Perceived Level of Ability to Use Technology*

The results of the factor analysis revealed that the teachers did perceive the technology as being for specific use: inclusion (component one) or general use (component two). The reliabilities calculated (Table 4.36) were based on these two components determined through the principal component analysis of the data on the teachers' perceived ability to use technology.

SCALES	CRONBACH'S ALPHA	MEAN	SD	NO. ITEMS
Component 1: Specific Use: Inclusion Technology	.896	8.80	3.42	4
Item 8: Text to speech word processors				
Item 9: Text scan and read software				
Item 11: Universally designed assessments				
Item 12: Universally designed learning				
Item 14: Voice recognition software				
Item 15: Word prediction software				
Component 2: General Use	.798	8.50	2.88	4
Item 2: Ebooks				
Item 4: General accessibility options				
Item 5: Multimedia programs				
Item 6: Spelling and grammar checking software				
TECH USE Total Scale	.922	25.48	8.28	15
(Items 1-15)				

Table 4:36: Technology Use RELIABILITIES Cronbach's Alpha

Principal Component Analysis

The principal component analysis (PCA), used for data reduction, enabled the researcher to also examine the *TECHNOLOGY USE and NEED* to determine how the participants responded to the different items [technology]. Did the respondents respond differently when it was ability to use technology and their perceived need for the same technology?

Technology Ability to Use

Two Factor Model

Eigenvalues. The results of the PCA (Table 4.37) using eigenvalues > or = to 1.0 resulted in the subscales of the TECH USE. The amount of variance extracted by the two components accounted for 58.07 percent of the total variance and the Scree plot (see Appendix G) supports the two-component model. Component one with an eigenvalue of 4.82 accounts for 32.15 percent of the variance, component two with an eigenvalue of 3.88 accounts for 25.91 percent of the variance for a total of 58.07 percent of the total variance.

COMPONENT	**INITIAL EIGENVALUES**		
	Total	% Variance	Cumulative %
1	4.824	32.15	32.15
2	3.888	25.91	58.07
3	.93	6.204	64.28
4	.87	5.85	70.13

Table 4.37: TECH USE: Extraction Method: Principal Component Analysis – Orthogonal Rotation

Rotation

In conducting the principal component analysis, both orthogonal and oblique rotations were completed. Following these analyses, the orthogonal rotation was selected because of the following: (1) low correlations between factors as shown in the oblique rotation, (2) the orthogonal rotation provided simple structure, and (3) the orthogonal rotation provided substantial and meaningful structure. The following components would represent the two-factor model of TECH USE based on the data obtained. Examining an orthogonal rotated component matrix (Table 4.38), the data obtained supported the two-component model (see Table 4.38).

Rotated Component Matrix

ITEM	**COMPONENT**	
	1	2
TECHUSE 1		
TECHUSE 2		.747
TECHUSE 3	.471	.595
TECHUSE 4		.642
TECHUSE 5		.788
TECHUSE 6		.775
TECHUSE 7	.614	.508
TECHUSE 8	.748	
TECHUSE 9	.740	
TECHUSE 10	.602	.503
TECHUSE 11	.772	
TECHUSE 12	.755	
TECHUSE 13		.461
TECHUSE 14	.733	
TECHUSE 15	.763	

Table 4.38: TECH USE: Extraction Method: Principal Component Analysis
Rotation Method: Varimax with Kaiser Normalization

In Table 4.39, the two-component model structure was analyzed for the Teachers' perceived level of ability to use technology (TECHUSE). The components support the concept that the technology items loaded on to component 1 ***Specific Use: Inclusion*** (for students with disabilities) and the items loaded on to component 2: G***eneral Use*** (all students).

The components would represent the 2-factor model of the TECH USE

Component 1: Specific Use: Inclusion Technology

Item 8: Text to speech word processors.
Item 9: Text scan and read software
Item 11: Universally designed assessments
Item 12: Universally designed learning
Item 14: Voice recognition software
Item 15: Word prediction software

Component 2: General Use

Item 2: ebooks
Item 4: General accessibility options
Item 5: Multimedia programs
Item 6: Spelling and grammar checking software

**Item 1, 3, 7, and 10 both had similar loadings.*

Table 4.39 Two-Component Model of TECH USE

TECH NEED

Teachers' Perceived Level of Need for Technology

The highest average ratings were TECH NEED 5 Multimedia with a mean score of 2.34 and TECH NEED 6 Spelling and Grammar Checking with a mean score of 2.54. These average ratings indicate teachers perceive that they "rarely need" and "frequently need" these technology programs. The TECH NEED data indicated that teachers do not perceive themselves as having a "frequently need" or "critically need" for technology (Table 4.40).

VARIABLE	N	MEAN	SD	S
TECH NEED 1 (alternative keyboard)	219	1.36	.630	.397
TECH NEED 2 (ebooks)	219	1.77	.890	.792
TECH NEED 3 (electronic concept mapping)	215	1.59	.756	.571
TECH NEED 4 (general accessibility options)	217	1.66	.819	.670
TECH NEED 5* (multimedia programs)	217	2.34	.974	.948
TECH NEED 6* (spelling & grammar checking)	218	2.54	1.030	1.061
TECH NEED 7 (text readers and digital text)	218	1.82	.902	.814
TECH NEED 8 (text to speech word processors)	218	1.75	.897	.805
TECH NEED 9 (text scan & read software)	218	1.61	.843	.710
TECH NEED 10 (tutorial and scaffolding software)	217	1.86	.952	.907
TECH NEED 11 (universally designed assessments)	216	1.68	.880	.774
TECH NEED 12 (universally designed learning)	218	1.61	.863	.745
TECH NEED 13 (video streaming and podcasts)	212	1.39	.689	.475
TECH NEED 14 (voice recognition software)	217	1.81	.941	.885
TECH NEED 15 (word prediction software)	215	1.50	.760	.578

Table 4.40: TECH NEED Means, Standard Deviation and Variance
Perceived level of need: 1 = no need, 2 = rarely need, 3 = frequently need and 4 = critically need

Reliability

Tech Need: Teachers' Perceived Level of Need for Technology

The results of the factor analysis revealed that these teachers perceived the need for technology as being for specific use technology or universal design technology. The reliabilities (see Table 4.41) were calculated based on the two-component model determined through the principal component analysis of the data collected on the teachers' perceived need for technology. The reliability coefficient was .890 for component one: specific use, .837 for component two: universal design, and .939 for the total scale.

SCALES	CRONBACH'S ALPHA	MEAN	SD	NO. ITEMS
Component 1: Specific Use: Inclusion	.890	8.24	3.43	5
Item 1: Alternative keyboards				
Item 2: Ebooks				
Item 7: Text readers and digital text				
Item 8: Text to speech word processors				
Item 9: Text scan and read software				
Component 2: Universal Design	.837	5.08	2.32	3
Item 11: Universally designed assessments				
Item 12: Universally designed learning				
Item 14: Voice recognition software				
TECH NEED Total Scale (All Items 1-15)	.939	26.14	9.42	15

Table 4.41: Technology Need Reliability Cronbach's Alpha
**Items 3, 4, 5, 6, 10, 13 and 15 had similar loadings on both components.*

Principal Component Analysis

Technology Need: 2-Factor Model

The principal component analysis (PCA), used for data reduction, enabled the researcher to examine *TECHNOLOGY NEED* to determine how participants responded to the different items [technology].

Eigenvalues. The results of the PCA using eigenvalues > or = to 1.0 resulted in the subscales of the TSES being compromised. The amount of variance extracted by the two components accounted for 62.96 percent of the total variance and the Scree plot (see Appendix G) supports the two-component model. Component one with an eigenvalue of 5.38 accounts for 35.86 percent of the variance, component two with an eigenvalue of 4.06 accounts for 27.09 percent of the variance for a total of 62.96 percent of the total variance (Table 4.42).

COMPONENT	**INITIAL EIGENVALUES**		
	Total	% Variance	Cumulative %
1	5.38	35.86	35.86
2	4.06	27.09	62.96
3	.97	6.46	69.43
4	.73	4.92	74.35

Table 4.42: TECHNEED: Extraction Method: Principal Component Analysis – Orthogonal Rotation

Rotation

In conducting the principal component analysis, both orthogonal and oblique rotations were completed. Following these analyses, the orthogonal rotation was selected because of the following: (1) low correlations between factors as shown in the oblique rotation, (2) the orthogonal rotation provided simple structure, and (3) the orthogonal rotation provided substantial and meaningful structure. The data obtained in this study would supported the two-component model of TECH NEED (see Table 4.43).

Rotated Component Matrix

ITEM	**COMPONENT**	
	1	2
TECHNEED 1	.634	
TECHNEED 2	.698	
TECHNEED 3	.542	.517
TECHNEED 4	.456	.546
TECHNEED 5		.564
TECHNEED 6	.531	
TECHNEED 7	.897	
TECHNEED 8	.849	
TECHNEED 9	.800	
TECHNEED 10	.648	.472
TECHNEED 11		.808
TECHNEED 12		,778
TECHNEED 13	.646	.478
TECHNEED 14		.775
TECHNEED 15	.540	.583

Table 4.43: TECH **NEED: Extraction Method: Principal Component Analysis**
Rotation Method: Varimax with Kaiser Normalization

In the two-component model structure analyzed for the teachers' perceived level of need for technology (TECH NEED), component one identified items for ***Specific Use: Inclusion*** (for students with disabilities) including: alternative keyboards, ebooks, text readers and digital text, text scan and read software, text to speech word processors. Component two identified items for ***Universal Design:*** universally designed assessments, universally designed learning, and voice recognition software (Table 4.44). The items (technology), identified for "general use" in the principal component analysis of TECHUSE, were the items not included in the principal component analysis for TECH NEED. The data did not support a need for technology for general use. However, the data supported some level of need for technology for students with disabilities.

The components would represent the 2-component model of the TECH NEED

Component 1: Specific Use: Inclusion Technology

Item 1:Alternative keyboard
Item 2: Ebooks
Item 7: Text readers and digital text
Item 8: Text to speech word processors
Itm 9: Text scan and read software

Component 2: Universal Design

Item 11: Universally designed assessments
Item 12: Universally designed learning
Item 14: Voice recognition software

**Items 3, 4, 5, 6, 10, 13 and 15 had similar loadings on both components*

Table 4.44: TECH NEED Principal Components Analysis

Multiple Regression Analysis

Tech Use and Tech Need.

The strategy for analysis was to use multiple regression anaylsis to determine the saliency of the predictor variables. Tech Use and Tech Need would identify the teachers' perceived ability to use technology and their perceived level of need for technology. The means and standard deviations for the predictor and criterion variables in the study are found in table 4.45.

VARIABLE	MEAN	SD	N
I-TSES	100.41	20.24	131
TSES	88.40	11.94	131
I-Collective	66.64	13.56	131
Attitude	17.90	3.88	131
TechUse	26.44	8.71	131
Quality of Teacher Preparation (Q-T-Prep)	23.76	8.62	131
TechNeed	26.29	9.27	131
Male	.29	.45	131
Female*			
Years of Teaching Experience > 3	33	.47	131
Years of Teaching Experience < = 3*			
African American/Black	.03	.17	131
Alaskan/American Indian	.00	.00	131
Asian/Pacific Islander	.00	.00	131
Hispanic	.02	.15	131
Caucasian*			
Special Education	.15	.36	131
General Education*			
Licensure for Present Position	.90	.30	131
Licensure Not for Present Position*			
Praxis II (Content) Yes	.91	.27	131
Praxis II No*			
Praxis II (Content) Passed for Present Position	.88	.31	131
Praxis II Not for Present Position*			
Praxis II PLT	.89	.30	131
Praxis II PLT No*			
Praxis III Passed	.78	.41	131
Praxis III No*			
Masters Degree	.37	.48	131
Bachelors Degree*			
Grades P-3	.23	.42	131
Grades 4-6	.14	.35	131
Grades 7-8	.15	.36	131
Grades P-12	.03	.19	131
Grades 9-12*			
Specific Disabilities Included	1.92	.64	131
Urban	.21	.41	131
Rural	.24	.43	131
Suburban*			
Number of Students with Disabilities	8.06	10.63	131
Number of Students with IEPs	7.26	10.27	131
Number of Students with IEPs Included	7.54	10.13	131

Table 4.45: FULL MODEL Means and Standard Deviations for Multiple Regression Analysis
*Reference groups for the predictor variables that have been dummy coded for inclusion in the multiple regression analysis: Gender: Female; Years of Teaching Experience < = 3; race Caucasian; Licensure: General Education; Licensure not for present position, Yes; Praxis Exams: Praxis II No, Praxis II not for present position, Praxis II PLT No, Praxis III No; Degrees: Bachelors Degree; Classroom Grade: Grades 9-12, and Location: Suburban.

The full model for the multiple regression analysis was used to answer research all the research questions. Table 4.46 provides the correlation matrix for the Teachers' Sense of Inclusion Efficacy and the predictor variables including TECH USE and TECH NEED. The size of the matrix was quite large with all of the predictor variables included in the multiple regression analysis and the full correlation matrix is found in Appendix F.

The data indicate a "low" relationship between the predictor variable TECH USE .269 and the criterion variable Teachers Sense of Inclusion Efficacy (ITSES) and a "very low" relationship between the predictor variable TECH NEED .134 and the criterion variable Teachers' Sense of Inclusion Efficacy. Bartz (1999) suggests values of .20 to .40 are indicative of low relationships and values of .20 or lower are indicative of a very low relationship (p. 184).

Variable	**I-TSES**	**TSES**	**I-Collective**	**Attitude**	**TECH USE**	**Q-T PREP**	**TECH NEED**	**Male**	**> 3 Yrs**
I-TSES	1.000								
TSES	.637	1.000							
I-COLLECTIVE	.455	.282	1.000						
Attitude	.511	.273	.215	1.000					
TECH USE	.269	.149	.252	.029	1.000				
Q-T-Prep	.207	.165	.258	.028	.086	1.000			
TECH NEED	.134	.049	-.012	.088	.356	.067	1.000		
Male	.101	.049	.114	-.114	.088	.103	.005	1.000	
> 3 Yrs	.001	.003	.071	.014	.031	-.151	-.081	-.020	1.000

Table 4.46: Correlations Matrix for Multiple Regression
The correlation matrix shown above provides only applicable sections appropriate for this question. The full correlation matrix is provided in APPENDIX F

Interpretation of the full model (Table 4.47) indicate an R value of .817 (Coefficient of multiple correlation). There is a very high relationship between Teachers' Sense of Inclusion Efficacy (criterion variable) and the linear combination of all of the predictor variables. The R^2 (Coefficient of determination) for the full model was .667 or the proportion of variance in the I-TSES (criterion variable) explained by the linear combination of the predictor variables. Sixty-six percent of the variance in I-TSES accounted for by the linear combination of the predictor variables. This value indicates a goodness of fit for the linear regression model. Multicollinearity was not a problem and the predictor variables were not linear combinations of the other independent variables. The tolerance .707 and the variance inflation factor (VIF) 1.41 indicate that there were no problems of multicollinearity among the predictor variables for TECH USE. The tolerance .669 and the variance inflation factor (VIF) 1.496 indicate that there were no problems of multicollinearity among the predictor variables for TECH NEED. The standard error also indicated goodness of fit for the full model. All assumptions about residuals for the full model included: residuals are independent, residuals have a mean of zero, residuals are normally distributed, residuals have a constant variance, and residuals not correlated with the predictor variables.

Unstandardized B for TECH USE in the full model equals .302. For a one-unit increase in TECH USE, there is an expected increase in the Teachers' Sense of Inclusion Efficacy (I-TSES) (criterion variable) of .302 points, when all other predictor variables held constant.

The unstandardized B for TECH NEED in the full model = -.013. For a one-unit increase in TECH NEED there is an expected decrease in the I-TSES of -.013 points, when all other predictor variables held constant. The unstandardized B coefficients represent raw scores that are not standardized and each scale was different.

The Beta coefficient for the TECH USE .130 indicated a "very low" relationship. The Beta coefficient for TECH NEED -.006 indicated a "very low" relationship. Based on the Beta coefficients, the standardized scores allowed the researcher to look at the relative importance of the predictor variables. This was essential to the analysis because the scales measuring the different predictor variables are all different. The Beta coefficient for TECH USE represented a low relationship of TECH USE on the criterion variable the Teachers' Sense of Inclusion Efficacy Scale (I-TSES). The Beta coefficient for TECH NEED represented very low relationship of TECH NEED with the criterion variable the Teachers' Sense of Inclusion Efficacy.

The partial correlation coefficient of .186 for TECH USE indicated a very low correlation between the predictor variable and the criterion variable while controlling for the effect of the other predictor variables in the model. The partial correlation coefficient of -.008 for TECH NEED indicated a very low correlation between the predictor variable TECH NEED and the criterion variable while controlling for the effect of the other predictor variables in the model.

The sample of respondents (227) to this online survey research with a response rate of 16.3 percent was not sufficient to allow for the use of inferential statistics, because the researcher could not be confident that respondents were representative of the population.

FULL MODEL	Unstandardized Coefficients B	Standard Error	Standardized Coefficients Beta	Correlation Partial
(constant)	-26.691	12.799		
TSES	.799	.118	.471	555
I-Collective	.260	.105	.174	.237
Attitude	1.742	.360	.335	.431
TechUse	.302	.157	.130	.186
Q-TeachPrep	.111	.165	.047	.066
TechNeed	-.013	.152	-.006	-.008
Male*	4.789	3.085	.109	.151
> 3 Years Teaching	-2.563	2.810	-.061	-.090
African American/Black*	-.305	8.155	-.003	-.004
Hispanic	-2.084	8.751	-.015	-.023
Special Education	3.046	4.423	.054	.068
Licensure for Present Position*	-9.178	4.666	-.136	-.190
Praxis II Yes*	-4.301	9.959	-.059	-.043
Praxis II Present Position*	9.373	8.313	.148	.110
Praxis II PLT*	-7.706	7.442	-.122	-.102
Praxis III Passed*	1.384	4.426	.028	.031
Masters Degree*	-.807	2.573	-.019	-.031
Grades P-3	2.776	3.740	.059	.079
Grades 4-6	2.662	3.949	.046	.065
Grades 7-8	-2.250	3.732	-.040	-.059
Grades P-12*	-5.730	7.122	-.054	-.079
Specific Disabilities Included	3.102	2.418	.098	.125
Urban*	2.300	3.516	.047	.064
Rural	-3.137	3.207	-.067	-.096
No. of Students w/ Disabilities	.242	.352	.127	.068
No.of Students w/ IEPs	-.194	.602	-.098	-.032
No. of Students w/ IEPs Incl	-.006	.552	-.003	-.001

R = .817, R^2 = .667, Standard Error of the Estimate = 13.12

Table 4.47: FULL MODEL Multiple Regression: Regression values of Teachers Sense of Efficacy (TSES); Collective Inclusion Efficacy (I-Collective); Attitudes Against Inclusion (Attitude); Quality of Teacher Prep (Q-T-Prep); Ability to Use Technology (TechUse); and Need for Technology (TechNeed); Years of Teaching Experience; Characteristics of Teachers and the Characteristics of Teaching Assignment on the levels of the dependent variable: Teachers' Sense of Inclusion Efficacy (I-TSES).

***Dummy Coded Predictor Variables: Reference groups for the predictor variables that have been dummy coded for inclusion in the multiple regression analysis: Gender: Female; Years of Teaching Experience < = 3; Race Caucasian; Licensure: General Education; Licensure not for present position, Yes; Praxis Exams: Praxis II No, Praxis IInot for present position, Praxis II PLT No, Praxis III No; Degrees: Bachelors Degree; Classroom Grade: Grades 9-12, and Location: Suburban.

Research Question 5: What is the relationship between the teachers' perception of the quality of their teacher preparation program and the Teachers' Sense of Inclusion Efficacy?

The Quality of Teacher Preparation had seven items to measure the teachers' attitudes concerning the quality of their teacher preparation programs in Ohio colleges and universities. The reliability of the questions was for the Quality of Teacher Preparation was alpha = .888 (see Table 4.48). The principal component analysis was conducted and the results supported a one-component model.

SCALES	**CRONBACH'S ALPHA**	**MEAN**	**SD**	**NO. ITEMS**
Quality of Teacher Preparation (Q-T-Prep)	.888	23.15	8.91	7

Table 4.48: Quality of Teacher Preparation Reliability Cronbach's Alpha Teachers' Sense of Efficacy (Tschannen-Moran and Woolfolk Hoy, 2001) and the Teachers' Sense of Inclusion Efficacy.

Multiple Regression Analysis

The following Table 4.49 provides the means and standard deviations for the predictor variables in the study. The full model for the multiple regression analysis was used to answer research question five. The strategy for analysis was to use multiple regression analysis to determine the saliency of the predictor variable, the Quality of Teacher Preparation.

VARIABLE	MEAN	SD	N
I-TSES	100.41	20.24	131
TSES	88.40	11.94	131
I-Collective	66.64	13.56	131
Attitude	17.90	3.88	131
TechUse	26.44	8.71	131
Quality of Teacher Preparation (Q-T-Prep)	23.76	8.62	131
TechNeed	26.29	9.27	131
Male	.29	.45	131
Female*			
Years of Teaching Experience > 3	33	.47	131
Years of Teaching Experience < = 3*			
African American/Black	.03	.17	131
Alaskan/American Indian	.00	.00	131
Asian/Pacific Islander	.00	.00	131
Hispanic	.02	.15	131
Caucasian*			
Special Education	.15	.36	131
General Education*			
Licensure for Present Position	.90	.30	131
Licensure Not for Present Position*			
Praxis II (Content) Yes	.91	.27	131
Praxis II No*			
Praxis II (Content) Passed for Present Position	.88	.31	131
Praxis II Not for Present Position*			
Praxis II PLT	.89	.30	131
Praxis II PLT No*			
Praxis III Passed	.78	.41	131
Praxis III No*			
Masters Degree	.37	.48	131
Bachelors Degree*			
Grades P-3	.23	.42	131
Grades 4-6	.14	.35	131
Grades 7-8	.15	.36	131
Grades P-12	.03	.19	131
Grades 9-12*			
Specific Disabilities Included	1.92	.64	131
Urban	.21	.41	131
Rural	.24	.43	131
Suburban*			
Number of Students with Disabilities	8.06	10.63	131
Number of Students with IEPs	7.26	10.27	131
Number of Students with IEPs Included	7.54	10.13	131

Table 4.49: FULL MODEL Means and Standard Deviations for Multiple Regression Analysis
*Reference groups for the predictor variables that have been dummy coded for inclusion in the multiple regression analysis: Gender: Female; Years of Teaching Experience < = 3; race Caucasian; Licensure: General Education; Licensure not for present position, Yes; Praxis Exams: Praxis II No, Praxis II not for present position, Praxis II PLT No, Praxis III No; Degrees: Bachelors Degree; Classroom Grade: Grades 9-12, and Location: Suburban.

The correlation matrix for the I-TSES (Teachers' Sense of Inclusion Efficacy Scale) and the quality of teacher preparation was understandably large based on all of the predictor variables included in the multiple regressions analysis. The full correlation matrix is found in Appendix F.

The multiple regression analysis indicated the Quality of Teacher Preparation had low relationship with the Teachers Sense of Inclusion Efficacy (I-TSES) with a correlation coefficient of .207 (see Table 4.50). Bartz (1999) suggests values of .20 to .40 indicate a low relationship (p. 184).

VARIABLE	**I-TSES**	**TSES**	**I-Collective**	**Attitude**	**TECH USE**	**Q-T PREP**	**TECH NEED**	**Male**	**> 3 Yrs**
I-TSES	1.000								
TSES	.637	1.000							
I-COLLECTIVE	.455	.282	1.000						
Attitude	.511	.273	.215	1.000					
TECH USE	.269	.149	.252	.029	1.000				
Q-T-Prep	.207	.165	.258	.028	.086	1.000			
TECH NEED	.134	.049	-.012	.088	.356	.067	1.000		
Male	.101	.049	.114	-.114	.088	.103	.005	1.000	
> 3 Yrs	.001	.003	.071	.014	.031	-.151	-.081	-.020	1.000

Table 4.50: Correlations Matrix for Multiple Regression
The correlation matrix shown above provides only applicable sections appropriate for this question. The full correlation matrix is provided in APPENDIX F

Interpretation of the full model (Table 4.51) indicated an R value of .817 (Coefficient of multiple correlation). There is a strong relationship between Teachers' Sense of Inclusion Efficacy (criterion variable) and the linear combination of the all of the predictor variables. The R^2 (Coefficient of determination) for the full model was .667 or the proportion of variance in the I-TSES (criterion variable) explained by the linear combination of all of the predictor variables. Sixty-six percent of the variance in I-TSES accounted for by the linear combination of the predictor variables. This value indicates a goodness of fit for the linear regression model.

Multicollinearity was not a problem and the predictor variables were not linear combinations of the other independent variables. The tolerance .650 and the variance inflation factor (VIF) 1.537 indicate that there were no problems of multicollinearity among the predictor variables.

The standard error also indicated goodness of fit for the full model. All assumptions about residuals for the full model included: residuals are independent, residuals have a mean of zero, residuals are normally distributed, residuals have a constant variance, and residuals not correlated with the predictor variables.

Unstandardized B for Q-TeachPrep in the full model equals .111. For a one-unit increase in the Quality of Teacher Preparation there is an expected increase in the criterion variable the Teachers' Sense of Inclusion Efficacy of .111 points, when all other predictor variables held constant.

The Beta coefficient for the TSES was .047 that indicates a very low relationship. Based on the Beta coefficients, the standardized scores allow the researcher to look at the relative importance of the predictor variables. This was essential to the analysis because the scales measuring the different predictor variables are all different. The Beta score for Quality of Teacher Preparation represents no real influence of this variable on the criterion variable the Teachers' Sense of Inclusion Efficacy Scale (I-TSES).

The partial correlation coefficient of .066 indicated a very low correlation between the predictor variable, Quality of Teacher Preparation and the criterion variable while controlling for the effect of the other predictor variables in the model.

The sample of respondents (227) to this online survey research with a response rate of 16.3 percent was not sufficient to allow for the use of inferential statistics, because the researcher could not be confident that respondents were representative of the population.

FULL MODEL	**Unstandardized Coefficients** B	**Standard Error**	**Standardized Coefficients** Beta	**Correlation Partial**
(constant)	-26.691	12.799		
TSES	.799	.118	.471	555
I-Collective	.260	.105	.174	.237
Attitude	1.742	.360	.335	.431
TechUse	.302	.157	.130	.186
Q-TeachPrep	.111	.165	.047	.066
TechNeed	-.013	.152	-.006	-.008
Male*	4.789	3.085	.109	.151
> 3 Years Teaching	-2.563	2.810	-.061	-.090
African American/Black*	-.305	8.155	-.003	-.004
Hispanic	-2.084	8.751	-.015	-.023
Special Education	3.046	4.423	.054	.068
Licensure for Present Position*	-9.178	4.666	-.136	-.190
Praxis II Yes*	-4.301	9.959	-.059	-.043
Praxis II Present Position*	9.373	8.313	.148	.110
Praxis II PLT*	-7.706	7.442	-.122	-.102
Praxis III Passed*	1.384	4.426	.028	.031
Masters Degree*	-.807	2.573	-.019	-.031
Grades P-3	2.776	3.740	.059	.079
Grades 4-6	2.662	3.949	.046	.065
Grades 7-8	-2.250	3.732	-.040	-.059
Grades P-12*	-5.730	7.122	-.054	-.079
Specific Disabilities Included	3.102	2.418	.098	.125
Urban*	2.300	3.516	.047	.064
Rural	-3.137	3.207	-.067	-.096
No. of Students w/ Disabilities	.242	.352	.127	.068
No.of Students w/ IEPs	-.194	.602	-.098	-.032
No. of Students w/ IEPs Incl	-.006	.552	-.003	-.001

$R = .817$, $R^2 = .667$, Standard Error of the Estimate = 13.12

Table 4.51: FULL MODEL Multiple Regression: Regression values of Teachers Sense of Efficacy (TSES); Collective Inclusion Efficacy (I-Collective); Attitudes Against Inclusion (Attitude); Quality of Teacher Prep (Q-T-Prep); Ability to Use Technology (TechUse); and Need for Technology (TechNeed); Years of Teaching Experience; Characteristics of Teachers and the Characteristics of Teaching Assignment on the levels of the dependent variable: Teachers' Sense of Inclusion Efficacy (I-TSES).

*****Dummy Coded Predictor Variables: Reference groups for the predictor variables that have been dummy coded for inclusion in the multiple regression analysis: Gender: Female; Years of Teaching Experience < = 3; Race Caucasian; Licensure: General Education; Licensure not for present position, Yes; Praxis Exams: Praxis II No, Praxis IInot for present position, Praxis II PLT No, Praxis III No; Degrees: Bachelors Degree; Classroom Grade: Grades 9-12, and Location: Suburban.

Research Question 6: What are the relationships among the characteristics of the teaching assignment and Teachers' Sense of Inclusion Efficacy?

This section only provided the multiple regression analysis to determine the strength of the relationship among the predictor variables, characteristics of teaching assignment and the criterion variable the Teachers' Sense of Inclusion Efficacy, I-TSES. The characteristics of the teaching assignment were presented in section one of this chapter to provide context and to situate the teachers who participated in the study..

Multiple Regression Analysis

The following Table 4.52 provides the means and standard deviations for the predictor variables in the study. The multiple regression analyzed data collected from the respondents in this study and the relationship of the Characteristics of the Teaching Assignment and the Teachers' Sense of Inclusion Efficacy.

VARIABLE	MEAN	SD	N
I-TSES	100.41	20.24	131
TSES	88.40	11.94	131
I-Collective	66.64	13.56	131
Attitude	17.90	3.88	131
TechUse	26.44	8.71	131
Quality of Teacher Preparation (Q-T-Prep)	23.76	8.62	131
TechNeed	26.29	9.27	131
Male	.29	.45	131
Female*			
Years of Teaching Experience > 3	33	.47	131
Years of Teaching Experience < = 3*			
African American/Black	.03	.17	131
Alaskan/American Indian	.00	.00	131
Asian/Pacific Islander	.00	.00	131
Hispanic	.02	.15	131
Caucasian*			
Special Education	.15	.36	131
General Education*			
Licensure for Present Position	.90	.30	131
Licensure Not for Present Position*			
Praxis II (Content) Yes	.91	.27	131
Praxis II No*			
Praxis II (Content) Passed for Present Position	.88	.31	131
Praxis II Not for Present Position*			
Praxis II PLT	.89	.30	131
Praxis II PLT No*			
Praxis III Passed	.78	.41	131
Praxis III No*			
Masters Degree	.37	.48	131
Bachelors Degree*			
Grades P-3	.23	.42	131
Grades 4-6	.14	.35	131
Grades 7-8	.15	.36	131
Grades P-12	.03	.19	131
Grades 9-12*			
Specific Disabilities Included	1.92	.64	131
Urban	.21	.41	131
Rural	.24	.43	131
Suburban*			
Number of Students with Disabilities	8.06	10.63	131
Number of Students with IEPs	7.26	10.27	131
Number of Students with IEPs Included	7.54	10.13	131

Table 4.52: FULL MODEL Means and Standard Deviations for Multiple Regression Analysis

*Reference groups for the predictor variables that have been dummy coded for inclusion in the multiple regression analysis: Gender: Female; Years of Teaching Experience < = 3; race Caucasian; Licensure: General Education; Licensure not for present position, Yes; Praxis Exams: Praxis II No, Praxis II not for present position, Praxis II PLT No, Praxis III No; Degrees: Bachelors Degree; Classroom Grade: Grades 9-12, and Location: Suburban.

The dummy coded predictor variables under Characteristics of Teaching Assignment and the criterion variable Teachers' Sense of Inclusion Efficacy, I-TSES had "very low" relationships from .001 to .155 (see full correlation matrix in Appendix F). The data (see Table 4.53) indicate very low correlations among the predictor variables, grade level, specific disabilities, and location with the criterion variable Teachers Sense of Inclusion Efficacy (I-TSES). The predictor variables, number of students with disabilities with and without Individualized Education Plans (IEPs) had correlation coefficients from .204 to .247, indicating "low" relationships with the criterion variable Teachers' Sense of Inclusion Efficacy. Bartz (1999) suggests values of .20 and lower are "very low" relationships and values of .20 to .40 are "low" relationships.

VARIABLE	I-TSES	TSES	I-Collective	Attitude	TECH USE	Q-T PREP	TECH NEED
I-TSES	1.000						
Grades P-3	-.001	.007	.039	-.038	-.138	-.127	-.029
Grades 4-6	.065	-.072	-.084	-.041	.041	.006	.039
Grades 7-8	-.063	-.045	.024	.010	.079	.007	.069
Grades P-12	-.028	.067	.026	-.016	-.079	-.036	-.092
Spec.Dis.	.155	-.057	.157	.151	.178	-.060	.237
Urban	-.001	.049	-.012	.088	.356	.067	-.039
Rural	-.152	-.075	-.149	-.051	-.029	.076	.063
No.Dis	.204	-.017	.079	.328	.079	-.115	.173
IEPs	.230	.045	.092	.351	.068	.152	.180
IEPs Incl.	.247	.054	.126	.363	.082	.174	.193

Table 4.53: Correlations Matrix for Multiple Regression –Characteristics of Teaching Assignment
The correlation matrix shown above provides only applicable sections appropriate for this question. The full correlation matrix is provided in APPENDIX F.

Interpretation of the full multiple regression model (Table 4.54) indicate an R value of .817 (Coefficient of multiple correlation). There is a strong relationship between I-TSES (criterion variable) and the linear combination of the all the predictor variables. The R^2 (Coefficient of determination) for the full model was .665 or the proportion of variance in the I-TSES (criterion variable) explained by the linear combination of the predictor variables. Sixty-six percent of the variance in I-TSES accounted for by the linear combination of the predictor variables. This value indicates a goodness of fit for the linear regression model. Multicollinearity was a problem for some of the predictor variables, specifically, number of disabilities with and without IEPs and included in the classroom for instruction. The tolerance values ranged from .035 to .094 and variance inflation factor (VIF) values ranged from 10.610 to 28.854.

The Beta coefficient for the characteristics of teaching assignment ranged from -.003 to .127. Based on the Beta coefficients, the standardized scores allow the researcher to look at the relative importance of the predictor variables. This was essential to the analysis because the scales measuring the different predictor variables are all different. The Beta scores for the characteristics of the teaching assignment represented “very low” relationship with the criterion variable the Teachers’ Sense of Inclusion Efficacy Scale (I-TSES).

The partial correlation coefficients for the characteristics of the teaching assignment ranged from -.001 to .125, indicating “very low” relationships with the criterion variable.

The sample of respondents (227) to this online survey research with a response rate of 16.3 percent was not sufficient to allow for the use of inferential statistics, because the researcher could not be confident that respondents were representative of the population.

FULL MODEL	**Unstandardized Coefficients** B	**Standard Error**	**Standardized Coefficients** Beta	**Correlation Partial**
(constant)	-26.691	12.799		
TSES	.799	.118	.471	555
I-Collective	.260	.105	.174	.237
Attitude	1.742	.360	.335	.431
TechUse	.302	.157	.130	.186
Q-TeachPrep	.111	.165	.047	.066
TechNeed	-.013	.152	-.006	-.008
Male*	4.789	3.085	.109	.151
> 3 Years Teaching	-2.563	2.810	-.061	-.090
African American/Black*	-.305	8.155	-.003	-.004
Hispanic	-2.084	8.751	-.015	-.023
Special Education	3.046	4.423	.054	.068
Licensure for Present Position*	-9.178	4.666	-.136	-.190
Praxis II Yes*	-4.301	9.959	-.059	-.043
Praxis II Present Position*	9.373	8.313	.148	.110
Praxis II PLT*	-7.706	7.442	-.122	-.102
Praxis III Passed*	1.384	4.426	.028	.031
Masters Degree*	-.807	2.573	-.019	-.031
Grades P-3	2.776	3.740	.059	.079
Grades 4-6	2.662	3.949	.046	.065
Grades 7-8	-2.250	3.732	-.040	-.059
Grades P-12*	-5.730	7.122	-.054	-.079
Specific Disabilities Included	3.102	2.418	.098	.125
Urban*	2.300	3.516	.047	.064
Rural	-3.137	3.207	-.067	-.096
No. of Students w/ Disabilities	.242	.352	.127	.068
No.of Students w/ IEPs	-.194	.602	-.098	-.032
No. of Students w/ IEPs Incl	-.006	.552	-.003	-.001

$R = .817$, $R^2 = .667$, Standard Error of the Estimate = 13.12

Table 4.54: FULL MODEL Multiple Regression: Regression values of Teachers Sense of Efficacy (TSES); Collective Inclusion Efficacy (I-Collective); Attitudes Against Inclusion (Attitude); Quality of Teacher Prep (Q-T-Prep); Ability to Use Technology (TechUse); and Need for Technology (TechNeed); Years of Teaching Experience; Characteristics of Teachers and the Characteristics of Teaching Assignment on the levels of the dependent variable: Teachers' Sense of Inclusion Efficacy (I-TSES).

*****Dummy Coded Predictor Variables: Reference groups for the predictor variables that have been dummy coded for inclusion in the multiple regression analysis: Gender: Female; Years of Teaching Experience < = 3; Race Caucasian; Licensure: General Education; Licensure not for present position, Yes; Praxis Exams: Praxis II No, Praxis IInot for present position, Praxis II PLT No, Praxis III No; Degrees: Bachelors Degree; Classroom Grade: Grades 9-12, and Location: Suburban.

Research Question 7: What are the relationships among the characteristics of teachers and Teachers' Sense of Inclusion Efficacy?

This section only provided the multiple regression analysis to determine the strength of the relationship among the predictor variables, characteristics of teachers and the criterion variable the Teachers' Sense of Inclusion Efficacy, I-TSES. The characteristics of teachers were presented in section one of this chapter to provide context and to situate the teachers who participated in this study..

Multiple Regression Analysis

The following Table 4.55 provides the means and standard deviations for the predictor variables in the study. The multiple regression analyzed data collected from the respondents in this study and the relationship of the Characteristics of Teachers and the Teachers' Sense of Inclusion Efficacy.

VARIABLE	MEAN	SD	N
I-TSES	100.41	20.24	131
TSES	88.40	11.94	131
I-Collective	66.64	13.56	131
Attitude	17.90	3.88	131
TechUse	26.44	8.71	131
Quality of Teacher Preparation (Q-T-Prep)	23.76	8.62	131
TechNeed	26.29	9.27	131
Male	.29	.45	131
Female*			
Years of Teaching Experience > 3	33	.47	131
Years of Teaching Experience < = 3*			
African American/Black	.03	.17	131
Alaskan/American Indian	.00	.00	131
Asian/Pacific Islander	.00	.00	131
Hispanic	.02	.15	131
Caucasian*			
Special Education	.15	.36	131
General Education*			
Licensure for Present Position	.90	.30	131
Licensure Not for Present Position*			
Praxis II (Content) Yes	.91	.27	131
Praxis II No*			
Praxis II (Content) Passed for Present Position	.88	.31	131
Praxis II Not for Present Position*			
Praxis II PLT	.89	.30	131
Praxis II PLT No*			
Praxis III Passed	.78	.41	131
Praxis III No*			
Masters Degree	.37	.48	131
Bachelors Degree*			
Grades P-3	.23	.42	131
Grades 4-6	.14	.35	131
Grades 7-8	.15	.36	131
Grades P-12	.03	.19	131
Grades 9-12*			
Specific Disabilities Included	1.92	.64	131
Urban	.21	.41	131
Rural	.24	.43	131
Suburban*			
Number of Students with Disabilities	8.06	10.63	131
Number of Students with IEPs	7.26	10.27	131
Number of Students with IEPs Included	7.54	10.13	131

Table 4.55: FULL MODEL Means and Standard Deviations for Multiple Regression Analysis

*Reference groups for the predictor variables that have been dummy coded for inclusion in the multiple regression analysis: Gender: Female; Years of Teaching Experience < = 3; race Caucasian; Licensure: General Education; Licensure not for present position, Yes; Praxis Exams: Praxis II No, Praxis II not for present position, Praxis II PLT No, Praxis III No; Degrees: Bachelors Degree; Classroom Grade: Grades 9-12, and Location: Suburban.

The data (see Table 4.56) indicate that these dummy coded predictor variables had very low relationships with the criterion variable, Teachers' Sense of Inclusion Efficacy (I-TSES) with correlation coefficients ranging from .001 to .172. Bartz (1999) suggests values of .20 and lower are "very low" relationships and values of .20 to .40 are "low" relationships (See the Full Correlation Matrix in Appendix F)..

VARIABLE	I-TSES	TSES	I-Collect	Attitude	TECHUse	Q-T-Prep	TECHNeed
I-TSES	1.000	.637	.455	.511	.269	.207	.134
> 3	.001	.003	.071	.014	.031	-.151	-.081
African Amer.	.181	.080	-.189	.061	.221	.206	.278
Hispanic	.053	.021	-.083	.056	.069	-.115	-.111
Spec.Ed	.172	-.063	.140	.229	.118	.338	.175
License NOW	-.078	.016	.012	.005	.064	-.083	.013
Praxis II	.009	.043	.031	-.021	-.010	.177	.063
Praxis II PLT	-.088	-.115	-.047	.029	-.029	.157	.027 .
Praxis III	-.093	.003	.071	.014	.031	-.151	-.081
Masters	-.015	.077	-.007	-.010	-.023	.086	-.094

Table 4.56: Correlations Matrix for Multiple Regression – Characteristics of Teachers
The correlation matrix shown above provides only applicable sections appropriate for this question. The full correlation matrix is provided in APPENDIX F

Interpretation of the full model (Table 4.57) indicate an R value of .817 (Coefficient of multiple correlation). There is a strong relationship between the criterion variable Teachers' Sense of Inclusion Efficacy (I-TSES) and the linear combination of the all the predictor variables. The R^2 (Coefficient of determination) for the full model was .665 or the proportion of variance in the I-TSES (criterion variable) explained by the linear combination of the predictor variables. Sixty-six percent of the variance in I-TSES accounted for by the linear combination of the predictor variables. This value indicates a goodness of fit for the linear regression model.

Multicollinearity may be a problem for some of the dummy coded predictor variables with the tolerance values ranging from .188 to .848 and the variance inflation factor (VIF) values ranging from 1.515 to 5.806.

The Beta coefficient for the characteristics of teachers ranged from -.003 to .136. Based on the Beta coefficients, the standardized scores allow the researcher to look at the relative importance of the predictor variables. This was essential to the analysis because the scales measuring the different predictor variables are all different. The Beta scores for the characteristics of teachers represented "very low" relationships with the criterion variable the Teachers' Sense of Inclusion Efficacy Scale (I-TSES).

The partial correlation coefficients for the characteristics of teachers and teaching assignment ranged from -.023 to .151, indicating "very low" relationship with the criterion variable.

The sample of respondents (227) to this online survey research with a response rate of 16.3 percent was not sufficient to allow for the use of inferential statistics, because the researcher could not be confident that respondents were representative of the population.

FULL MODEL	Unstandardized Coefficients B	Standard Error	Standardized Coefficients Beta	Correlation Partial
(constant)	-26.691	12.799		
TSES	.799	.118	.471	555
I-Collective	.260	.105	.174	.237
Attitude	1.742	.360	.335	.431
TechUse	.302	.157	.130	.186
Q-TeachPrep	.111	.165	.047	.066
TechNeed	-.013	.152	-.006	-.008
Male*	4.789	3.085	.109	.151
> 3 Years Teaching	-2.563	2.810	-.061	-.090
African American/Black*	-.305	8.155	-.003	-.004
Hispanic	-2.084	8.751	-.015	-.023
Special Education	3.046	4.423	.054	.068
Licensure for Present Position*	-9.178	4.666	-.136	-.190
Praxis II Yes*	-4.301	9.959	-.059	-.043
Praxis II Present Position*	9.373	8.313	.148	.110
Praxis II PLT*	-7.706	7.442	-.122	-.102
Praxis III Passed*	1.384	4.426	.028	.031
Masters Degree*	-.807	2.573	-.019	-.031
Grades P-3	2.776	3.740	.059	.079
Grades 4-6	2.662	3.949	.046	.065
Grades 7-8	-2.250	3.732	-.040	-.059
Grades P-12*	-5.730	7.122	-.054	-.079
Specific Disabilities Included	3.102	2.418	.098	.125
Urban*	2.300	3.516	.047	.064
Rural	-3.137	3.207	-.067	-.096
No. of Students w/ Disabilities	.242	.352	.127	.068
No.of Students w/ IEPs	-.194	.602	-.098	-.032
No. of Students w/ IEPs Incl	-.006	.552	-.003	-.001

R = .817, R^2 = .667, Standard Error of the Estimate = 13.12

Table 4.57: FULL MODEL Multiple Regression: Regression values of Teachers Sense of Efficacy (TSES); Collective Inclusion Efficacy (I-Collective); Attitudes Against Inclusion (Attitude); Quality of Teacher Prep (Q-T-Prep); Ability to Use Technology (TechUse); and Need for Technology (TechNeed); Years of Teaching Experience; Characteristics of Teachers and the Characteristics of Teaching Assignment on the levels of the dependent variable: Teachers' Sense of Inclusion Efficacy (I-TSES).

***Dummy Coded Predictor Variables: Reference groups for the predictor variables that have been dummy coded for inclusion in the multiple regression analysis: Gender: Female; Years of Teaching Experience < = 3; Race Caucasian; Licensure: General Education; Licensure not for present position, Yes; Praxis Exams: Praxis II No, Praxis IInot for present position, Praxis II PLT No, Praxis III No; Degrees: Bachelors Degree; Classroom Grade: Grades 9-12, and Location: Suburban.

CHAPTER V

DISCUSSION

Teaching every student in the 21^{st} century may be within reach, as more and more teachers become part of the digital world out of necessity, and develop the skills needed to accomplish the task of inclusion. Essential to the integration of technology for successful inclusion of students with disabilities in the general education classroom is a vigorous and resilient sense of personal and collective efficacy for inclusion because having the technology skills alone will not ensure inclusion. This study was able to measure personal and collective efficacy for inclusion with new scales adapted from established instruments by Tschannen-Moran and Woolfolk Hoy (2001) and Goddard (2002) and used to determine the relationships among predictor variables with the criterion variable, Teachers' Sense of Inclusion Efficacy.

The sample of respondents (227) to this online survey research with a response rate of 16.3 percent was not sufficient to allow for the use of inferential statistics, because the researcher could not be confident that respondents were representative of the population. This study cannot generalize to the target population of Ohio teachers, but it can generalize to the sample of teachers who participated in the survey. Descriptive quantitative statistics were used for analyses. The diverse sample of teachers has provided a rich source of data to enable the researcher to describe the relationships among the predictor variables and the criterion variable, Teachers' Sense of Inclusion Efficacy.

This discussion will first analyze the findings in research questions four, six, and seven, because the data collected provided essential contextual information that may help in the creating a deeper understanding of the lived experiences of these teachers, and the importance of the findings to the other research questions one, two, three and five. The data support the literature reviewed in

Chapter II and create an understanding of the cyclical nature of the personal and collective efficacy but also of the relationship between the integration of technology into instructional practices that support inclusion and the inclusion of students with disabilities in the general education classrooms.

Contextual and Situational Data

The respondents were representative of rural, urban, and suburban teachers in special education and general education, teaching students with and without disabilities in all grade levels from P-3 to P-12. The sample represented the full spectrum of teachers from music teachers who travel throughout the district to teach students in all grades levels, to the instructional tutor who works with students with disabilities one-to-one or in small groups, to the regular education teacher in a self-contained classroom. The variety of teaching position codes represented in this study support the representativeness of the sample. The sample of teachers was slightly more diverse based on the state's percentages for different races. The accepting sample had teachers representing every racial group and had slightly higher percentages of Hispanics and African Americans compared to the state of Ohio. The sample had the same proportions by gender as found in the ODE comparison sample.

Research Questions 4, 6 and 7

These following contextual and situational data were highly informative even though these predictor variables had "low" (Bartz, 1999) relationships with the criterion variable.: (1) teachers ability to use accessible and assistive technology use and their perceived need for these technologies and (2) specific disabilities included in the general education classroom for instruction.

Technology Use and Need

Technology Use

Previous research predicted (Buckenmeyer, 2005; Burgsthaler, 2005; Mike, 2000; Moursand & Bielefeldt, 1999; Russell, Bebell, O'Dwyer, & O'Connor, 2003; Russell, Bebell, O'Dwyer, 2003;

Smerdon, Cronen, Lanahan, Anderson, Iannoti, Angeles, & Greene, 2000) and the subjects' responses in this study supported the teachers' inability to use the technologies listed.

The teachers had slightly above novice ability to use only two (Table 4.34) of the four technologies identified for *general use* (that is , for use with students without disabilities) in the principal component analysis (Table 4.38). These were general accessibility options and multimedia programs. The four technologies identified for general use included: (1) electronic concept mapping, (2) general accessibility options, (3) multimedia programs, and (4) spelling and grammar checking software.

The teachers perceived themselves as having no ability or less than novice ability to use the remaining 12 technologies (Table 4.34). The principal component analysis identified six of these technologies for *specific use: inclusion* (students with disabilities). The technologies identified for specific use: inclusion included: (1) text to speech word processors, (2) text scan and read software, (3) universally designed assessments, (4) universally designed learning, (5) voice recognition software, and (6) word prediction software (Table 4.38). Teachers' perceived ability to use technology had a "low" (Bartz, 1999) relationship with the criterion variable, Teachers' Sense of Inclusion Efficacy Scale.

Teachers are not able to use the technologies required to provide accessible curriculum content mandated under law (IDEA 2004, Federal Register, 2005) to students who require it to learn. This is important because teachers must learn to use the tools that will enable them to teach the students with disabilities.

Technology Need

The previous research predicted (Buckenmeyer, 2005; Burgsthaler, 2005; Mike, 2000; Moursand & Bielefeldt, 1999; Russell et al., 2003; Schacter, 1999) and the data in this study supported the teachers' view that these technologies were seen as *not needed or rarely needed* to teach. The perceived need for technology was even lower than the teachers' perceived ability to use these technologies.

The teachers' perceived *lack of need for or rare need for* the technologies listed was unexpected (See Table 4.39). The teachers' identified having less than *frequently need* but more than *rarely need* for two technologies: multimedia programs and spelling and grammar checking software. The remaining 13 technologies were identified by the teachers as *rarely need* or less than rarely needed.

The principal component analysis (PCA) for technology need (TECH NEED) was different from the factors identified in the PCA for technology use (TECH USE) (See Table 4.43). The two-component model identified these technologies in slightly different groupings. The technologies found under *specific use: inclusion* included: (1) alternative keyboards, (2) Ebooks, (3) text readers and digital text, (4) text to speech word processors, and (4) test scan and read software. The second component was labeled *universal design* because it included the following technologies: (1) universally designed assessments, (2) universally designed learning, and (3) voice recognition software.

The principal component analysis for technology need found that the component previously defined as *general use technology* (multimedia programs and spell and grammar checking software) was missing from the two factors.

The teachers expressed *no need* or *rarely need* the *specific use* and *universal design* technology. The technology that did not load onto either one of the two components included the general use technologies. Was this because they did in fact understand that there was some need for these technologies (for students with disabilities; but not strong enough of a need for them to learn to use them?

The technology need scale for the study indicated a *very low* relationship (Bartz, 1999) among the predictor variable, technology need, and the criterion variable the Teachers' Sense of Inclusion Efficacy. Why would teachers teaching in the 21st century not perceive technology as needed for teaching, especially the special education teachers—the discussion concerning the data collected on the specific disabilities of students included in the general education classroom for instruction provided some insight.

Recommendations

Schools, colleges, and departments of education (SCDEs) need to ensure that teachers have the ability to use the technologies that are required by law to be made available to students with disabilities who require curriculum and instructional content in alternative formats (IDEA 2004; Federal Register, 2005). Proactive intensive professional development might be necessary to ensure teachers in Ohio have the skills needed to integrate technology in their teaching to teach every student..

Future Research

Further research is needed to determine whether the population of teachers in Ohio schools have the same level of ability [no ability or novice ability] to use technology inasmuch as this study could not infer to the target population, because of the low response rate (16.3 percent). This study could only generalize to the sample of 227 respondents who completed the online instrument.

Specific Disabilities of Students Included in the Classroom for Instruction

Previous research predicted (Farrell, Ainscow, Howes, Frankham, Fox & Davis, 2004; Kluth, Villa & Thousand, 2002; McLeskey, Hoppey, Williamson, & Rentz, 2004) and the data from this study reported by these teachers in the sample supported the conclusion that students with disabilities are not being included in the general education classroom.

*Specific Disabilities **Included***

The specific disabilities of students included in teachers' classrooms for instruction had a "very low" relationship with the criterion variable, Teachers' Sense of Inclusion Efficacy and the other predictor variables. However, the data clearly indicated that the students most in need of the technologies identified under the principal component analysis under component one for specific use (inclusion) were not included in these teachers' classroom for instruction. Of the 14 specific disabilities defined by Ohio Department of Education for inclusion under the federal and state legislative mandates, students with only three of the specific disabilities were frequently included in teachers' general education classrooms for instruction only 28.60 percent to 52.00 percent of the time. These included students with specific learning, speech and language, and cognitive disabilities. One must be cautious about these conclusions because data were not gathered as to whether students with these specific disabilities were actually enrolled in the schools.

Specific Disabilities ***Excluded***

The predictor variable specific disabilities of students included in the general (regular) teachers' classrooms for instruction had a very low relationship (Bartz, 1999) with the criterion variable. However, the data clearly indicated that the students most in need of the technologies identified under the principal component analysis under component one for specific use (inclusion) were not frequently included in these teachers' classrooms for instruction.

Of the 14 specific disabilities defined by Ohio Department of Education for inclusion under the federal and state legislative mandates, students with eleven of the specific disabilities were frequently included in teachers' general education classrooms for instruction only 2.40 percent to 20.00 percent of the time (See Table 4.6). The specific disabilities excluded from the classroom for instruction were the following: autism, blind, Deaf, developmental disability, emotional disturbance, hearing impaired, multiple disabilities, other health impairment, traumatic head injury and visual impairment. One must be cautious about these conclusions because data were not gathered as to whether students with these specific disabilities were actually enrolled in the schools.

Cyclical Relationship

These findings are important when analyzed within the context of teachers' ability to use and the perception of their need for technology to teach every student in the 21st century. There appears to exist a cyclical relationship among tech use, tech need, and inclusion of students with disabilities. Teachers did not include students with disabilities in their classrooms for instruction, therefore, they did not need the technologies, and because the teachers did not know how to use the technologies, they maintained attitudes against inclusion and saw no need for technology, and students with disabilities continue to be excluded from their classrooms.

These teachers, with reported inability or novice ability to use technology and no need or rare need for technology coupled with the low numbers of student with disabilities included in their classrooms, did not have high efficacies for inclusion.

Findings of the Contextual and Situational Data Collected

- Teachers do not have the ability to use the technology
- Teachers do not include students who require the technology in their classrooms.
- Teachers were not familiar with the IDEA 2004 mandated National Instructional Materials Accessibility Standard (NIMAS) or the National Instructional Materials Access Center (NIMAC).
- Schools are in noncompliance with the law and the teachers by their own evaluation are not prepared to use the tools that are required to teach these students even if they were included in the general education classrooms.
- The characteristics of teachers and characteristics of teaching assignment had very low (Bartz, 1999) relationships with the criterion variable Teachers' Sense of Inclusion Efficacy.

Recommendations:

Schools, colleges, and departments of education (SCDEs) might focus on improving teachers' knowledge, skills and dispositions to use specific use (inclusion) technology to teach every student. Collaboration among these groups might be proactive to ensure that teachers are able to use the tools required to teach every student.

Future Research

The lack of compliance warrants further research to determine whether teachers teaching in Ohio schools have the skills to use technology and the perceptions of need for the technology required to teach students with disabilities in the general education classroom.

The questions on *specific disabilities* of students included in the classroom for instruction, require the addition of one response for clarity. The responses need to determine whether the teacher has students with these specific disabilities in their classroom, therefore, the responses would include: not in my class, or in my class, but not included, rarely included, occasionally included, or frequently included.

Interval Data Collected From Scaled Instruments

This study developed scales to measure the personal and collective efficacy for inclusion of students with disabilities in the general education classroom. The instruments were based on established scales developed by Tschannen-Moran and Woolfolk Hoy (2001) to measure personal teacher efficacy and based on Goddard (2002) to measure the collective efficacy.

Research Questions 1

Teachers' Sense of Inclusion Efficacy (without technology items)

The criterion variable, Teachers' Sense of Inclusion Efficacy (I-TSES) was developed based on minimal adaptations to the Teachers' Sense of Efficacy (TSES) (Tschannen-Moran & Woolfolk Hoy, 2001). The 12 item I-TSES without technology items with a reliability of .932 was compared to the 12 item TSES with a reliability of .925 to determine whether these scales measured the same efficacy.

The I-TSES (without technology) measured the efficacy for inclusion as shown through the One-Sample T Test. The One-Sample T Test was used to examine the difference between the means of the I-TSES and the TSES. The results indicate that the two scales are different and measure two different efficacies. The one-sample t test resulted in a moderate effect size of .6 (Cohen's d).

Teachers' Sense of Efficacy

The predictor variable, Teachers' Sense of Efficacy (TSES) (Tschannen-Moran & Woolfolk Hoy, 2001) had a strong positive relationship (Bartz, 1999) with the criterion variable, I-TSES.

Findings of the data analyses for Teachers' Sense of Efficacy (TSES) and Teachers' Sense of Inclusion Efficacy (I-TSES)

- Teachers' Sense of Inclusion Efficacy Scale (I-TSES) developed for this study did measure the efficacy of teachers for the inclusion of students with disabilities in the general education classroom that differs from the Teachers' Sense of Efficacy (TSES). One-sample t test had a moderate effect size of .6 (Cohen's d).
- Teachers have an efficacy for inclusion of students with disabilities that differs from their efficacy to teach students without disabilities as measured by Teachers' Sense of Efficacy (TSES).
- Teachers have a lower efficacy for teaching students with disabilities than for teaching students without disabilities as evidenced by the data analyzed using the mean differences between the TSES and the I-TSES using the One-sample T Test.
- TSES had a strong, positive relationship (Bartz, 1999) with the I-TSES based on the multiple regression analysis.
- TSES had a low, positive relationship (Bartz, 1999) with the predictor variable Collective Inclusion Efficacy based on the multiple regression analysis.

Recommendations:

School, colleges, and departments of education should use the I-TSES to assess preservice teachers' sense of inclusion efficacy to determine whether additional sources of efficacy information for inclusion are required. The I-TSES and TSES could be used as measures of success in the preservice program. Preservice teachers might be assessed during the halfway point in the program and those whose efficacies are weak, could be scheduled for more intense field experiences in inclusion classrooms or student teaching in classrooms of cooperating teachers who have success in inclusion. The colleges of teacher education would be proactive in finding the best sources of inclusion efficacy information to include in courses, field experiences and student teaching to strengthen the preservice teachers' sense of efficacy for inclusion.

Future Research:

Teacher preparation programs would benefit from research studies to determine whether increasing sources of efficacy information for the specific task of inclusion of students with disabilities results in an increase in the I-TSES.

There should be a statewide survey of teachers in the same teaching position codes in Ohio schools to duplicate the study with a higher response rate. Were the results obtained in this research study able to be duplicated with a larger rate of response to enable the use of inferential statistics to allow the research to be generalized to the target population.

Research might investigate the 12 item I-TSES (without technology) and 12 item TSES scales to determine whether the results in this study can be repeated with the same level of scale reliability, difference in one-sample T Test, and the same "strong," positive relationship between the predictor (TSES) and criterion (I-TSES) variables in the multiple regression analysis.

Research might compare the difference between the 12 item I-TSES (without technology) and the 17 item I-TSES (with technology) to determine which scale is a better measure of efficacy for inclusion.

Research Question 2

Collective Inclusion Efficacy

One of the predictor variables, the Collective Inclusion Efficacy scale (I-Collective) developed for this research study was adapted using the 12-item Collective Efficacy scale developed by Goddard (2002). Similar to the I-TSES, the Collective Inclusion Efficacy scale measured the collective efficacy for inclusion. The principal component analysis for collective inclusion efficacy revealed the same four subscales that Goddard (2002) found, and along with the addition of the fifth component, technology for inclusion.

Collective Inclusion Efficacy

The predictor variable, Collective Inclusion Efficacy (Goddard, 2001) had a "moderate" positive relationship (Bartz, 1999) with the criterion variable, I-TSES based on the multiple regression analysis. This indicates an interdependency and cyclical relationship similar to the relationship between TSES and Collective Efficacy.

Findings of the data analyses for Collective Inclusion Efficacy

and Teachers' Sense of Inclusion Efficacy (I-TSES)

- The study developed a reliable scale that measured the Collective Inclusion Efficacy and supported the four-component structure postulated by Goddard (2002) with the addition of the fifth-component, technology for inclusion.
- Collective Inclusion Efficacy had a moderate, positive relationship (Bartz, 1999) with the criterion variable I-TSES based on the multiple regression analysis.
- Collective Inclusion Efficacy had a low, positive relationship (Bartz, 1999) with the predictor variable TSES.

Recommendations:

It is recommended that schools, colleges, and departments of education (SCDEs) use the Collective Efficacy for Inclusion scale to assess the collective inclusion efficacy of schools to determine whether additional sources of efficacy information for inclusion are required. Goddard, Hoy and Hoy (2004) indicate teacher involvement in curriculum decision making can improve the collective efficacy of the school. Lieberman (1995) also recommends general education teachers involvement in decisions to teach students with disabilities in the general education classroom.

It is recommended that teacher preparation programs use the Collective Inclusion Efficacy scale to determine the Collective Inclusion Efficacy of cooperating schools that take student teachers. Schools with low Collective Inclusion Efficacy should have special monitoring or support and/or provide student teachers with extra sources of inclusion efficacy information to ensure that these preservice teachers are not affected by lack of collective support for the inclusion of students with disabilities in the general education classroom. The colleges of teacher education must be proactive to ensure that preservice teachers graduate with strong efficacies for inclusion.

Future Research:

A statewide survey of teachers in the same teaching position codes in Ohio schools is recommended to duplicate this study to achieve a higher response rate. Were the results obtained in this research study able to be duplicated with a larger percentage of respondents to enable the use of inferential statistics to allow the research to be generalized to the target population.

It is recommended that researchers investigate the 12 item Collective Inclusion Efficacy (without technology) and 17 item Collective Inclusion Efficacy (with technology) to determine which is a better measure of collective inclusion efficacy.

It is also recommended that the 12 item Collective Efficacy (Goddard, 2002) be administered along with the 12 item Collective Inclusion Efficacy Scale to compare the differences using a one-sample t test to determine whether they are measuring the same efficacy or different efficacies. *The present study could not include the 12 item Collective Efficacy scale because of the length of the survey.*

It is recommended that researchers investigate whether the same cyclical relationship that exists between TSES and Collective Efficacy also exists between the Teachers' Sense of Inclusion Efficacy and Collective Inclusion Efficacy.

Research Question 3

Attitudes Toward Inclusion

Previous research predicted (Blanchett et al. 2005; Ferri & Connor, 2005; Hanson, 1979; Kleinhammer-Tramill, 2003; Klute et al. 2002; Mittnacht, 2005) and the data in this study supported the "moderate" (Bartz, 1999) positive relationship between attitudes and the criterion variable, teachers' sense of efficacy. The Attitudes toward inclusion scale (Attitude) developed for this research study measured the teachers' responses to four items. The attitude scale had a reliability coefficient of .780. The predictor variable, Attitudes toward inclusion also had a "moderate" positive relationship with the criterion variable, I-TSES.

Findings of the data analyses for Attitude Toward Inclusion

and Teachers' Sense of Inclusion Efficacy (I-TSES)

- The predictor variable, Attitude Toward Inclusion (Attitude) had a moderate, positive relationship (Bartz, 1999) with the criterion variable, Teachers' Sense of Inclusion Efficacy in the multiple regression analysis.
- Teachers with higher scores on the Attitude Toward Inclusion (Attitude) had a higher sense of inclusion efficacy to teach students with disabilities in the general education classroom.

- The predictor variable, Attitudes toward Inclusion had low, positive relationships (Bartz, 1999) with the predictor variables Teachers' Sense of Efficacy and Collective Inclusion Efficacy.

Recommendations:

School, colleges, and departments of education (SCDEs) should be aware of the moderate relationship of the predictor variable, Attitudes toward inclusion, and the criterion variable, Teachers' Sense of Inclusion Efficacy. Colleges of teacher education must become proactive to ensure that preservice teachers' attitudes toward inclusion are positive.

Otis-Wilborn, Winn, Griffin and Kilgore (2005) found teachers' attitudes to be one of three barriers to the inclusion of students with disabilities in the general education classroom. The special education and general education must narrow the gap between the two programs and increase collaboration to change attitudes of teachers toward inclusion. Linton (1998) predicted that special education and general education would eventually merge as programs began to reflect the need to prepare teachers to teach students with and without disabilities (Campbell, Dobson & Bost, 1985).

The teacher preparation programs should consider the introducing *Disability Theory* across the curriculum. Perhaps attitudes would change if preservice teachers understood the medical rehabilitative model of disability and the social constructionist model of disability (Albrecht, 2002; Davis, 2002; Linton, 1998).

Future Research:

Likewise, a statewide survey of teachers in the same teaching position codes in Ohio schools is recommended to duplicate the study seeking a higher response rate. Were the results obtained in this research study able to be duplicated with a larger percentage of respondents to enable the use of inferential statistics to allow the research to be generalized to the target population.

Research Question 5

Quality of Teacher Preparation Programs

Previous research predicted (Adamson et al., 2003; Bebell, 2005; Dickson, 2000; Hartshorne et al., 2005; Heiwett, 1999; Kluth et al., 2002; Rogers, 2005; Scruggs & Mastropieri, 1996; Otis-Wilborn et al., 2005), but the current data in this study failed to support the importance of the quality of teacher preparation programs as a predictor of teachers' sense of inclusion efficacy. The answer might lie somewhere in between. Perhaps a parallel can be drawn between the Tech Use, Tech Need, and the Specific Disabilities being included in the general education classroom. The teachers do not believe it is their responsibility to teach students with disabilities in the regular education classroom (Otis-Wilborn, et al., 2005; Roberts, 2000), therefore, their perceptions of their college preparation programs would be that they were prepared for the job they are responsible for performing—which does not include teaching students with disabilities in the regular education classroom.

One of the predictor variables, the *Quality of Teacher Preparation Program* scale was developed for this research study to measure the teachers' perceptions of the quality of their teacher preparation program for inclusion. The predictor variable, Quality of Teacher Preparation Programs had an unexpectedly "low" (Bartz, 1999) positive relationship with the criterion variable, I-TSES.

Findings of the data analyses for Quality of Teacher Preparation Programs and Teachers' Sense of Inclusion Efficacy (I-TSES)

- The predictor variable, Quality of Teacher Preparation Programs, had a low, positive relationship (Bartz, 1999) with the criterion variable, Teachers' Sense of Inclusion Efficacy.

Recommendations:

It is recommended that teacher preparation programs model how to integrate technology and how to teach students with disabilities in the general education classroom. Schippen, Crites, Houchins, Ramsey, and Simon (2005) state the need for colleges of teacher education to prepare teachers to teach every student warrants a transition to the electronic (digital) mode of communication (Keiper & Larson, 2000).

Training in the use of assistive, accessible and innovative technologies is needed at the preservice level to prepare teachers (Bausch & Hasselbring (2004) to integrate technology for student learning (Rose, Meyer et al., 2004) and the assessment of student learning (Dolan, Hall, Bnaerjee, Chun & Strangman, 2005).

Future Research:

Again a statewide survey of teachers in the same teaching position codes in Ohio schools is recommended to duplicate the study in an effort to gather a higher response rate. Were the results obtained in this research study able to be duplicated with a larger percentage of respondents to enable the use of inferential statistics to allow the research to be generalized to the target population.

To investigate whether the quality of teacher preparation had more of a relationship with the criterion variable, Teachers' Sense of Inclusion Efficacy, than this study was able to assess, structural equation modeling (*SEM*) should be used to analyze the predictor variable, Quality of Teacher Preparation, to determine if it was actually a latent variable unaccounted for in the multiple regression analysis. It may be that the influence of the three strongest predictor variables made it impossible to observe the effect of the Quality of Teacher Preparation.

A qualitative study involving the use of the seven item Quality of Teacher Preparation scale could provide greater in-depth analysis of the rationale behind the teachers' perceptions concerning the quality of teacher preparation programs. Why are these teachers so positive about the quality of their teacher preparation program IF they are not prepared to teach every student?

Survey Delivery and Response Issues

One of the reasons why this study could not use inferential statistics was because of the 16.3 percent response rate of online respondents to the survey. Fifteen percent of the non-response rate was due to bounced emails that resulted from incorrect email designations. Repeated attempts to obtain correct email addresses were fruitless because P-12 schools often refuse to provide such information due to privacy and security reasons.

A follow-up survey, to determine reasons for non-response, was conducted by mail to a random sample of 100 non-respondents and online to the remaining 1059 sample of non-respondents. The three reasons these respondents gave in the follow-up survey for not participating in the original study were: (1) too busy to complete the survey online or in print, (2) do not like using technology, and (3) suspicious of online surveys.

Advantages and Disadvantages of Online Survey Research

From conducting this study, the researcher identified the following advantages and disadvantages of conducting online survey research in addition to answering the original research questions.

Advantages. The online survey format provided: (1) a credible record of individual numerical IPO addresses dated and time stamped; (2) all respondents with accessibility to the survey; and (3) greater cost efficiency because the online survey costs (approximately $500) were less than one set of printed letters with surveys (approximately $3000 - $4000) and the follow-up post card reminders ($750).

Disadvantages. The online survey format produced: (1) lower response rates; (2) inaccessibility to the survey by some subjects randomly selected for the study due to inaccessibility of email addresses; and (3) undelivered emails due to Internet security.

Recommendations:

The schools, colleges, and departments of education (SCDEs) should consider collaboration among all stakeholders to promote accessible, cost efficient research. The percent of teachers who were unable to receive the survey online because of Internet security and those suspicious of online surveys might have participated had there been a safe web site that educators knew was sponsored and maintained by the Ohio Department of Education and schools, colleges, and departments of education. The cost to send print surveys will only increase and conducting online research is more cost effective. SCDEs need to be innovative if they desire credible participation in survey research.

Summary

This research study has resulted in the development of two reliable and conceptually sound scales to measure the personal and collective efficacy for inclusion. The one-sample t test supports the new scale to measure *Teachers' Sense of Inclusion Efficacy*. The efficacy to teach students without disabilities in the general education classroom is completely different from the efficacy to teach students with disabilities in the general education classroom. The efficacy for inclusion is lower than the teachers' efficacy for teaching students without disabilities. The predictor variable, Teachers' Sense of Efficacy, had a strong positive relationship with the criterion variable, Teachers' Sense of Inclusion Efficacy.

There also appears to be support for the interdependency of the Collective Inclusion Efficacy based on the multiple regression analysis. Collective Inclusion Efficacy had a moderate positive relationship with the Teachers' Sense of Inclusion Efficacy and a low relationship with the predictor variable Teachers' Sense of Efficacy. Collective Inclusion Efficacy appears to be different from the collective efficacy. The groups' efficacy for inclusion, based on physically segregated and separated students with test scores excluded from the collective achievement, results in a lower collective efficacy for the collective task of inclusion. The performance of these students, who are often not part of the system of accountability, may not directly affect the image of the groups' level of competence to achieve goal attainment [high student achievement]. Thus, *Teachers' Sense of Inclusion Efficacy* appears to exist and to have an interdependent (cyclical) relationship with *Collective Inclusion Efficacy*.

This study also found that the predictor variable, Attitudes Toward Inclusion, had a moderate , positive relationship with the criterion variable, Teachers' Sense of Inclusion Efficacy. All other predictor variables provided valuable insight concerning the subjects' who participated in the research study, but did not have moderate or strong relationships with the criterion variable.

The teachers' perceived ability to use technology and their perceived level of need for technology are important reminders that actions speak louder than words—teachers with strong sense of efficacy for inclusion would avail themselves of the tools required for the task of teaching students with disabilities in their classrooms. However, the study showed that the predictor variable, ability to use technology, was low (no ability to use or novice ability to use technology) and corresponded with the teachers' low scores on the efficacy for inclusion. The weakness in these skills to use technology may be symptomatic of the teacher who has a weak efficacy for inclusion.

These data, combined with the high number of students with specific disabilities excluded from the classroom for instruction (11 out of 14 specific disabilities), support the research that teachers are not teaching students with disabilities in the general education classroom (Kluth et al., 2002; McLeskey et al., 2004). In addition, they are not prepared to teach students with disabilities in the general education classroom (Kleinhammer-Tramill, 2003), creating a barrier to inclusion itself (Otis-Wilborn, 2005).

The IDEA 2004 created the new National Instructional Materials Access Center to provide curriculum content in accessible formats for those students who require them (and are legally eligible to receive them) to access the curriculum content. It is inconceivable to the researcher that special education teachers are not aware that they can obtain these new materials for their students. That is, in this study only three percent of special education teachers had an understanding of the terms the National Instructional Materials Accessibility Standard (NIMAS) and the National Instructional Materials Access Center (NIMAC), and only one third of these teachers had some understanding of the terms. The illusion of inclusion of students with specific disabilities in the general education classroom and teachers' lack of understanding of NIMAS and NIMAC, create a contextual picture of the work ahead.

Where do the schools, colleges, and departments of education (SCDEs) begin? Research suggests that the integration of technology for inclusion must be modeled (Adamson et al., 2003) for teachers to understand how to use technology to teach every student. Likewise, it is critical that efforts be made to change their attitudes toward inclusion. Until teachers believe it is their responsibility to teach every student, they will not strive to learn the skills necessary to accomplish the task of inclusion (Roberts, 2000). Collaboration among the schools, colleges, and departments of education (SCDEs) is essential. SCDEs must work together to develop and to maintain sustained implementation of innovative solutions that will accomplish these objectives to enable teachers to teach every student.

Unless teachers understand Disability Theory, using the social constructionist model, they might not fully comprehend the need to provide the content and technological supports needed for success and may be hesitant to embrace inclusion (Davis, 1995; Linton, 2002). In a constructivist environment, where teachers apply the *social constructionist* model of disability, students with disabilities will be able to be included like their peers within the general education classroom. These students will have the opportunity to achieve at their highest level because the environmental issues that made their impairments disabilities will be removed (Davis, 1995; Linton, 2002). Students will still have individualized education plans (IEPs), but they will no longer be segregated and isolated based solely on the medical model of disability. Special education under the social constructionist model of disability will become a collaborative resource for the general education teachers to assist all learners in general education classrooms (Federal Register, 2005; IDEA, 2004). The IDEA, 1997 moved the general education teacher closer to inclusion (Benedetto, 2005), and technology has enabled them to successfully accomplish the task (Scherer, 2004; Strum, 2002).

The nation's laws and judicial decisions warrant the schools move toward "inclusion" of students with disabilities in the general education classroom. The bifurcated system of education has supported a system that separates and segregates, making the transition toward inclusion anything but smooth. The constructs of teacher efficacy and collective efficacy are essential to gain a deeper understanding of the challenges that teachers and schools face in the implementation of these judicial and legislative mandates. This affords educational leaders the opportunity to apply theory to practice in order to change the dynamics in a school system or school building. For example, school principals need to determine how they can change the collective efficacy of their school building through professional development that provides multiple sources of efficacy information to increase teachers' sense of efficacy, thereby increasing the collective efficacy of the entire school for the specific task of inclusion.

The accountability for improved performance for every student, regardless of whether one agrees with the large scale testing of the NCLB or the inclusion mandated by the IDEA, puts the pressure squarely on schools to teach all students, even those in the shadows. Goddard et al. (2004) explain that "[t]he more teachers have the opportunity to influence instructionally relevant school decisions, the more likely a school is to be characterized by a robust sense of collective efficacy" (p. 10). Therefore, schools need to involve teachers in the instructional decisions concerning the inclusion of students with disabilities to increase the collective efficacy of the school for inclusion. The success of such efforts depends upon not leaving those most affected out of the decision-making process (Lieberman, 1985; Harmon, 1979).

Teacher educators need to become proactive and model how to support student learning using technology in new ways. Teacher educators cannot wait until someone with a disability enters their class to integrate technology in their teaching, or they run the risk of failing to meet the needs of preservice teachers and ultimately the millions of P-12 students that require such instructional strategies. Teachers' identification with the use of technology will only enhance their sense of inclusion efficacy. Hoy and Spero (2005) suggest that the most powerful influences on teacher efficacy are mastery experiences during student teaching and the first year of teaching. Therefore, teacher preparation needs to provide effective sources of mastery experiences to increase teacher efficacy for inclusion within their preservice candidates.

Schools, colleges and departments of education (SCDEs) will remain *relevant* in the 21st century only through collaboration with the national and state education agencies, and school district leadership who inform the unit and change policy, leaving behind the traditional linear “one size fits all” print-only model of teaching from the past. To be an exemplary teacher education program, a school, college or department of education must make it explicit in their conceptual framework that candidates must be prepared to teach all students, and must then explicitly model such instructional strategies for candidates.

REFERENCES

AACTE. (2000). *Log in or log out: Technology in 21st century teacher education*. Washington D.C.: Author.

AACTE. (2002, February). *Preparing teachers to work with students with disabilities: Possibilities and challenges for special and general teacher education.* (A White Paper of the American Association of Colleges for Teacher Education). Washington D.C.: Author. Retrieved February 12, 2004, from www.aacte.org

Abedi, Jamal. (2004). The no child left behind act and english language learners: Assessment and accountability issues. *Educational Researcher*, 33(1), 4-14.

Abberley, P. (2002). American pragmatism, sociology, and the development of disability studies. In C.Barnes, M. Oliver & L. Barton (Eds.), *Disability Studies Today* (pp. 18-37). Malden, MA: Blackwell Publishers, Inc.

Adamson, S. L, Banks, D., Burtch, M., Cox III, F., Judson, E., Turley, J. B., Benford, R., & Lawson, A. E. (2003). Reformed undergraduate instruction and its subsequent impact on secondary school teaching practice and student achievement. *Journal of Research in Science Teaching*, 40(10). 939-957. Retrieved on February 10, 2004, from http://www.interscience.wiley.com

Allan, J., Haritos-shea, K., & Jacobs I. (2001). Mapping comparison between combined U.S. Section 508 standards and UAAG 1.0 requirements and priorities. W3C Working Draft [Online]. Available: http://www.w3.org/WAI/UA/sect508-UAAG.html

Architectural and Transportation Barriers Compliance Board [Access Board], (2000). *Electronic and Information Technology Accessibility Standards.* [Docket No. 2000-01]. Washington D.C.: Federal Register.

Ashton, T.M. (2003). Assistive technology. *Journal of Special Education Technology*. 18(1), 39-43.

Babell, D. (2005, July). *Technology promoting student excellence: An investigation of the first year of 1:1 computing in new hampshire middle schools.* Paper presented at the meeting of the National Educational Computing Conference, Philadelphia, PA.

Bahar, C. (2004). The relationship between teacher efficacy and inclusion: An analysis of general and special education perspectives. Ph.D. dissertation, University of California, Los Angeles, United States - California. Retrieved July 26, 2005, from ProQuest Digital Dissertations database. (Publication No. AAT 3117694).

Balajathy, E. (1990). Hypertext, hypermedia, and metacognition: Research and instructional implications for disabled readers. *Journal of Reading, Writing, and Learning Disabilities International*, 6 (2), 183-202.

Bandura, A. (2002). Growing primacy of human agency in adaptation and change in the electronic era. European Psychologist, 7 (1), 2-16. Retrieved on July 27, 2005, from http://journals.ohiolink.edu.proxy.lib.ohio-state.edu/science?_refkey=Bandura%232002%2…

Bandura, A. (1993). Perceived self-efficacy in cognitive development and functioning. *Educational Psychologist*, 28(2), 117-148.

Bandura, A. (1991). Human agency: The rhetoric and the reality. *American Psychologist*, 46(2), 157-162. Retrieved on July 27, 2005, from http://olinks.ohiolink.edu.proxy.lib.ohio-state.edu//formatter.php?ctx_ver=Z39.88-2004&rf…

Bandura, A. (1989). Human agency in social cognitive theory. *Ameican Psychologist*, 44(9), 1175-1184.

Bartz, A. E. (1999). *Basic statistical concepts*. Upper Saddle River, NJ: Prentice Hall.

Bausch, M. E. & Hasselbring, T. S. (2004). Assistive Technology: Are the necessary skills and knowledge being developed at the preservice and inservice levels? *Teacher Education and Special Education*., 27(2). 97-104.

Becker, H. J. (2000). Findings from the teaching, learning, and computing survey: Is larry cuban right? Paper presented at the School Technology Leadership Conference of the Council of Chief State School Officers, Washington D.C. Retrieved on April 14, 2006, from http://www.crito.uci.edu.

Benedetto, A.O. (2005). *Does technology influence teaching practices in the classroom?* Paper presented at the meeting of the National Educational Computing Conference, Philadelphia, PA. June 27, 2005.

Benton-Borghi, B.H. (2005, February). Symposium Organizer and Discussant. *Teaching every student in the 21st century: The integrated roles of technology, universal design and collaborative leadership*. Annual meeting of the America Association of Colleges of Teacher Education (AACTE), Washington D.C.

Billingsley, B. S. & McLeskey, J. (2004). Critical issues in special education teacher supply and demand: An interview. *The Journal of Special Education*, 38, 2-4.

Blanchett, W., Brantlinger, E., & Shealey, M.W. (2005). Brown 50 years later--exclusion, segregation and inclusion. *Remedial and Special Education*, 26(2), 66-69.

Borman, G.D., Hewes, G.M., Overman, L.T., & Brown, S. (2002*). Comprehensive School reform and student achievement: A meta-analysis* (Report No. 59). Baltimore , MD: John Hopkins University, Center for Research on the Education of Students Placed at Risk.

Boyle, E. A. (2003). Effects of audio texts on the acquisition of secondary level content by students with mild disabilities. *Learning Disabilities Quarterly*, 26 (3), 203-214.

Buckenmeyer, J. (2005, July). *No computer left behind: Getting teachers on board with technology*. Paper Presented at the meeting of the National Educational Computing Conference, Phildadelphia, PA.

Burch, S. (2001). Reading between the signs. In P. Longmore & L. Umansky (Eds.), *The New Disability History* (pp.214-235). New York, NY: New York University Press.

Burgin, D. L.(2004). Facilitators and barrier to incorporating students with disabilities in the general education classroom at the secondary school level: A study of teacher perceptions. Ed.D. dissertation, East Tennessee State University, United States. Retrieved July 26, 2005, from ProQuest Digital Dissertation database. (Publication No. AAT3152137).

Burgstahler, S. (2005). *Universal design of instruction*. Retrieved May 27, 2005, from http://www.washington.edu/doit/Brochures/Academics/instruction.html.

Burgstahler, S. (2005). *Developing policy for making distance learning programs accessible to Everyone*. Paper presented at the Center on Disabilities: Technology and Persons with Disabilities Conference, 2003, California State University Northridge, CA.

Burris, C. C., Heubert, J. P. & Levin, H. M. (2006). Accelerating mathematics achievement using heterogeneous groups. *American Educational Research Journal*, 43 (1), 105-136.

Campbell, N.J., Dobson, J.E. & Bost, J.M. (1985). Educator perceptions of behavior problems of mainstreamed students. *Exceptional Children*. 51(4), 298-303.

Carter, N., (Ed.). (2003). *Convergence or divergence*. Washington D.C.: American Association of Colleges for Teacher Education.

CAST. (2003). *Beyond assistive technology: Policy, curriculum, and technology for inclusion*. Wakefield, MA: Author. Retrieved on November 7, 2003, from http://www.cast.org/udl/index.cfm?l=175

CAST. (2003). *Universal design and assessment*. Wakefield, MA: Author. Retrieved November 7, 2003, from http://www.cast.org/udl/index.cfm?1=4512

Center for Universal Design. (2005). *Universal design*. North Carolina State University Universal Design Cneter. Author. Retrieved on July 13, 2005, from http://www.design.ncsu.edu/cud/index.html

Caywood, K., & Duckett, J. (2003). Online vs. on-campus learning in teacher education. *Teacher Education and Special Education*, 26(2), 98-105.

Chapman, C. (2005). Rates of computer & internet use by children in nursery school and students in kindergarten through twelfth grade: 2003 (NCES 2005-111). U.S. Department of Education Institute of Education Sciences. Washington D.C.: National Center for Education Statistics.

Charles, J. (2005, June). *Teaching matters, inc*. Paper presented at the National Educational Computing Conference, Philadelpia, PA.

Charlton, J. (2000). Nothing about us without us. Berkeley, CA: University of California Press.

Christie, A., Baker, R., Castiglione, L., LaBelle, S., & Naish, V. (2005, June*). Student voice and audience: Changing the teaching and learning experience.* Paper presented at the 2005 National Educational Computing Conference, Philadelphia, PA.

Cole, M., & Engestrom, Y. (1993). A cultural-historical approach to distributed cognition. In G. Salomon (Ed), *The powers of literacy: A genre approach to teaching writing* (pp. 179-2021). Pittsburgh: University of Pittsburgh Press.

Copolla, E. (2005, July). Powering up: Supporting constructivist teaching with technology. Paper presented at the meeting of the National Educational Computing Conference, Phildadelphia, PA.

Crowther, M. S., Keller, C..C., Waddoups, G.L. (2004). Improving the quality and effectiveness of computer-mediated instruction through usability evaluations. *British Journal of Educational Technology*. 35(3). 289-303.

Dalton, B., Pisha, B., Coyne, P., Eagleton, M., & Deysher, S. (2001). *Engaging the text: Reciprocal teaching and questioning strategies in a scaffold learning environment.* Wakefield, MA: CAST. Retrieved February 7, 2004, from http://www.cast.org/EngagingTheTextFinalReport.htm

Daly, E. J. (2000). Improving practice by taking steps toward technological improvements in academic intervention in the new millennium. *Psychology in the Schools*, 37 (1), 61-72.

Darling-Hammond, L. & Bransford, J. (2005). *Preparing teachers for a changing world: What teachers should learn and be able to do*. San Francisco, CA: Jossey-Bass.

Dattilo, J. Guerin, N., Cory, L. & Williams, R. (2001). Effects of computerized leisure education on self-determination of youth with disabilities. Journal of special education technology, 16(1), 5-17.

Davis, L. (2002). Bending over backwards. New York, NY: New York University Press.

Davis, L. (Ed.) (1997). *The disability studies reader*. New York, NY: Routledge.

Davis, L. (1995). Constructing normalcy. In L. Davis (Ed.), *The Disabilty Studies Reader* (pp. 9-28). New York, NY: Routledge.

Dawson, K. (2005). *Teacher inquiry: A vehicle to merge prospective teachers' experience and reflection during curriculum-based, technology-enhanced field experiences*. Paper presented at the National Educational Computing Conference, Philadelphia, PA.

Day J. N. & Huefner, D. S. (2003). Assistive technology: Legal issues for students with disabilities and their schools. *Journal of Special Education Technology*, 18(2), 23-33.

Dede, C. (December 1, 2000). *A new century demands new ways of learning. An excerpt from the digital classroom*. Cambridge, MA: Harvard Graduate School of Education. Retrieved November 7, 2003, from http://gseweb.harvard.edu/news/features/dc_dede12012000.html

Dillman, Don, A. (2000). *Mail and internet surveys: The tailored design method*. New York, N.Y.: John Wiley & Sons, Inc.

Dolan, R.P., Hall, T.E., Banerjee, M., Chun, E., & Strangman, N. (2005). Applying principles of universal design to test delivery: The effect of computer-based read-aloud on test performance of high school students with learning disabilities. *Journal of Technology, Learning and Assessment*, 3(7), 1-32. Retrieved March 5, 2006, from http://www.jtla.org

Dyer, R.G. (2003). A survey of the influence of general outcome measurement on teachers' beliefs and attitudes concerning inclusion. MA thesis University of Nevada, Reno. UMI.com AAT 1415839

Eagleton, M. & Hamilton, M. (2002). *New england ereading association*, 38 (1). Retrieved November, 2003, from http://www.nereading.org/standardsArticle/abstract.htm.

Educational Testing Service. (2003). *PRAXIS I, II, II PLT, & III. Teacher Performance Assessment*. Princeton, NJ. Author.

Edwards, R.A.R. (2001). "Speech has an extraordinary humanizing power. In P. Longmore & L. Umansky (Eds.), *The New Disability History* (pp. 58-82). New York, NY: New York University Press.

Edyburn, D. L. (2005). Technology enhanced performance. *Special Education Technology Practice,* 7(2), 16-25.

Edyburn, D.L. (2004). Rethinking assistive technology. *Special Education Technology*, 5(4), 16-23.

Edyburn, D.L. (2003). Measuring assistive technology outcomes in mathematics. *Journal of Special Education Technology*, 18(4), 76-79.

Edyburn, D.L. (2003). Measuring assistive technology outcomes in writing. *Journal of Special Education Technology*, 18(2), 60-64.

Elliiot, L.B., Foster, S & Stinson, M. (2003). Aqualitative study of teachers' acceptance of a speech-to-text transcription system in high school and college classrooms. *Journal of Special Technology*. 18(3), 45-58.

Elmore, R.F. (2005). What (so-called) low-performing schools can teach (so-called) high-performing Schools. *Harvard Education Letter*, 21(5) Cambridge, MA: Harvard Graduate School of Education.

Englert, C. S., Manalo, M. & Zhao, Y. (2004). I can do it better on a computer: The effects of technology-enabled scaffolding on young writers' competition. *Journal of Special Education Technology*, 19 (1), 5-21.

Enwefa, S. & Enwefa, R. (2002). The role of technology in the education of all children. In *Educating all learners: Refocusing the comprehensive support model*. Obiakor, F., Grant, P., et al. Springfield, IL: Charles C. Thomas Publishers, 166-178.

Fafard, M., Hanlon, R.E., Bryson, E.. (1986).Jose P. v. ambach: Progress toward compliance. *Exceptional Children,* 52(4), 313-322.

Farrell, P., Ainscow, M., Howes, A., Frankham, J., Fox, S. & Davis, P. (2004). Inclusive education for all: Dream or reality? *Journal of International Special Needs Education*, (7), 7-11.

Federal Register. (June 21, 2005). Assistance to states for the education of children with disabilities; and preschool grants for children with disabilities; and service obligations under special education personnel development to improve services and results for children with disabilities; proposed rule. Federal Register, 34 CFR Parts 300, 301, and 304. RIN 1820-AB57. author

Federal Register (2000). *Electronic and Informatin Technology Accessibility Standards.* Washington D.C.: Architectural and Transportation Barriers Compliance Board. 36 CFR Part 1194, Docket No. 2000-01, RIN 3014-AA25.

Ferri, B & Connor, D. (2005). In the shadow of brown: Special education and overrepresentation of students of color. *Remedial and Special Education,* 26(2), 93-100.

Fisher, D., Frey, N., & Thousasnd, J. (2003). What do special educators need to know and be parepared to do for inclusive schooling to work?. *Teacher Education and Special Education,* 26(1), 42-50.

Foley, A. R. (2003). Distance, disability and the commodification of education: Web accessibility and the construction of knowledge. *Current Issues in Comparative Education* [Online], 6(1), Retrieved June 6, 2005, from http://www.tc.columbia.edu/cice/articles/af161.htm

Garibaldi, A. (1992). Preparing teachers for culturally diverse classrooms. In M. Dilworth (Ed*.).* *Diversity in teacher education: New Expectations.* San Francisco, CA: Joessey-Bass Publishers.

Garthwait, A., & Weller, H.G. (2005). A year in the life: Two seventh grade teachers implement one-to-one computing. *Journal of Research on Teacher Education*, 37(4), 361-378.

Gerges, G. (2001). Factors influencing preservice teachers' variation in use of instructional methods: Why is teacher efficacy not a significant contributor? *Teacher Education Quarterly*. 28(4), 71-85.

Gersten, R., Bakers, S., Pugach, M. Scanlon, D., & Chard, D. (2001). Contemporary research on special education teaching. In V. Richardson (Ed,), *Handbook of research on teaching*. (4th ed., pp.695-722). Washington D.C.: American Educational Research Association.

Giangreco, M. F., Halvorsen, A. T., Doyle, M. B. & Broer, S. (2004). Alternatives to overreliance on paraprofessionals in inclusive schools. *Journal of Special Education Leadership*, 17 (2), 82-90.

Gifford, B. & Enyedy, N. D. (1999)). Activity centered design: Towards a theoretical framework for CSCL. Proceedings of the Third International Conference on Computer Support for Collaborative Learning.

Goldstein, S., Gee, E., and Daniel, P. (1995). *Law and public education: Cases and materials*. Charlottesville, VA: MICHIE Law Publishers.

Goldman, S. R., Hasselbring, T.S. & the Cognition and Technology Group at Vanderbilt. (1996). Achieving meaningful mathematics literacy for students with learning disabilities. *Journal of Learning Disabilities*, 30(2), 198-208.

George Lucas Educational Foundation. (Fall 2003). “The write stuff.” *Edutopia.* San Rafaef, CA Retrieved on February 12, 2004, from www.glef.org,

Goddard, R., LoGerfo, L. & Hoy, W. (2004). High school accountability: The role of perceived collective efficacy. *Educational Policy*, 18(3), 403-425. Retrieved on March 31, 2006 from http://olinks.ohiolink.edu

Goddard, R.D., Hoy, W.K., & Hoy, A.W. (2004). Collective efficacy beliefs: Theoretical developments, empirical evidence, and future directions. *Educational Researcher*, 33(3), 3-13.

Goddard, R.D. (2002). A theoretical and empirical analysis of the measurement of collective efficacy: The development of a short form. *Education and Psychology Measurement*, 62(1), 97-110. Retrieved on July 27, 2005, from http://olinks.ohiolink.edu.proxy.lib.ohio-state.edu

Goddard, R.D. (2001). A multilevel analysis of the relation between teacher collective efficacy in urban school. *Teaching and Teacher Education*, 17(7), 807-818.

Goddard, R. D. (2001). Collective efficacy: A neglected construct in the study of schools and student achievement. *Journal of Educational Psychology*, 93 (3), 467-476. Retrieved on July 27, 2005, from http://olinks.ohiolink.edu.proxy.lib.ohio-state.edu

Goddard, R. D. & Goddard, Y. L. (2000). A multi-level analysis of the relationship between teacher and collective efficacy in urban schools. *Teaching and Teacher Education*, 17(7), 807-818. Retrieved on July 27, 2005, from http://olinks.ohiolinks.edu.proxy.lib.ohio-state.edu.

Goldberg, S.S. (1986). Reimbursing parents for unilateral placements in private special education schools. *Exceptional Children*. 52(4), 390-394.

Gordan, D. T. (2000). *The digital classroom: How technology is changing the way we teach and learn.* Cambridge, MA: Harvard Education Letter

Graham, S. & Harris, K.R. (1989a). Components analysis of cognitive strategy instruction: Effects on learning disabled students' compositions and self-efficacy. *Journal of Educational Psychology*, 81, 353-361.

Graham, S., & Harris, K. R. (1989b). Improving learning disabled students' skills at composing essays: Self-instructional strategy training. *Exceptional Children*, 56(3), 201-214.

Guskey, T.R. (2002) Professional development and teacher change. *Teachers and Teahcing: Theoy and Practice*. 8(3/4).

Guskey, T.R. (2001). Context variables that affect measures of teacher efficacy. *Journal of Educational Research*, 81(1). 41-47.

Hahn, H. (2002). Academic debates and political advocacy: The u.s. disability movement. In C. Barnes, M. Oliver & Barton (Eds.), *Disability Studies Today* (pp. 162-189). Malden, MA: Blackwell Publishers, Inc.

Hair, Jr., J.F., Anderson, R.E., Tatham, R.L & Black, W.C. (1998). Multivariate Data Analysis. Upper Saddle River, N.J.: Prentice Hall.

Hall, T. (Ed.). (2003). *Teacher planning and the universal design for learning environments: Teacher practice.* National Center on Accessing the General Curriculum (NCAC). Wakefield, MA: CAST and OSEP, Cooperative agreement No. H324H990004. Retrieved December 4, 2003, from www.cast.org.

Hamilton, Michael B. (2005). Online survey response rates and times. *SuperSurvey Tercent Inc*. Retrieved on December 3, 2005, from http://www.supersurvey.com/papers/supersurvey_white_paper_response_rates.pdf

Hanley, T. (1995). The need for technological advances in assessment related to national educational reform. *Exceptional Children*, 61 (3), 222-229.

Hargrave, E.K., (2001). The effects of educators' perceptions of efficacy on their willingness to include students with disabilities in regular classrooms. Ph.D. Dissertation. University of Missouri, Columbia. Retrieved July 26, 2005, from ProQuest Digital Dissertations database. (Publication No.. #AAT3025670).

Harman, A.B. (Summer,1979). The impact of PL 94-142 at the LEA level or PL 94-142 revisited. *Journal of Education* 161 (3), 81-89.

Harriott, W. A. (2004). Inclusion inservice content and training procedures across the united states. *Journal of Special Education Leadership*, 17 (2), 91-102.

Hasselbring, T. S. & Goin, L. I. (2004). Literacy instruction for older struggling readers: What is the role of technology. *Reading and Writing Quarterly: Overcoming Learning Difficulties*, 20 (2), 123-144.

Hasselbring, T. S. (2001). A possible future of special education technology. *Journal of Special Education Technology*, 16 (4), 15-22.

Hartshorne, R., Ferdig, R.E. & Dawson, K. (2006). Preparing current and future teachers to teach with technology: An examination of school-university collaborations. *Journal of Computing in Teacher Education*, 21 (3), 77-85.

Herner, L. M., Karayan, s., McKean, G., & Love, D. (2003). Special education teacher preparation and the electronic portfolio. *Journal of Special Education Technology,* 18(1), 44-49.

Higgins, E. L. & Raskind, M. H. (2000). Speaking to read: The effects of continuous vs. discrete speech recognition systems on the reading and spelling of children with learning disabilities. *Journal of Special Education Technology*, 15(1), 19-30.

Hill, E.F. (2000). The relationship between teacher beliefs and inclusive education. Ed.D. dissertation, Rutgers The State University of New Jersey - New Brunswick, United States - New Jersey. Retrieved July 26, 2005, from ProQuest Digital Dissertations database. (Publication No. AAT 9994828).

Hitchcock, M.B., Meyer, A., Rose, D., & Jackson, R. (2002). Providing access to the general education curriculum: Universal design for learning. *Teaching Exceptional Children*, 35(2), 8-17.

Hoy, A.W. & Spero, R.B. (2005). Changes in teacher efficacy during the early years of teaching: A comparison of four measures. *Teaching and Teacher Education*, 21(4), 343-356. Retrieved on April 14, 2006, from http://olinks.ohiolinks.eduproxy.lib.ohio-state.edu

Hoy, A.W. (2004).What Preservice teachers should know about recent theory and research in motivation? Paper presented at the annual meeting of the American Educational Research Association, San Diego, CA, April 15, 2004. Retrieved on July, 29,2005, from: www.osu.edu

Hoy, A. W. & Hoy, W.K. (2003). *Instructional leadership: A learning-centered guide.* New York, NY: Allyn & Bacon.

Hoy, A. (2000). Qualitative and quantitative approaches to examining efficacy in teaching and learning. Paper presented at the annual meeting of the American Educational Research Association, New Orleans, LA, April 28, 2000. Retrieved on July, 29,2005, from: www.osu.edu

Hoy, W.K., Sweetland, S.R., & Smith, P.A. (2002). Toward an organizational model of achievement in high schools: The significance of collective efficacy. Educational Administration Quarterly, 38(1), 77-93. Retrieved on April 14, 2006, from http://journals.ohiolink.edu.proxy.lib.ohio-state.edu

Huang, S. (1994). Prospective teachers' use and perception of the value of technology: In J. Willis, B. Robin, D. Willis (Eds), *Technology and Teacher Education Annual* (pp. 61-66.) Charlottesville, VA: Association for the Advancement of Computing in Education.

Hughes, R. & Hans, J. (2001). Computers, the internet, and families: A review of the role new technology plays in family life. *Journal of Family Issues*, 22 (6), 776-790.

Individuals with Disabilities Education Act (IDEA) amendments. Retrieved on November 30, 2003, from http://www.ideapractices.org/

Individuals with Disabilities Education Act (IDEA) Amendments of 1997 (formerly P.L. 94-142, The Education for All Handicapped Children's Act) Retrieved on February 12, 2004, from http://www.ed.gov/offices/OSERS/IDEA/

Individuals with Disabilities Education Act (IDEA) amendments. Retrieved on April 5, 2004, from http://www.ideapractices.org/

Individuals with Disabilities Education Act (IDEA) amendments. Retrieved on November 30, 2003, from http://www.ideapractices.org/

Individuals with Disabilities Education Act (IDEA) Amendments of 1997 (formerly P.L. 94-142, The Education for All Handicapped Children's Act) Retrieved on February 12, 2004, from http://www.ed.gov/offices/OSERS/IDEA/

Individuals with Disabilities Education Act (IDEA) amendments. Retrieved on April 5, 2004, from http://www.ideapractices.org/

Jackson, R. M. (2004). Technologies supporting curriculum access for students with disabilities. Wakefield, MA: National Center on Accessing the General Curriculum. Retrieved July 31, 2005, from http://www.cast.org/publications/ncac/ncac_techsupport.html

Jackson, R, Harper, K., & Jackson, J. (2003). Effective teaching practices and the barriers limiting their use in accessing the curriculum: A review of recent literature. Peabody, MA: Center for Applied Special Technology (CAST). Retrieved on July 31, 2005, from http://www.cast.org/publications/ncac/ncac_effectivevetp.htm

Jackson, R., & Harper, K., (2001). Teacher planning and the universal design for learning environments. Peabody, MA: Center for the Applied Special Technology, Inc. Retrieved on July 31, 2005, from http://www.cast.org/publications/ncac/ncac_teacherplanning.html.

Jacobs, J., Garnier, H., Gallimore, R., Hollingsworth, H., Givvin, K., Rust, K., Kawanaka, T., Smith, M. Wearne, D., Manaster, A., Etterback, W., Hiebert, J., and Stigler, J. W. (2003). *Third international mathematics and science study 1999 video study technical report volume I: Mathematics*, NCES (2003-012). Washington D.C.: U. S. Department of Education, National Center for Education Statistics. Retrieved March, 2004, from http://nces.ed.gov

Jakowski, M.E. (2004). Special education in the public schools: Lessons from teachers who stay (Doctoral dissertation, Indiana University , 2004). Proquest Information and Learning Company #AAT 3141600.

Jensen, Jennifer, M. (2005). Ten easy ways to increase response rates for your online survey. *Question Pro*, Retrieved on December 4, 2005, from http://www.questionpro.com/akira/showArticle.do?articleID=deploy01

Jerald, C. (2003). Beyond the rock and the hard place. *Educational Leadership*, 61 (3), 12-16.

Johnson, D. (2005). Computer tutors get personal. *Learning and Leading with Technology*, 33 (3), 14-19.

Johnson, M. (2003). *Make them go away*. Louisville, KY: The Avocado Press.

Johnston, M. & Cooley, N. (2001). *What we know about: Supporting new models of teaching and learning through technology*. Arlington, VA: Educational Research Service. (ERIC Document Reproduction No. ED455223).

Johnstone, C.J. (2003). *Improving validity of large-scale tests: Universal design and student performance* (No. Technical Report 37). Minneapolis, MN: University of Minnesota, National Center on Education Outcomes.

Jones, R., Cunningham, A., & Stewart, L.M. (2005). A collaborative model for influencing the technology integration behaviors and dispositions of preservice social studies teachers. *Journal of Computing in Teacher Education*, 21(4), 77-83.

Judge, S. L. (2001). Computer applications in programs for young children with disabilities: Current status and future directions. *Journal of Special Education Technology*, 16(1), 29-40.

Karger, J., (2004). *Post IDEA'97 case law and administrative decisions: Access to the general curriculum.* National Center for Accessing the General Curriculum. Wakefield, MA: CAST. Retrieved April 7, 2004, from http://www.cast.org/ncac/index.cfm?i=4928

Keiper, T.& Larson, B. (2000). Preservice teachers' perceptions of infusing computer technology into social studies instruction. *Theory and Research in Social Education*, 28 (4), 566-579.

King, B. M. & Minium, E. M. (2003). *Statistical reasoning in psychology and education*. Hoboken, NJ: John Wiley & Sons, Inc.

Kleinhammer-Tramill, J. (2003). An analysis of federal initiatives to prepare regular educators to serve students with disabilities: Dean's grants, regi, and beyond. *Teacher Education and Special Education*. 26(3), 230-245.

Kleinhammer-Tramill, J., & Fiore, T.A. (2003). A history of federal support for preparing special educators and related services personnel to serve children and youth with disabilities. *Teacher Education and Special Education*, 26(3), 217-229.

Kluth, P., Villa, R.A. & Thousand, J.S. (2002). "Our school doesn't offer inclusion" and other legal blunders. *Educational Leadership*, 59(4), 24-27.

Kranzler, J.H. & Pajares, F. (1997). An exploratory factor analysis of the Mathematics Self-Efficacy Scale-Revised (MSES-R). *Measurement and Evaluation in Counseling & Development*, 29(4), 215-228. Retrieved on July 27, 2005, from http://olinks.ohiolink.edu.proxy.lib.ohio-state.edu/formatter.php?ctx_ver=Z39.88-2004&rf…

Lagemann, E. C. & Shulman, L. S. (1999). *Issues in education research: Problems and possibilities*. San Francisco, CA: Jossey-Bass Publications.

Ledford, Dionne, (2002). Teachers' level of efficacy as a predictor of the academic achievement of students with disabilities. Ph.D. Dissertation. Rutgers The State University of New Jersey, New Brunswick. UMI Dissertation Database #AAT3052726 Retrieved on July 26, 2005, from http://proquest.umi.com.proxy.lib.ohio-state.edu/dissertations/preview_all/3052726.

Lee, Y. & Vail, C. O. (2005). Computer-based reading instruction for young children with disabilities. *Journal of Special Education Technology*. 20(1), 5-18.

Lewis, R. B., Graves, A. W., Ashton, T. M. & Kieley, C. L. (1998). Word processing tools for students with learning disabilities: A comparison of strategies to increase text entry speed. *Learning and Disabilities Research*, 13. 95-108.

Leyser, L. (2002) Choices of instructional practices and efficacy beliefs of Israeli general and special educators: A cross-cultural research initiative. *Teacher Education and Special Education*, 25(2), 154-167.

Little, M.E. & Crawford, P.A. (2002). Collaboration among educators for true innovative programming. *Teacher Education and Special Education*, 25(3), 320-324.

Lindstrom, P. (2001). Parents of children with disabilities evaluate importance of computer in child development. *Journal of Special Education Technology*, 16(2), 43-52.

Linton, S. (1998). *Claiming disability*. New York, NY: New York University Press.

Liu, M. (2005 June). *Motivating students through problem-based learning.* Paper presented at the National Computing Conference, Philadelphia, PA.

Lowe, D. M. (1982). *The history of bourgeois perception*. Chicago, IL: University of Chicago Press.

Luckasson, R.A. (1986). Attorneys' fees reimbursement in special education cases: Smith v. robinson. *Exceptional Children*, 52(4), 384-389.

Mainzer, L., Castellani, J., Lowry, B., & Nunn, J. (2006). GLOBE tech using technology to maximize classroom performance with team-based instruction. *Technology in Action*. 2(1), 1-12.

Meyer, A. & O'Neill, M. (2000). Supporting the motivation to learn: How universal design for learning can help. *Exceptional Parent*, 30(6), 35.

MacArthur, C.A. (1998). From illegible to understandable: How word recognition and speech synthesis can help. *Teaching Exceptional Children*, 30 (6), 66-71.

McGee, M.R. (2004). Teacher and school variables associate with the academic and social outcomes of students with special needs in general education classrooms. Dissertation (University of Toronto, Canada). Retrieved on July 26, 2005, from http://proquest.umi.com.proxy.lib.ohio-state.edu/pqdweb?did=766029731&Fmt=7&clientID=3959&RQT=309&Vname=PQDAB

McLeskey, J., Hoppey, D., Williamson, P., & Rentz, T. (May, 2004). Is inclusion an illusion? An examination of national and state trends toward education of students with learning disabilities in general education classrooms. *Learning Disabilities Research & Practice*, 19 (2), 109-115.

Menges, R. J., & Austin, A. (2001). Teaching in higher education. In V. Richardson (Ed,), *Handbook of research on teaching*.(4th ed.,pp.1122-1156). Washington D.C.: American Educational Research Association.

Michaels, C. A. & McDermott, J. (2003). Assistive technology integration in special education teacher preparation: Program coordinators' perceptions of current attainment and importance. *Journal of Special Education Technology*, 18(3), 29-45.

Minke, K.M., Bear, G.G., Deemer, S.A., & Griffin, S.M. (1996). Teachers' experiences with inclusive classrooms: Implications for special education reform. *The Journal of Special Education*, 30, 152-186. Retrieved on July 27, 2005, from http://vnweb.hwwilsonweb.com.proxy.lib.ohio-state.edu/hww/results/results_single_fullte…

Microsoft. (2004). *Educating the 21st century citizen.* Retrieved January 20, 2004, from http://www.microsoft.com/education/?ID=About

Meyen, E., Aust, R., Gauch, J.M., Hinton, H.S., Isaacson, R.E., Smith, S.J., et al.(2002). E-learning: A programmatic research construct for the future. *Journal of Special Education Technology*, 17(3).

Mike, D. (2000, November). *Preparing pre-service special education teachers to use technology effectively: Program considerations*. Paper presented at the Teacher Education Division of the Council for Exceptional Children Conference, Las Vegas, NV.

Mittnacht, M. (2005). Case in point: Funding special education. Are we asking the right questions? *Journal of Special Education Leadership*, 18(1), 50-52.

Mrsnik, K.O. (2003). A case study of the effects of the interactive change model for inclusion on the development of teacher efficacy and teachers' willingness to implement inclusive practices. Ph.D. dissertation, Cleveland State University, United States - Ohio. Retrieved July 26, 2005, from ProQuest Digital Dissertations database. (Publication No. AAT 3108441).

Montgomery , D.J., Karlan, G. R. & Coutinho, M. (2001). The effectiveness of word processor spell checker programs to produce target words for misspellings gnerated by students with learning disabilities. *The Journal of Special Education Technology*, 16(2), 27-42.

Morrison, G.R., Ross, S. M., and Kemp, J.E. (2004). *Designing effective instruction*. Hoboken, N.J.: John Wiley & Sons, Inc.

Moursund, D., & Bielefeldt, T. (1999). Will new teachers be prepared to teach in a digital age? *Milken Exchange on Education Technology.* Retrieved March 13, 2004, from http://www.mff.org/publications.taf?page=154

Natarajan, V. P. (1999). An empirical study of the effectiveness of inclusion in a large urban school district. Ed.D. dissertation, Rutgers The State University of New Jersey - New Brunswick, United States - New Jersey. Retrieved July 26, 2005 from ProQuest Dissertations database. (Pubication No. AAT 9922478).

Nelson, K. A. (2001). Inclusion: A content analysis of general and special education teachers' and administrators' perspectives. Dissertation. (University of Illinois at Urbana-Champaign). Proquest #AAT 9990099. Retrieved on July 26, 2005, from http://proquest.umi.com. ProQuest document ID: 727797391.

National Center on Educational Restructuring and Inclusion. (1995). *National study on inclusive education overview and summary report*. Phi Delta Kappan

National Council for the Accreditation of Teacher Education (NCATE). (2001). NCATE unit standards. Retrieved October 20, 2003, from, http://www.ncate.org/standard/unit_stnds_ch2.htm

National Council for the Accreditation of Teacher Education (NCATE). (1997). *Technology and the new professional teacher: Preparing for the 21st century classroom.* Washington DC: author. Retrieved on June 19, 2006, from http://www.ncate.org/public/technology21.asp?ch=113

No Child Left Behind Act NCLB: Public Law No. 107-110, 115 stat. 1425, 2002.

No Child Left Behind Act, NCLB: Public Law No. 107-100, 2001.

Ochoa, T.A. & Robinson, J.M. (2005). Revisiting group consensus: Collaborative learning dynamics during a problem-based learning activity in education. *Teacher Education and Special Education*, 28(1), 10-20.

Ochoa, T. A., Kelly, M.L., Stuart, S., & Rogers-Anderson, D. (2004). The impact of PBL technology on the preparation of teachers of English language learners. Journal of Special Education Technology, 19(3), 35-45.

Ochoa, T.A. (2002). An interactive multimedia problem-based learning CD-ROM for teacher preparation: IDEA-97 Guidelines for disciplining students with disabilities. *Journal of special education technology*, 17(2), 39-45.

Office of Technology Assessment. (1995). *Teachers and technology: Making the connection*. Report No. OTA-HER-616. Washington DC: Government Printing Office.

Ohio State University Partnership Grant. (2003). *Universally designed for learning project*. Columbus, OH: The Ohio State University. Retrieved February 12, 2004, from www.osu.edu/grants/dpg.

Olson, J.F., & Goldstein, A.A. (1996). *Increasing the inclusion of students with disabilities and limited English proficient students in NAEP* (No. Focus on NAEP v2 n1). Washington D.C.: National Center for Education Statistics.

O'Neill, L. M. (2005, Winter). To leave no child behind. *Threshold*. [Online] www.ciconline.org/threshold. 18-30.

Opitz, C, Savenye, W., & Rowland, C. (2003). Accessibility of state department education home pages and special education pages. *Journal of Special Education Technology*, 18(1), 17-27.

Otis-Wilborn, A., Winn, J., Griffin, C. & Kilgore, K. (2005). Beginning special educators' forays into general education. *Teacher Education and Special Education*, 28(3/4), 143-152.

Pajares, F. (2003). Self-efficacy beliefs, motivation, and achievement in writing: A review of the literature. *Reading and Writing Quarterly*, 19, 139-158. Retrieved on July 29, 2005 , from http://www.ingentaconnect.com.proxy.lib.ohio-state.edu/content/tandf/urwl/2003/0000001…

Pajares, M. F. (1992). Teachers' beliefs and educational research: Cleaning up a messy construct. *Review of Educational Research*, 62 (3), 307-332.

Parette, P. & Scherer, M. (2004). Assistive technology use and stigma. *Education and Training in Developmental Disabilities*, 39 (3), 217-226.

Perl, E.S. (2002).Federal and state legislation regarding accessible instructional materials. Wakefield, MA: National Center on Accessing the General Curriculum (NCAC). www.cast.org

Pierson, M. (2006). Universal design for learning: Are your teachers prepared? *Journal of Computing in Teacher Education* , 22 (3), 87.

Prasse, D. P. (1986). Litigation and special educaiton An introduction. *Exceptional Children*, 52(4), 311-312.

Prasse, D. P.& Reschly, D. J. (1986).Larry P.: A case of segregation, testing, or program efficacy?. *Exceptional Children*, 52(4), 333-346.

Preparing Tomorrow's Teachers to Use Technology (PT^3) Grants. Retrieved on November 13, 2004, from http://www.pt3.org.

Puckett, K. S. (2004). Project access: Field testing an assistive technology toolkit for students with mild disabilities. *Journal of Special Education Technology*, 19(2), 5-17.

Pugach, M.C. (2003). Associate editor's exchange: An historical perspective and analysis of federal support for the preparation of personnel to teach students with disabilities. *Teacher Education and Special Education*, 26(3), 215-216.

Rakes, G.C., Fields, V. S., & Cox, K. E. (2006). The influence of teachers' technology use on instructional practices. Journal of Research on Technology in Education, 38 (4), 409-424.

Riel, M., Schwartz, J., & Hitt, A. (2002). School change with technology: *Crossing the digital divide. Information Technology in Childhood Education Annual*, 14, 147-179.

Roberts, G.J. (2001). General education and special educators' attitudes toward the inclusion of students with mild/moderate disabilities. Ph.D. Dissertation. University of Southern Mississippi. Retrieved July 26, 2005, from ProQuest Digital Dissertations database. (Publication No.. AAT3038695)

Rogers, E. (1995, 2003). *Diffusion of innovations*. New York, NY: Free Press

Rose, D. H., Meyer, A., & Hitchcock, C. (2005*). The universally designed classroom: Accessible curriculum and digital technologies.* Cambridge, MA: Harvard Education Press.

Rose, D.H., Meyer, A., Rappolt, G., & Strangman, N.M. (2002). *Teaching every student in the digital age: Universal design for learning*. Alexandria, VA: ASCD Press.

Rose, D. (2000). Universal design for learning. *Journal of Special Education Technology*., 15(4), 47-51.

Rose, D. (2001). Universal design for learning. *Journal of Special Education Technology*, 15(2), 66-67.

Rose, D. (2001). Universal design for learning. *Journal of Special Education Technology,* 16 (4), 64-67.

Rose, D., & Meyer, A. (2000). Universal design for individual differences. *Educational Leadership*, 58 (3), 39-43.

Rose, D., & Meyer, A. (2002). *Teaching every student in the digital age*. Alexandria, VA: Association for Supervision and Curriculum Development.

Ruzic, R. (2001, April). *Lessons for everyone: How students with reading-related learning disabilities survive and excel in college course with heavy reading requirement.* Paper presented at the Annual Meeting of the American Educational Research Association in Seattle, Washington. Retrieved March 3, 2004, from www.cast.org.

Russell, M, Bebell, D. & O'Dwyer, L. (2003). *Use , support, and affect of instructional technology study: An overview of the USEIT study and the participating districts*. Boston, MA: Technology and Assessment Study Collaborative. Retrieved on August 9, 2005, from http://www.intasc.org/PDF/useit_r1.pdf.

Russell, M, Bebell, D. , O'Dwyer, L &. O'Connor. (2003). Teachers' belief about and use of technology: Enhancing the use of technology for new and veteran teachers. Boston, MA: Boston College, Technology and Assessment Study Collaborative. Retrieved on August 9, 2005, from http://www.intasc.org/PDF/useit_r5.pdf.

Sailor, W. & Roger, B. (2005). Rethinking inclusion: Schoolwide applications*. Phi Delta Kappan*. 86 (7), 503-509.

Sandene, b., Horkay, N., Bennett, R.E., Brazwell, B & Oranje, A. (2005). Online assessment in mathematics and writing: Reports from the NAEP technology-based assessment project research & development series. U.S. Department of Education . Washington D.C.: National Assessment of Educational Progress (National Center for Education Statistics. Downloeaded on August 26, 2005, from http://nces.ed.gov/nationsreportcard/pdf/Studies/2005457.pdf.

Sandholtz, J.H., Ringstaff, C. & Dwyer, D.C. (1994). Student engagement revisited: Views from technology-rich classrooms. *Apple Classrooms of Tomorrow* (ACOT Report #21).

Scanlon, D., Gallego, M., Duran, G.Z.& Reyes, E.I. (2005). Interactive staff development supports collaboration when learning to teach. *Teacher Education and Special Education*, 28(1), 40-51.

Schacter, J. (1999). *The impact of educational technology on student achievement: What the most current research has to say.* Milken Exchange on Education Technology. Retrieved on March 13, 2004, from http://www.mff.org/edtech/

Scheeler, M. C., McAfee, J. K., Ruhl, K. L. & Lee, D. L. (2006). Effects of corrective feedback delivered via wireless technology on preservice teacher performance and student behavior. *Teacher Education and Special Education*, 29 (1), 12-25.

Scherer, M. (2004). *The move from separate to inclusive education*. Washington DC: American Psychological Association.

Scherer, M. (2004). Technology made inclusive education possible. In Connecting to learn: Educational and assistive technology for people with disabilities. Schere, Marcia J. American Psychological Association, 91-106.

Schrock, J. A. (2002). *Preservice teachers' attitudes toward inclusion: The influence of cooperating teachers and the student teaching experience*. Ph.D. dissertation, The University of North Carolina at Chapel Hill, United States - North Carolina. Retrieved July 26, 2005, from ProQuest Digital Dissertations database. (Publication No. AAT 3070908).

Scotch, R. K. (2001). American disability policy in the twentieth century. In P. Longmore & L. Urmansky (Eds.), *The New Disability History* (pp. 375-392). New York, NY: New York University Press.

Scruggs, T.E., & Mastropieri, M.A. (1996). Teacher perceptions of mainstreaming/inclusion 1958-1995: A research synthesis. *Exceptional Children* 63: 59-74.

Seidl, B., & Pugach, M.C. (1998). Responsible linkages between diversity and disability: A challenge for special education. *Teacher Education and Special Education*, 21, 319-333.

Shealey, M., Lue, M., Brooks, M. & McCray, E. (2005). Examining the legacy of brown: The impact on special education and teacher practice. *Remedial and Special Education*, 26(2), 113-121.

Shippen, M.E., Crites,S.A., Houchins, D.E., Ramsey, M.L. & Simon, M. (2005). Preservice teachers' perceptions of including students with disabilities. *Teacher Education and Special Education.* 28(2), 92-99.

Skrtic, T.M. (2003). An organizational analysis of the overrepresentation of poor and minority students in special education. *Multiple Voices for Ethnically Diverse Exceptional Learners.* 6(1), 41-57.

Smerdon, B., Cronen, S., Lanahan, L., Anderson, J., Iannoti, N., Angeles, J. & Greene, B. (2000). *Teachers' tools for the 21st century: A report on teachers' use of technology.* Washington D.C: U.S. Department of Education Office of Educational Research and Improvement (NCES 2000-102).

Smith, D.D., Tyler, N., Skow, K, Stark, A., Baca, L. (2003). Effective inclusion of students with disabilities in general education classrooms: The IRIS study . American Association of Colleges of Teacher Education.

Smith, D. D., Tyler, N., Skow, K., Stark, A., & Baca, L. (2003, January). *Effective inclusion of students with disabilities in general education classrooms: The IRIS center for faculty enhancement*. Paper presented at the Annual Meeting of the American Association of Colleges of Teacher Education, (55th, New Orleans, LA. January) ERIC #ED473-260.

Smith, S. (2005). Teacher Education . *Journal of Special Education Technology*, 20 (4), 64-67.

Smith, S. (2001) Technology 101: Integration beyond a technology foundations course. *Journal of special education technology*, 16(1), 43-45.

Smith, S. (2000). Teacher education. *Journal Special Education Technology*, 15(4), 40-43.

Sneeden, C. (2000). *State-wide change*. Chapel Hill, NC: University of North Carolina, 2000 Catalyst Grant [PT3 grant].

Soodak, L.C., Erwin, E.J., Winton, P., Brotherson, M.J., Turnbull, A.P., Hanson, M.J. & Brault, L.M.J. (2002). Implementing inclusive early childhood education: A call for professional empowerment. *Topics in Early Childhood Special Education*, 22(2), 91-102.

Soodak, L.C. & Erwin, J. (2000) Valued member or tolerated participant: Parents' experiences in inclusive early childhood. *Journal of the Association for Persons with Severe Handicaps*. 25(1), 29-41.

Soodak, L.C., Podell, D.M., & Lehman, L.R. (1998). Teacher, student, and school attributes as predictors of teachers' responses to inclusion. The Journal of Special Education, 31(4), 480-497.

Soodak, L.C.& Podell, D.M. (1996). Teacher efficacy: Toward the understanding of a multi-faceted construct. *Teaching and Teacher Education*, 12(4), 401-411. Retrieved on July 27, 2005, from http://olc3.ohiolink.edu.proxy.lib.ohio-state.edu/bin/gate.exe?f=doc&state=nsv5ud.2.1

Soodak L.C. & Podel, D.M. (1993). Teacher efficacy and student problems as factors in apecial education referral. *Journal of Special Education*. 27, 66-81.

Stahl, S. (2004). The promise of accessible textbooks: Increased achievement for all students. Wakefield, MA: National Center on Accessing the General Curriculum. Retrieved on July 31, 2005, from http://www.cast.org/publications/ncac/ncac_accessible.html

Stevenson, H., & Stigler, J. W. (1992). *The learning gap: Why are schools are failing and what we can learn from japanese and chinese education.* New York, NY: Simon and Schuster.

Stigler, J. W., & Hiebert, J., (February, 2004). Improving mathematics teaching. *Educational Leadership*. 61(5), 12-17.

Steinweg, S.B., Davis, M.L. & Thomson, W.S. (2005). A comparison of traditional online instruction in an Introduction to special education course. *Teacher Education and Special Education*. 28(1). 62-73.

Stock, S.E., Davies, D.K. & Wehmeyer,M.L. (2004). Internet-based multimedia tests and surveys for individuals with intellectual disabilities. *Journal of special education technology*,19(4), 43-47.

Strudler, N., & Wetzel, K. (2005) The diffusion of electronic portfolios in teacher education: Issues of initiation and implementation. *Journal of Research on Teacher Education*, 37(4), 411-433.

Strudler, N. (2000). *Project technology: helping restructure educational access and deliver*. University of Nevada, Las Vegas: 2000 Implementation Grant. [PT3 grant]

Styron, R. & Cole, M. (2005 June). *Enhancing the effectiveness of professional development*. Paper presented at the National Educational Computing Conference, Philadelphia, PA.

Sturm, J. M., Erickson, K. & Yoder, D.E. (2002). Enhancing literacy development through ACC technologies. *Assistive Technology*, 14 (1), 71-80.

Sugar, W., & Wilson, K. (2005). Seeking alternative to inservice technology workshops from teachers' perspectives. *Journal of Computing in Teacher Education*, 21(4), 91-98.

Swain, C. (2005). Technology in teacher education : Faculty visions and decision making. Paper presented at the International Society of Technology in Education Conference. Philadelphia, 2005

Tab, E.D. (2005, February). *Internet access in u.s. public schools and classrooms: 1994-2003(*NCES 2005-015). U.S. Department of Education. Washington DC: National Center for Education Statistics.

Taylor, J. M., Tucker, J. A.& Galagan, J. E. (1986). The luke s. class action suit: A lesson in system change. *Exceptional Children*, 52(4), 376382

Tharp, R., & Gallimore, R. (1988). *Rousing minds to life: Teaching, learning, and schooling in social context.* London: Cambridge University Press.

Thiessen, D. & Howey, K. (1998). *Agents, provacateurs: Reform-minded leaders for schools of education*. Washington D.C.: American Association of Colleges for Teacher Education.

Thompson, S.J., Johnstone, C.J. & Thurlow, M.L. (2002). *Universal design applied to large-scale assessments* (No. NCEO Technical Report 34). Minneapolis, MN: University of Minnesota, National Center on Education Outcomes.

Thompson, S.J., Thurlow, M.L., Quenemoen, R.F. & Lehr, c.A. (2002). *Access to computer-based testing for students with disabilities* (No. NCEO Synthesis Report 45). Minneapolis, MN: University of Minnesota, National Center on Education Outcomes.

Thurlow, M.L. McGrew, K.S., Tindal, G., Thompson, S.J., Ysseldyke, J.E., & Elliott, J.L. (2000). *Assessment accommodations research: Considerations for design and analysis* (No. Technical Report 26). Minneapolis, MN: University of Minnesota, National Center for Educational Outcomes.

Thurlow, M. L. & Wiley, H. I. (2006). A baseline perspective on disability subgroup reporting. *The Journal of Special Education*, 39 (4), 246-254.

Tillery, W.L. & Carfioli, J.C. (1986). Frederick l: A review of the litigation in context. *Exceptional Children.* 52(4), 367-375.

Tom, A. (1997). *Redesigning teacher education*. New York: State University of New York Press.

Tomlinson, C. A. (1999). *The differentiated classroom*. Alexandria, VA: Association for Supervision and Curriculum Development.

Tomlinson, C. A. (1999, September). Mapping a route toward differentiate instruction. *Educational Leadership*, 57 (1), 12-16.

Tschannen-Moran, M., Woolfolk Hoy, A. (2002, April). The influences of resources and support on teachers' efficacy beliefs. Paper presented at the American Educational Research Association, New Orleans, L.A.

Tschannen-Moran, M. & Hoy, A. (2001). Teacher efficacy: Capturing an elusive construct. *Teaching and Teacher Education*, 17, 783-805.

Tschannen-Moran, M., Woolfolk Hoy, Hoy, W. K. (1998). Teaching efficacy: Its meaning and measure. Review of Educational Research, 68, 202-248.

Turnbull III, H. R. (1986). Appropriate education and rowley. *Exceptional Children*, 52(4), 347-352.

United States Department of Education, Office of Educational Technology. (2004, May 2005). *Toward a new golden age in american education: How the internet, the law and today's students are revolutionizing expectations*, Washington, D.C.: Author.

United States Department of Education. (2003). http://www.ed.gov

United States Department of Education. Office of Special Programs. (2001). *Twenty-third annual report to congress on the implementation of the individuals with disabilities education act*. Washington D.C.: Author.

United States Department of Education Regulation s for Section 504 of the Rehabilitation Act of 1973, 34 C.F.R. Part 100 [1999].

Villa, R.A. & Thousand, J.S. (2003). Making inclusive education work. Educational Leadership, 61(2), 19-23.

Vitello, S.J. (1986). The tatro case: Who gets what and why. *Exceptional Children* (52(4), 353-357.

Vogt, W. P. (1999). Dictionary of statistics & methodology. Thousand Oaks: Sage Pubications.

Walumba, F.O., Wang, P., Lawler, J.J., & Shi, K. (2004). The role of collective efficacy in the relations between transformational leadership and work outcomes. *Journal of Occupational & Organizational Psychology*, 77(4), 515-530.

Wang J. & Hartley, K. (2003). Video technology as a support for teacher education reform. *Journal of Technology and Teacher Education.* 11 (1), 105-138.

Werts, M.G., Wolery, M., Synder, E.D., Caldwell, N., & Salisbury, C. L., (1996). Supports and resources associated with inclusive schooling: Perceptions of elementary school teachers about need and availability. *The Journal of Special Education*. 33(2), 187-203.

Wehmeyer, M.L., Smith, S.J., Palmer, S.B. & Davies, D.K. (2004). Technology use by student with intellectual disabilities: An overview. Journal of Special Education Technology, 19(4), 7-21.

Wetzel, K. & Williams, M. K. (2004-2005). Changing teacher education faculty: Mission possible. *Journal of Computing in Teacher Education*, 21 (2), 45-50.

Wetzel, K. (1996). Speech-recognizing computers: A written-communication tool for students with learning disabilities: *Journal of Learning Disabilities*, 35(4), 290-305.

Wiley H.I., Thurlow M.L. & Klein, J.A. (2005). *Steady progress: State public reporting practices for students with disabilities after the first year of NCLB (2002-2003)* (NCEO Technical Report 40), Minneapolis, MN: University of Minnesota, National Center on Educational Outcomes. Retrieved August 10, 2005, from http://education.umn.edu/NCE/OnlinePubs/Technical40.htm.

Wiggins, G. & McTighe, J. (1998-1999*).* *Understanding by design*. Alexandria,VA: : Association for Supervision and Curriculum Development.

Wiggins, G. (1989, November). The futility of trying to teach everything of importance. *Educational Leadership,* 47(3), 44-48, 57-59.

Williams, S.C. (2002). Word-prediction software can help students write. *Teaching Exceptional Children*, 34, 71-77.

Wissick, C. A. (2005, May). Written language: When to consider technology. *Technology in Action*, 1(6), 1-12.

Winzer, M. (1997). Disability and society before the eighteenth century. In L. Davis (Ed.). *The Disability Studies Reader* (pp. 75-109). New York, NY: Routledge.

Wiske, S. (2004). A new culture of teaching for the 21st century. *Harvard Education Letter: The digital classroom.* Cambridge, MA: Harvard Graduate School of Education. Retrieved March 1, 2004, from http://www.edletter.org/dc/wiske.htm

Wolery, M. & Synder, E.D. (1996). Supports and resources associated with inclusive schooling: Perceptions of elementary school teachers about need and availability. *Journal of Special Education*, 30 (2), 1-17, Retrieved on October 31, 2004, from http://web24.epnet.com.proxy.lib.ohio-state.edu/citation.asp?tb=1&_ug=sid+CCD37223

Wood, F.H., Johnson, J. L., & Jenkins, J.R. (1986). The lora case: Nonbiased referral, assessment, and placement procedures. *Exceptional Children*, 52(4), 323-332.

Wu, X. (2003). Enactment of technology-enhanced literacy learning environments (TELE-Web) in a multi-grade inclusion classroom: A case of evolving technology curriculum and its affordances. Michigan State University., U.S. Dissertation Abstracts record AA13092229 [Vol 64 (5-A), 2003, p. 1530].

Zhao, Y. & Frank, K. A. (2003). Factors affecting technology use in schools: An ecological perspective. *American Educational Research Journal*. 40(4), 807-840.

Xin, J. F. & Reith, H. (2001). Video-assisted vocabulary instruction for elementary school students with learning disabilities. *Information Technology for Childhood Education Annual*, 13, 87-103.

Zigmond, N. (Fall 2003). Where should students with disabilities receive special education services? Is one place better than another?. *The Journal of Special Education*, 37(3), 193-199. Retrieved on August 3, 2005, from http//:olc5.ohiolink.edu.proxy.lib.ohio-state.edu/bin/gate.exe?f=doc&state=e3u3s8.2.2

APPENDIX A

IRB APPROVAL

07/08/2006 10:19 FAX 614 688 0366 RESPONSIBLE RESEARCH 002

RECD MAR 0 3 2006

TITLE PAGE - APPLICATION FOR EXEMPTION FROM REVIEW BY THE INSTITUTIONAL REVIEW BOARD
The Ohio State University, Columbus OH 43210

For office use only
PROTOCOL NUMBER: 2006E0193

► **Principal Investigator**	Name: **Anita Woolfolk Hoy, Ph.D.**	Phone: 614-292-3774
University Title: ☒ Professor ☐ Associate Professor ☐ Assistant Professor ☐ Instructor ☐ Other. Please specify. (May require prior approval.)	Department or College: College of Education, Education Policy & Leadership Campus Address (room, building, street address): 159 A Ramseyer Hall 29 W. Woodruff Avenue Columbus, OH 43210 Signature: Anita Woolfolk Hoy Date: 2/7/05	E-mail: Hoy.17@osu.edu Fax: 614-292-7700
► **Co-Investigator**	Name: **Beatrice H. Benton-Borghi**	Phone: 614-486-9036
University Status: ☐ Faculty ☐ Staff ☒ Graduate Student ☐ Undergraduate Student ☐ Other. Please specify.	Campus Address (room, building, street address) or Mailing Address: 2449 Edington Road Columbus, OH 43221-3047 Signature: Beatrice H. Benton-Borghi Date: 3/03/06	E-mail: Benton-borghi.1@osu.edu Fax:
► **Co-Investigator**	Name:	Phone:
University Status: ☐ Faculty ☐ Staff ☐ Graduate Student ☐ Undergraduate Student ☐ Other. Please specify.	Campus Address (room, building, street address) or Mailing Address: Signature: Date:	E-mail: Fax:
► **Protocol Title**	Teaching *Every* Student in the 21st Century: Teacher Efficacy and Technology	
► **Source of Funding**	none	

For Office Use Only

☒ **Approved.** ►	Research has been determined to be exempt under these categories: #2. Research may begin as of the date of determination listed below.
☐ **Disapproved.** ►	The proposed research does not fall within the categories of exemption. Submit an application to the appropriate Institutional Review Board for review.

Date of determination: 3/08/06 **Signature:** Janet A. Schulte
Office of Responsible Research Practices

HSE-1.0 Page 2 *Approved by the Policy Coordinating IRB. 5/18/00, revised 12/31/03*

APPENDIX B

IRB SECOND APPROVAL

REC'D JUN 0 1 2006

REC'D JUN 0 1 ...

TITLE PAGE - APPLICATION FOR EXEMPTION
FROM REVIEW BY THE INSTITUTIONAL REVIEW BOARD
The Ohio State University, Columbus OH 43210

For office use only
PROTOCOL NUMBER: 2006E0421

► **Principal Investigator**		
University Title: ☒ Professor ☐ Associate Professor ☐ Assistant Professor ☐ Instructor ☐ Other. Please specify. (May require prior approval.)	Name: **Anita Woolfolk Hoy, Ph.D.**	Phone: 614-292-3774
	Department or College: College of Education, Education Policy & Leadership Campus Address (room, building, street address): 159 A Ramseyer Hall 29 W. Woodruff Avenue Columbus, OH 43210	E-mail: Hoy.17@osu.edu
	Signature: Anita W. Hoy Date: 6/1/06	Fax: 614-292-7700

► **Co-Investigator**		
University Status: ☐ Faculty ☐ Staff ☒ Graduate Student ☐ Undergraduate Student ☐ Other. Please specify.	Name: **Beatrice H. Benton-Borghi**	Phone: 614-486-9036
	Campus Address (room, building, street address) or Mailing Address: 2449 Edington Road Columbus, OH 43221-3047	E-mail: Benton-borghi.1@osu.edu
	Signature: Beatrice H. Benton-Borghi Date: 6/1/06	Fax:

► **Co-Investigator**		
University Status: ☐ Faculty ☐ Staff ☐ Graduate Student ☐ Undergraduate Student ☐ Other. Please specify.	Name:	Phone:
	Campus Address (room, building, street address) or Mailing Address:	E-mail:
	Signature: Date:	Fax:

► **Protocol Title**	Teaching *Every* Student in the 21st Century: Teacher Efficacy and Technology

► **Source of Funding**	none

For Office Use Only		
☒ **Approved.**	►	Research has been determined to be exempt under these categories: #2. Research may begin as of the date of determination listed below.
☐ **Disapproved.**	►	The proposed research does not fall within the categories of exemption. Submit an application to the appropriate Institutional Review Board for review.

Date of determination: 6/02/06 **Signature:** Janet A. Schulte
Office of Responsible Research Practices

APPENDIX C

IRB APPROVED COMMUNICATIONS, PROTOCOLS, AND THE TEACHER BELIEFS INVENTORY

C-1 PANEL OF EXPERTS
E-mail invitation

C- 2 FIELD TEST
E-mail invitation

C-3 PILOT TEST
Online
E-mail invitation
Letter of consent information and survey instrument
1st E-mail reminder
2nd E-mail reminder
E-mail thank you for submission and interview invitation with consent information
Traditional Print
Traditional print invitation
Teacher response card to request a traditional print copy
Print thank you and invitation to optional interview

C-4 RESEARCH STUDY
Online
E-mail invitation
Online letter of consent information and survey instrument
1st E--mail reminder
2nd E-mail reminder
E-mail thank you for submission and interview invitation with consent information
Traditional Print
Traditional print invitation
Teacher response card to request a traditional print copy
Print thank you and invitation to optional interview
Survey non-respondents
Non-responder protocol [telephone]
Interview participants
Interview protocol [online instant messenger, email, telephone]

C-5 STUDY OF NONRESPONDENTS
Survey Non-Respondents
Letter of consent/information
Feedback post card [Why they did not respond to online survey]
Feedback Email Version

C-6 TEACHER BELIEFS INVENTORY

Appendix C-1 PANEL
Email Invitation

Education

College of Education
The Ohio State University

Dear Panel Expert,

Thank you for your participation in this OSU Research Study: *Teaching Every Student in the 21st Century: Teacher Efficacy and Technology*, adding your voice in the ongoing effort to improve teacher education. This study will look at novice teachers' sense of efficacy to teach students with disabilities in the regular education classroom and to integrate technology to teach these students. Your expertise in the inclusion of students with disabilities in the general education classroom and/or your expertise in the integration of assistive and accessible technology to teach every student is important to our study.

Teachers expected to graduate from the colleges of education with the knowledge, skills and dispositions to teach all students, are not teaching *every* student (Sailor & Roger, 2005; Kluth, Villa & Thousand, 2002) or integrating technology (Russell, Bebell, O'Dwyer & O'Connor, 2003). Teachers' sense of efficacy to teach every student may differ from teachers' sense of efficacy to teach students without disabilities. “Attention to the factors that support the development of a strong sense of efficacy among preservice and novice teachers seems to be worth what effort and care may be involved because, once established, efficacy beliefs of experienced teachers seem resistant to change”(Woolfolk Hoy, 2004, p.6). A closer look at novice teacher beliefs and attitudes would enable colleges of teacher education to become proactive and to ensure that pre-service teachers have the courses, field experiences and student teaching needed to prepare them to teach every student in the 21st century.

To establish content validity for the *Teacher Beliefs Inventory*, your knowledge of the subject matter will help us to determine the appropriateness and clarity of the items. Use the following link to access the preview version of the survey instrument: **Teacher Beliefs Inventory** [websurveyor link]. After reviewing the instrument, please email your opinions and concerns about the instrument based on the domains of **inclusion** [students with disabilities in the regular education classroom] and **technology** [integrating technology to teach every student]. Email the co-investigator: Benton-borghi.1@osu.edu with your reactions and recommendations.

Thank you for your participation.

Anita Woolfolk Hoy, Ph.D
614-292-3774
Email: hoy.17@osu.edu

Beatrice Benton-Borghi, M.Ed.
614-486-9036
Email: Benton-borghi.1@osu.edu

Appendix C-2 FIELD TEST
Email Invitation

Education

College of Education
The Ohio State University

Dear Teacher,

Thank you for agreeing to participate in the Ohio State University Research Study: **Teaching Every Student in the 21st Century: Efficacy and Technology**.

The researchers appreciate your willingness to preview the survey instrument and to provide feedback concerning the face validity of the instrument. Use the following link to the survey instrument: **Teacher Beliefs Inventory** [ ]. Examine the instrument for the following: 1) ease of use, 2) word difficulty, 3) clarity, 4) layout, and 5) appearance.

Email your opinions and concerns to the researchers c/o benton-borghi.1@osu.edu. Your feedback will help the researchers to improve the instrument.

.
Thank you for your participation and feedback.

Anita Woolfolk Hoy, Ph.D
614-292-3775
Email: hoy.17@osu.edu

Beatrice Benton-Borghi, M.Ed.
614-486-9036
Email: Benton-borghi.1@osu.edu

Appendix C-3 PILOT TEST
Online Email Invitation

Education

College of Education
The Ohio State University

Subject: Leave No Teacher's Voice Behind

Teachers throughout the nation are struggling to meet the needs of a diverse population of students with varying abilities in their classrooms. This Ohio State University survey research, *Teaching Every Student in the 21st Century: Teacher Efficacy and Technology*, examines teachers' beliefs and attitudes regarding the challenges they face in the 21st Century. Data gathered will inform Colleges of Teacher Education.

You may participate by completing the online survey titled: **Teacher Beliefs Inventory**. The instrument will take approximately fifteen minutes to complete. Your identity is in no way connected to your responses and confidentiality is given the highest priority. **Access your copy of the survey** [ ] **using your unique password [ ]**.

The principal investigator, Anita Woolfolk Hoy, Ph.D., hoy.17@osu.edu, or the co-investigator, Beatrice Benton-Borghi, M.Ed., benton-borghi.1@osu.edu, will answer any questions that you may have about the study. Thank you for sharing your valuable opinions.

Anita Woolfolk Hoy, Ph.D
614-292-3776
Email: hoy.17@osu.edu

Beatrice Benton-Borghi, M.Ed.
614-486-9036
Email: Benton-borghi.1@osu.edu

Appendix C-3 PILOT TEST
Online Informed Consent/Introduction Page

Education

College of Education
The Ohio State University

Teacher Beliefs Inventory

Thank you for your participation in The Ohio State University research study: *Teaching Every Student in the 21st Century: Teacher Efficacy and Technology,* adding your voice to the ongoing effort to improve teacher education.

Please read the following letter of consent. Then proceed to the inventory.

Purpose:
Teachers throughout the nation are struggling to meet the needs of a diverse population of students with varying abilities in their classrooms. This survey research examines teachers' beliefs and attitudes regarding the challenges they face teaching in the 21st Century. Data gathered will inform Colleges of Teacher Education.

Procedure:
Your participation in this study only requires the completion of a voluntary, anonymous online inventory that should take approximately fifteen minutes. After reading the informed consent information, you can proceed to the *Teacher Beliefs Inventory*. Once you have completed the inventory, please click the submit button, which indicates your consent to participate in the study. You will then receive an email thanking you for your participation and asking you to volunteer for an optional, follow-up interview with the same high level of confidentiality.

Benefits, Risks, Confidentiality, and Right to Withdraw:
Teachers may benefit indirectly and collectively from voicing their beliefs concerning teaching in the 21st century. There are no known risks associated with completing this inventory, because your identity is not in any way linked to your responses. You may decide not to participate or to answer any or all of the questions at any time prior to submitting your completed inventory. Once submitted, your responses will be stored in a database separate from your identity. The confidentiality of your participation is the highest priority.

Incentive:
All teachers who complete the inventory will have their names [password numbers] placed into a drawing for fifty dollars.

Contacts:
The principal investigator, Anita Woolfolk Hoy, Ph.D. (hoy.17@osu.edu), or the co-investigator, Beatrice Benton-Borghi, M.Ed., (Benton-borghi.1@osu.edu) will answer any questions that you may have about the study. For questions about your rights as a participant in this study and/or to discuss concerns or complaints with someone who is not part of the research team, contact the Office of Responsible Research Practices at 1-800-678-6251.

Thank you for sharing your valuable opinions.

Appendix C-3 PILOT TEST
1st Online Email Reminder

College of Education
The Ohio State University

Subject: Leave No Teacher's Voice Behind

Recently, we invited you to participate in The Ohio State University research study: Teaching Every Student in the 21st Century: Efficacy and Technology.

You voice is important to us. We would greatly appreciate you taking the time to complete the inventory. If you have already completed the inventory online, we want to thank you for participating. If not, please consider voicing your opinions.

Please go to link [ ] to access your survey using the password [ ]. You may return to this site using the link and the password provided to complete the inventory until [final date to take survey]. Your identity is not in any way linked to your responses. Once submitted, your responses will be stored in a database separate from your identity. The confidentiality of your participation is the highest priority.

Thank you for your participation.

Anita Woolfolk Hoy, Ph.D
614-292-3777
Email: hoy.17@osu.edu

Beatrice Benton-Borghi, M.Ed.
614-486-9036
Email: Benton-borghi.1@osu.edu

Appendix C-3 PILOT TEST
2nd Online E-mail Reminder

College of Education
The Ohio State University

Subject: Your Perspective as a Teacher Needed

Recently, we sent you an email invitation to participate in the Ohio State University research study: Teaching Every Student in the 21st Century: Efficacy and Technology.

This email is a reminder to invite you to participate in the study. Your perspective is important to us. If you have already submitted or mailed your responses, we want to thank you for participating. If not, please consider voicing your opinions.

Use your unique password [ ] to access the survey instrument at the following link [ ]. You may return to this site using the link and the password provided to complete the inventory until [final date to take survey]. Your identity is not in any way linked to your responses. Once submitted, your responses will be stored in a database separate from your identity. The confidentiality of your participation is the highest priority.

Anita Woolfolk Hoy, Ph.D
614-292-3778
Email: hoy.17@osu.edu

Beatrice Benton-Borghi, M.Ed.
614-486-9036
Email: Benton-borghi.1@osu.edu

Appendix C-3 PILOT TEST
Thank You Email and Invitation to Optional Interview

Education

College of Education
The Ohio State University

Subject: Thank You

Thank you for participating in The Ohio State University research study: Teaching Every Student in the 21st Century: Efficacy and Technology. Your name will be included in the drawing for the incentives.

Follow-up Interviews
Your opinions are highly valued. Please consider volunteering for the optional, follow-up interviews to provide a deeper understanding of teacher beliefs and attitudes on teaching in the 21st century. If interested, email your name, telephone number and email address, indicating preference for an online interview (email/instant messenger) or telephone interview, to the co-investigator: Benton-borghi.1@osu.edu .

Benefits, Risks, Confidentiality, and Right to Withdraw:
Your participation in the voluntary, optional follow-up interview will be an informal conversation lasting approximately fifteen minutes. There are no known risks associated with participation in the interview, because your identity is not in any way linked to your responses. You may decide not to participate or to answer questions at any time. Your responses are stored in a database separate from your identity and pseudonyms are used. The confidentiality of your participation is the highest priority.

Anita Woolfolk Hoy, Ph.D
614-292-3779
Email: hoy.17@osu.edu

Beatrice Benton-Borghi, M.Ed.
614-486-9036
Email: Benton-borghi.1@osu.edu

Appendix C-3 PILOT TEST
Traditional Print Invitation (Pilot Test)
[Teachers without email addresses and/or survey non-respondents]

Education

College of Education
The Ohio State University

Teacher's Address

Dear [TEACHER],
Teachers throughout the nation are struggling to meet the needs of a diverse population of students with varying abilities in their classrooms. This Ohio State University survey research examines teachers' beliefs and attitudes regarding the challenges they face teaching in the 21st Century. Data gathered will inform Colleges of Education.

Procedures:
Your participation in this study only requires the completion of a voluntary, anonymous online inventory that should take approximately fifteen minutes. After reading the informed consent information, you can proceed to the online inventory, using the link [ ] and password [ ]. *If you prefer the optional print format, please return the stamped post card to request it*. Once you have completed the inventory, please click the submit button, which indicates your consent to participate in the study. You will then receive an email thanking you for your participation and asking you to volunteer for an optional, follow-up interview with the same high level of confidentiality.

Benefits, Risks, Confidentiality, and Right to Withdraw:
Teachers may benefit indirectly and collectively from voicing their beliefs concerning teaching in the 21st century. There are no known risks associated with completing this inventory, because your identity is not in any way linked to your responses. You may decide not to participate or to answer any or all of the questions at any time prior to submitting your completed inventory. Once submitted, your responses will be stored in a database separate from your identity. The confidentiality of your participation is the highest priority.

Incentive:
All teachers who complete the Teacher Beliefs Inventory will have their names [password numbers] placed into a drawing for fifty dollars.

Contacts:
The principal investigator, Anita Woolfolk Hoy, Ph.D. (hoy.17@osu.edu) or the co-investigator, Beatrice Benton-Borghi, M.Ed. (benton-borghi.1@osu.edu) will answer any questions that you may have about the study. For questions about your rights as a participant in this study and/or to discuss concerns or complaints with someone who is not part of the research team, contact the Office of Responsible Research Practices at 1-800-678-6251.

Thank you for sharing your valuable opinions.

Anita Woolfolk Hoy, Ph.D
614-292-3780
Email: hoy.17@osu.edu

Beatrice Benton-Borghi, M.Ed.
614-486-9036
Email: Benton-borghi.1@osu.edu

Appendix C-3 PILOT TEST
Teacher Response card to request a traditional print copy

Education

College of Education
The Ohio State University

I have read the invitation to participate in The Ohio State University research study: *Teaching Every Student in the 21st Century: Teacher Efficacy and Technology*. I would like to add my voice to the ongoing effort to improve teacher education by completing the **Teacher Beliefs Inventory**.

I am returning this post card to request a print copy of the survey instrument.

I would like the Teacher Beliefs Inventory mailed to an address different from my school address:

____

____

[Front of Post Card]
Teacher's Name
School Address

OSU Research Study*: **Teaching Every Student in the 21st Century***
c/o Beatrice Benton-Borghi, Co-Investigator
2449 Edington Road
Columbus, OH 43221-3047

Appendix C-3 PILOT TEST
Mailed Survey Notification
Thank You and Invitation to Optional Interview

Education

College of Education
The Ohio State University

____I have mailed the **Teacher Beliefs Inventory** in the separate envelope provided.

Thank you for participating in The Ohio State University research study: *Teaching Every Student in the 21st Century: Teacher Efficacy and Technology*. Your unique password will be included in the drawing for the incentives.

Follow-up Interviews
Your opinions are highly valued. Please consider volunteering for the optional, follow-up interviews to provide a deeper understanding of teacher beliefs and attitudes on teaching in the 21st century. If interested, email your name, telephone number and email address, indicating preference for an online interview (email/instant messenger) or telephone interview, to the co-investigator: Benton-borghi.1@osu.edu .

Benefits, Risks, Confidentiality, and Right to Withdraw:
Your participation in the voluntary, optional follow-up interview will be an informal conversation lasting approximately fifteen minutes. There are no known risks associated with participation in the interview, because your identity is not in any way linked to your responses. You may decide not to participate or to answer questions at any time. Your responses are stored in a database separate from your identity and pseudonyms are used. The confidentiality of your participation is the highest priority.

[Front of Post Card]
Teacher's Name
School Address

OSU Research Study*:* ***Teaching Every Student in the 21st Century***
c/o Beatrice Benton-Borghi, Co-Investigator
2449 Edington Road
Columbus, OH 43221-3047

Appendix C-4 STUDY
Online Email Invitation

Education

College of Education
The Ohio State University

Subject: Leave No Teacher's Voice Behind

Teachers throughout the nation are struggling to meet the needs of a diverse population of students with varying abilities in their classrooms. This Ohio State University survey research, *Teaching Every Student in the 21st Century: Teacher Efficacy and Technology*, examines teachers' beliefs and attitudes regarding the challenges they face in the 21st Century. Data gathered will inform Colleges of Teacher Education.

You may participate by completing the online survey titled: **Teacher Beliefs Inventory**. The instrument will take approximately fifteen minutes to complete. You identity is in no way connected to your responses and confidentiality is given the highest priority. **Access your copy of the survey [link] using your unique password [ ]**.

The principal investigator, Anita Woolfolk Hoy, Ph.D., (hoy.17@osu.edu) or the co-investigator, Beatrice Benton-Borghi, M.Ed., (benton-borghi.1@osu.edu) will answer any questions that you may have about the study.

Thank you for sharing your valuable opinions.

Appendix C-4 STUDY
Online Informed Consent/Introduction Page

Education

College of Education
The Ohio State University

Teacher Beliefs Inventory

Thank you for your participation in The Ohio State University Research Study: *Teaching Every Student in the 21st Century: Teacher Efficacy and Technology*, adding your voice to the ongoing effort to improve teacher education.

Please read the following letter of consent. Then proceed to the inventory.

Purpose:
Teachers throughout the nation are struggling to meet the needs of a diverse population of students with varying abilities in their classrooms. This survey research examines teachers' beliefs and attitudes regarding the challenges they face teaching in the 21st Century. Data gathered will inform Colleges of Teacher Education.

Procedure:
Your participation in this study only requires the completion of a voluntary, anonymous online inventory that should take approximately fifteen minutes. After reading the informed consent information, you can proceed to the *Teacher Beliefs Inventory*. Once you have completed the inventory, please click the submit button, which indicates your consent to participate in the study. You will then receive an email thanking you for your participation and asking you to volunteer for an optional, follow-up interview with the same level of confidentiality.

Benefits, Risks, Confidentiality, and Right to Withdraw:
Teachers may benefit indirectly and collectively from voicing their beliefs concerning teaching in the 21st century. There are no known risks associated with completing this inventory, because your identity is not in any way linked to your responses. You may decide not to participate or to answer any or all of the questions at any time prior to submitting your completed inventory. Once submitted, your responses will be stored in a database separate from your identity. The confidentiality of your participation is the highest priority.

Incentive:
The first 50 teachers who complete the *Teacher Beliefs Inventory* will receive a copy of a fiction book whose main character has a physical disability. All teachers who complete the survey will have their names placed into a drawing for one of 10 sets of classroom fiction books on inclusion with each set consisting of 15 paperback copies of each of four different titles.

Contacts:
The principal investigator, Anita Woolfolk Hoy, Ph.D., (hoy.17@osu.edu), or the co-investigator, Beatrice Benton-Borghi, M.Ed., (benton-borghi.1@osu.edu) will answer any questions that you may have about the study. For questions about your rights as a participant in this study and/or to discuss concerns or complaints with someone who is not part of the research team, contact the Office of Responsible Research Practices at 1-800-678-6251.

Thank you for sharing your valuable opinions.

Appendix C-4 STUDY

1st Online Email Reminder

Education

College of Education
The Ohio State University

Subject: Leave No Teacher's Voice Behind

Recently, we invited you to participate in The Ohio State University research study: *Teaching Every Student in the 21st Century: Efficacy and Technology.*

You voice is important to us. We would greatly appreciate your taking the time to complete the inventory. If you have already completed the inventory online, we want to thank you for participating. If not, please consider voicing your opinions.

Please go to link [ ] to access your survey using the password [ ]. You may return to this site using the link and the password provided to complete the inventory until [final date to take survey]. Your identity is not in any way linked to your responses. Once submitted, your responses will be stored in a database separate from your identity. The confidentiality of your participation is the highest priority.

Thank you for your participation.

Anita Woolfolk Hoy, Ph.D
614-292-3781
Email: hoy.17@osu.edu

Beatrice Benton-Borghi, M.Ed.
614-486-9036
Email: Benton-borghi.1@osu.edu

Appendix C-4 STUDY

2nd Online E-mail Reminder

Education

College of Education
The Ohio State University

Subject: Your Perspective as a Teacher Needed

Recently, we sent you an email invitation to participate in The Ohio State University research study*: Teaching Every Student in the 21st Century: Efficacy and Technology.*

This email is a reminder to invite you to participate in the study. Your perspective is important to us. If you have already submitted or mailed your responses, we want to thank you for participating. If not, please consider voicing your opinions.

Use your unique password [ ] to access the survey instrument at the following link [ ]. You may return to this site using the link and the password provided to complete the inventory until [final date to take survey]. Your identity is not in any way linked to your responses. Once submitted, your responses will be stored in a database separate from your identity. The confidentiality of your participation is the highest priority.

Anita Woolfolk Hoy, Ph.D
614-292-3782
Email: hoy.17@osu.edu

Beatrice Benton-Borghi, M.Ed.
614-486-9036
Email: Benton-borghi.1@osu.edu

Appendix C-4 STUDY

Thank You Email and Invitation to Optional Interview

Education

College of Education
The Ohio State University

Subject: Thank You

Thank you for participating in The Ohio State University research study: *Teaching Every Student in the 21st Century: Teacher Efficacy and Technology*. Your name will be included in the drawing for the incentives.

Follow-up Interviews
Your opinions are highly valued. Please consider volunteering for the optional, follow-up interviews to provide a deeper understanding of teacher beliefs and attitudes on teaching in the 21st century. If interested, email your name, telephone number and email address, indicating preference for an online interview (email/instant messenger) or telephone interview, to the co-investigator: Benton-borghi.1@osu.edu .

Benefits, Risks, Confidentiality, and Right to Withdraw:
Your participation in the voluntary, optional follow-up interview will be an informal conversation lasting approximately fifteen minutes. There are no known risks associated with participation in the interview, because your identity is not in any way linked to your responses. You may decide not to participate or to answer questions at any time. Your responses are stored in a database separate from your identity and pseudonyms are used. The confidentiality of your participation is the highest priority.

Anita Woolfolk Hoy, Ph.D
614-292-3783
Email: hoy.17@osu.edu

Beatrice Benton-Borghi, M.Ed.
614-486-9036
Email: Benton-borghi.1@osu.edu

Appendix C-4 STUDY

Traditional Print Invitation
[Teachers without email addresses and/or survey non-respondents]

Education

College of Education
The Ohio State University

Teacher's Address

Dear [TEACHER],
Teachers throughout the nation are struggling to meet the needs of a diverse population of students with varying abilities in their classrooms. This Ohio State University survey research examines teachers' beliefs and attitudes regarding the challenges they face teaching in the 21st Century. Data gathered will inform Colleges of Education.

Procedures:
Your participation in this study only requires the completion of a voluntary, anonymous online inventory that should take approximately fifteen minutes. After reading the informed consent information, you can proceed to the online inventory, using the link [ ] and password [ ]. *If you prefer the optional print format, please return the stamped post card to request it*. Once you have completed the inventory, please click the submit button, which indicates your consent to participate in the study. You will then receive an email thanking you for your participation and asking you to volunteer for an optional, follow-up interview with the same high level of confidentiality.

Benefits, Risks, Confidentiality, and Right to Withdraw:
Teachers may benefit indirectly and collectively from voicing their beliefs concerning teaching in the 21st century. There are no known risks associated with completing this inventory, because your identity is not in any way linked to your responses. You may decide not to participate or to answer any or all of the questions at any time prior to submitting your completed inventory. Once submitted, your responses will be stored in a database separate from your identity. The confidentiality of your participation is the highest priority.

Incentive:
The first 50 teachers who complete the *Teacher Beliefs Inventory* will receive a copy of a fiction book whose main character has a physical disability. All teachers who complete the inventory will have their names placed into a drawing for one of 10 sets of classroom fiction books on inclusion with each set consisting of 15 paperback copies of each of the four different titles.

Contacts:
The principal investigator, Anita Woolfolk Hoy, Ph.D. (hoy.17@osu.edu) or the co-investigator, Beatrice Benton-Borghi, M.Ed. (benton-borghi.1@osu.edu) will answer any questions that you may have about the study. For questions about your rights as a participant in this study and/or to discuss concerns or complaints with someone who is not part of the research team, contact the Office of Responsible Research Practices at 1-800-678-6251.

Thank you for sharing your valuable opinions.

Anita Woolfolk Hoy, Ph.D
614-292-3784
Email: hoy.17@osu.edu

Beatrice Benton-Borghi, M.Ed.
614-486-9036
Email: Benton-borghi.1@osu.edu

Appendix C-4 STUDY

Teacher Response card to request a traditional print copy

Education

College of Education
The Ohio State University

I have read the invitation to participate in The Ohio State University research study: *Teaching Every Student in the 21st Century: Teacher Efficacy and Technology*. I would like to add my voice to the ongoing effort to improve teacher education by completing the **Teacher Beliefs Inventory**.

I am returning this post card to request a print copy of the survey instrument.

I would like the Teacher Beliefs Inventory mailed to an address different from my school address:

____

____

[Front of Post Card]
Teacher's Name
School Address

OSU Research Study*: **Teaching Every Student in the 21st Century***
c/o Beatrice Benton-Borghi, Co-Investigator
2449 Edington Road
Columbus, OH 43221-3047

Appendix C-4 STUDY
Mailed Survey Notification
Thank You and Invitation to Optional Interview

College of Education
The Ohio State University

____I have mailed the **Teacher Beliefs Inventory** in the separate envelope provided.

Thank you for participating in The Ohio State University research study: *Teaching Every Student in the 21st Century: Teacher Efficacy and Technology*. Your unique password will be included in the drawing for the incentives.

Follow-up Interviews
Your opinions are highly valued. Please consider volunteering for the optional, follow-up interviews to provide a deeper understanding of teacher beliefs and attitudes on teaching in the 21st century. If interested, email your name, telephone number and email address, indicating preference for an online interview (email/instant messenger) or telephone interview, to the co-investigator: Benton-borghi.1@osu.edu .

Benefits, Risks, Confidentiality, and Right to Withdraw:
Your participation in the voluntary, optional follow-up interview will be an informal conversation lasting approximately fifteen minutes. There are no known risks associated with participation in the interview, because your identity is not in any way linked to your responses. You may decide not to participate or to answer questions at any time. Your responses are stored in a database separate from your identity and pseudonyms are used. The confidentiality of your participation is the highest priority.

[Front of Post Card]
Teacher's Name
School Address

OSU Research Study: ***Teaching Every Student in the 21st Century***
c/o Beatrice Benton-Borghi, Co-Investigator
2449 Edington Road
Columbus, OH 43221-3047

Appendix C-4 STUDY

Telephone Protocol for Non-Responders

Education

College of Education
The Ohio State University

Telephone (Script) Protocol for Non-Responders

Step 1: Hello. My name is Beatrice Benton-Borghi. You were recently sent a letter (or email invitation) inviting you to participate in The Ohio State University research: Teaching Every Student in the 21st Century: Teacher Efficacy and Technology by completing an online or print version of the *Teacher Beliefs Inventory.*

Step 2: I need your help. Our records show that you have not completed the questionnaire online nor have you requested the optional print version.

Step 3: Is there a reason why you have not completed the inventory online?

Step 4: I would be happy to answer any questions that you might have concerning the research.

Step 5: Would you consider going online to complete the inventory or would you prefer to receive a print copy of the inventory?

Step 6: If you have the time right now, I could read the questions and record your responses. Your opinions are important to our research.

Three options

- If the subject agrees to complete the inventory online, provide the [link and password], and let them know that you will send an email reminder with the information.
- If the subject indicates a preference for a print copy of the survey, tell them that you will sent a copy right away.
- If the subject indicates that they are willing to complete the inventory over the telephone, read the letter of consent before reading the questions and recording their responses.

Appendix C-4 STUDY

Protocol for Interviews

Education

College of Education
The Ohio State University

Telephone (Script) Protocol for Interviews

Introduction
Hello. My name is Beatrice Benton-Borghi. I am the co-investigator conducting research at Ohio State University. You recently completed the *Teacher Beliefs Inventory* and indicated your willingness to participate in the follow-up interview. Are you able to be interviewed or would there be a more convenient time?

Confidentiality:
Your participation in the voluntary, optional follow-up interview will be an informal conversation lasting approximately fifteen minutes. There are no known risks associated with participation in the interview, because your identity is not in any way linked to your responses. You may decide not to participate or to answer questions at any time. Your responses are stored in a database separate from your identity and pseudonyms are used. The confidentiality of your participation is the highest priority.

Interview Prompts
The following are the interview prompts. Each interview is unique and each interviewee will respond differently. The prompts are only a guide.

Question Prompt: You have completed the *Inclusion Inventory*, do you have any questions or opinions that you were unable to express in the questions that were asked?

Question Prompt: Do you believe that teachers are prepared to teach students with disabilities in the regular education classroom? Why or why not?

Question Prompt: Do you believe that teachers can implement the No Child Left Behind, 2002, and the Individuals with Disabilities Education Act, 1997, and the Individuals with Disabilities Education Improvement Act, 2004? Why or why not?

Question Prompt: Do you believe technology enables teachers to meet the needs of the diverse population? If so, how?

Appendix C-4 STUDY

1st Online Email Reminder/Request for Print Version

Education

College of Education
The Ohio State University

Subject: Leave No Teacher's Voice Behind

Recently, we invited you to participate in The Ohio State University research study: Teaching Every Student in the 21st Century: Efficacy and Technology.

You voice is important to us. We would greatly appreciate you taking the time to complete the inventory. If you have already completed the inventory online, we want to thank you for participating. If not, please consider voicing your opinions.

IF YOU PREFER A PRINT VERSION, please email: Benton-Borghi.1@osu.edu.

If you choose to complete the online Teacher Beliefs Inventory, please go to link [ ] to access your survey using the password [ ]. You may return to this site using the link and the password provided to complete the inventory until [final date to take survey]. Your identity is not in any way linked to your responses. Once submitted, your responses will be stored in a database separate from your identity. The confidentiality of your participation is the highest priority.

Thank you for your participation.

Anita Woolfolk Hoy, Ph.D
614-292-3785
Email: hoy.17@osu.edu

Beatrice Benton-Borghi, M.Ed.
614-486-9036
Email: Benton-borghi.1@osu.edu

Appendix C-5 STUDY OF NONRESPONDENTS

Feedback Post Card Recruitment/Consent Letter

Education

College of Education
The Ohio State University

Purpose:
Recently, we invited you to participate in The Ohio State University research study: Teaching Every Student in the 21st Century: Efficacy and Technology. We are interested in finding out why teachers did not respond to the online survey. Your feedback will help to inform researchers concerning online surveys, and this will help us design better surveys in the future.

Procedure:
Your participation only requires the completion of a voluntary, anonymous post card. After reading the informed consent information, please fill out the back of the stamped and pre-addressed post card that has been included and mail it.

Benefits, Risks, Confidentiality, and Right to Withdraw:
Teachers may benefit indirectly and collectively from voicing their feedback concerning online surveys. There are no known risks associated with completing this post card, because your identity is not in any way linked to your responses. You may decide not to participate or to answer any or all of the questions at any time prior to mailing your post card. If you would like your name included in a drawing for $50, please write your password [number at the bottom of this letter] on the post card. The confidentiality of your participation is the highest priority.

Incentive:
All teachers who complete the post card will have their names [password numbers] placed into a drawing for fifty dollars.

Contacts:
The principal investigator, Anita Woolfolk Hoy, Ph.D. (hoy.17@osu.edu), or the co-investigator, Beatrice Benton-Borghi, M.Ed., (Benton-borghi.1@osu.edu) will answer any questions that you may have about the study. For questions about your rights as a participant in this study and/or to discuss concerns or complaints with someone who is not part of the research team, contact the Office of Responsible Research Practices at 1-800-678-6251.

Thank you for sharing your valuable opinions.

APPENDIX C-5 STUDY OF NONRESPONDENTS

FEEDBACK POST CARD

College of Education
The Ohio State University

I did not respond to the online survey because:
(Please check all that apply)

______ I am suspicious of online surveys.

______ I am too busy to fill out surveys.

______ I did not like the topic of the survey.

______ I am not comfortable using technology.

_______Other (write in space provided below)

APPENDIX C-5 STUDY OF NONRESPONDENTS

FEEDBACK - EMAIL VERSION

Subject Title: **Win $50. Tell Us Why You Did Not Complete the Survey?**

Recently, we invited you to participate in The Ohio State University research study: Teaching Every Student in the 21st Century: Efficacy and Technology. We are interested in finding out why teachers did not respond to the online survey. Your feedback will help to inform researchers concerning online surveys, and this will help us design better surveys in the future.

Email Benton-Borghi.1@osu.edu your reasons for not completing the survey.

I did not respond to the online survey because:

______ I am suspicious of online surveys.

_______Other (write in space provided below)

______ I am too busy to fill out surveys.

______ I did not like the topic of the survey.

______ I am not comfortable using technology.

Benefits, Risks, Confidentiality, and Right to Withdraw:
Teachers may benefit indirectly and collectively from voicing their feedback concerning online surveys. There are no known risks associated with completing this post card, because your identity is not in any way linked to your responses. You may decide not to participate or to answer any or all of the questions at any time prior to mailing your post card. If you would like your name included in a drawing for $50, please write your password [number at the bottom of this letter] on the post card. The confidentiality of your participation is the highest priority.

Contacts:
The principal investigator, Anita Woolfolk Hoy, Ph.D. (hoy.17@osu.edu), or the co-investigator, Beatrice Benton-Borghi, M.Ed., (Benton-borghi.1@osu.edu) will answer any questions that you may have about the study. For questions about your rights as a participant in this study and/or to discuss concerns or complaints with someone who is not part of the research team, contact the Office of Responsible Research Practices at 1-800-678-6251.

APPENDIX C-6

TEACHER BELIEFS INVENTORY

Education

College of Education
The Ohio State University

Teacher Beliefs Inventory

Thank you for your participation in The Ohio State University Research Study: Teaching *Every Student in the 21st Century: Teacher Efficacy and Technology*, adding your voice to the ongoing effort to improve teacher education.

Please read the following letter of consent. Then proceed to the inventory.

Purpose:
Teachers throughout the nation are struggling to meet the needs of a diverse population of students with varying abilities in their classrooms. This survey research examines teachers' beliefs and attitudes regarding the challenges they face teaching in the 21st Century. Data gathered will be used to inform Colleges of Teacher Education.

Procedure:
Your participation in this study only requires the completion of a voluntary, anonymous online inventory that should take approximately fifteen minutes. After reading the informed consent information, you can proceed to the *Teacher Beliefs Inventory*. Once you have completed the inventory, please click the submit button, which indicates your consent to participate in the study. You will then receive an email thanking you for your participation and asking you to volunteer for an optional, follow-up interview with the same high level of confidentiality.

Benefits, Risks, Confidentiality, and Right to Withdraw:
Teachers may benefit indirectly and collectively from voicing their beliefs concerning teaching in the 21st century. There are no known risks associated with completing this inventory, because your identity is not in any way linked to your responses. You may decide not to participate or to answer any or all of the questions at any time prior to submitting your completed inventory. Once submitted, your responses will be stored in a database separate from your identity. The confidentiality of your participation is the highest priority.

Incentive:
The first 50 teachers who complete the *Teacher Beliefs Inventory* will receive a copy of a fiction book whose main character has a physical disability. All teachers who complete the inventory will have their names placed into a drawing for one of 10 sets of classroom fiction books on inclusion with each set consisting of 15 paperback copies of each of four different titles.

Contacts:
The principal investigator, Anita Woolfolk Hoy, Ph.D. (hoy.17@osu.edu), or the co-investigator, Beatrice Benton-Borghi, M.Ed. (Benton-borghi.1@osu.edu) will answer any questions that you may have about the study. For questions about your rights as a participant in this study and/or to discuss concerns or complaints with someone who is not part of the research team, contact the Office of Responsible Research Practices at 1-800-678-6251.

Thank you for sharing your valuable opinion from the teacher's perspective.

Teacher Beliefs Inventory

SECTION A.

This section is designed to learn about you and your teaching assignment.

1) Gender

☐ Male ☐ Female

2) Race

☐ African American/Black ☐ Alaskan Native or American Indian ☐ Asian or Pacific Islander ☐ Caucasian/White ☐ Hispanic ☐ Prefer not to respond

3) Years of teaching experience (do not count the present school year):

4) Licensure/Certification:

☐ Regular Education ☐ Special Education

5) I currently hold certification/licensure (not a temporary) for the area in which I am now teaching

☐ No ☐ Yes

6) I have passed the following Praxis Tests:

	no	Yes
I have passed Praxis II (content)	☐	☐
I have passed Praxis II (content) in the area in which I am now teaching	☐	☐
I have passed Praxis PLT	☐	☐
I have passed Praxis III	☐	☐

7) I teach grades:

☐ P-3 ☐ 4-6 ☐ 7-8 ☐ 9-12 ☐ P-12

8) Highest Degree Completed

☐ Bachelor ☐ Masters ☐ Doctorate

9) School Location:

☐ Urban ☐ Rural ☐ Suburban

10) Approximately how many students with disabilities (e.g. speech impairment, vision impairment, hearing impairment, orthopedic disability, etc.) are in your classroom for instruction?

11) How many of these students with disabilities have individualized education plans (IEPs)?

12) How many of these students with IEPs are included in your classroom instruction?

13) Students with the following disabilities are included in your classroom for instruction:
(Not applicable means that you do not have any students with that specific disability)

	Not Applicable	rarely	occasionally	frequently
Autism	○	○	○	○
Blind	○	○	○	○
Cognitive Disability	○	○	○	○
Deaf	○	○	○	○
Developmental Disabilities (DH)	○	○	○	○
Emotional Disturbance (SBH)	○	○	○	○
Hearing Impaired	○	○	○	○
Multiple Disability (other than deaf-blindness)	○	○	○	○
Orthopedic Disability	○	○	○	○
Other Health Impairment	○	○	○	○
Specific Learning Disabilities	○	○	○	○
Speech and Language Impairments	○	○	○	○
Traumatic Brain Injured (TBI)	○	○	○	○
Visual Impairment	○	○	○	○

14) Identify your level of ability to use each of the following technologies.

	None or very little	Novice	Advanced	Expert
Alternative keyboard				
e-books (electronic books)				
Electronic concept mapping				
General Accessibility Options				
Multimedia programs				
Spelling & Grammar Check Software				
Text readers & digital text				
Text to speech word processors				
Text scan and read software				
Tutorial (self-paced) and scaffolding software				
Universally designed (digital) assessments				
Universally designed (digital) learning				
Video streaming and Podcasts				
Voice recognition software				
Word prediction software				

15) Identify your level of need for each of the following technologies.

	Do not need	Rarely need	Often need	Critically Need
Alternative keyboards				
e-books (electronic books)				
Electronic concept mapping				
General Accessibility Options				
Multimedia Programs				
Spelling & Grammar Check Software				
Text readers & digital text				
Text scan & read software				
Text to speech word processors				
Tutorial (self-paced) & scaffolding software				
Universally designed (digital) assessments				
Universally designed (digital) learning				
Voice recognition software				
Video streaming and Podcasts				
Word prediction software				

16) As a teacher, I believe:

	1 strongly disagree	2 moderately disagree	3 slightly disagree	4 slightly agree	5 moderately agree	6 strongly agree
students without disabilities learn less when the regular education teacher must accommodate students with disabilities in the same classroom.						
students with disabilities learn more in a special education classroom than in a regular education classroom.						
when you consider the No Child Left Behind Act already in place, the regular education teacher cannot be expected to include students with disabilities too.						
teachers do not need technology to teach students with disabilities in their classrooms.						

17) My college/university teacher preparation program:

	1 strongly disagree	2 moderately disagree	3 slightly disagree	4 slightly agree	5 moderately agree	6 strongly agree
required courses on inclusion that prepared me to integrate assistive and accessible technology to teach students with disabilities in my classroom.						

required field experiences that prepared me to teach students with disabilities in my classroom.						
required student teaching that provided me the opportunity to use technology to teach students with disabilities.						
required experiences in schools where I was able to observe outstanding teachers who integrated assistive and accessible technology to teach students with disabilities.						
required student teaching that prepared me to collaborate with other professionals to teach students with disabilities in my classroom.						
My college/university teacher preparation program prepared me to understand my responsibilities as a teacher under the Individuals with Disabilities Act (IDEA) 1997, and the Individuals with Disabilities Education Improvement Act (IDEIA) 2004.						
My college/university education professors modeled how to integrate technology in teaching.						

SECTION B.

This section of the questionnaire is designed to help gain a better understanding of the kinds of things that create difficulties for teachers in their school activities.

18) Indicate the number of the answer that best indicates your opinion about each of the statements.

	1 Nothing	2	3 Very Little	4	5 Some Influence	6	7 Quite a bit	8	9 A Great Deal
How much can you do to control disruptive behavior of students with disabilities in the classroom?									
How much can you do to motivate students with disabilities who show low interest in school?									
How much can you do to get students with disabilities to believe they can do well in school work?									
How much can you do to help your students with disabilities to value learning?									
To what extent can you craft good questions for your students with disabilities?									
How much can you do to get children with disabilities to follow classroom rules?									

19) Indicate the number of the answer that best indicates your opinion about each of the statements.

	1 Nothing	2	3 Very Little	4	5 Some Influence	6	7 Quite a bit	8	9 A Great Deal
How much can you do to calm a student with disabilities who is disruptive or noisy?									
How well can you establish a classroom management system with students with disabilities in your classroom?									
How much can you use a variety of assessment strategies for students with disabilities?									
To what extent can you provide alternative explanations or examples when students with disabilities are confused?									
How much can you assist families in helping their children with disabilities do well in school?									
How well can you implement alternative strategies when students with disabilities are included in your classroom?									

20) Indicate the number of the answer that best indicates your opinion about each of the statements.

	1 Nothing	2	3 Very Little	4	5 Some Influence	6	7 Quite a bit	8	9 A Great Deal
How well can you motivate students with disabilities who require assistive technologies in you classroom?									
To what extent can you implement accommodations for assistive and accessible technology for students with disabilities in your classroom?									
How much can you do to provide students with disabilities, who require text readers and accessible digital content, access to the curriculum content?									
How much can you do to provide universally designed [digital] assessments to evaluate learning by students with disabilities in your classroom?									
How much can you do to provide the curriculum content in specialized formats [Braille, digital, audio] for students with qualifying disabilities who require them?									

SECTION C.
This section of the inventory is designed to gain a better understanding of the needs of teachers.

21) Indicate the answer that best represents your level of agreement with each of the following statements:

	1 strongly disagree	2 moderately disagree	3 slightly disagree	4 slightly agree	5 moderately agree	6 strongly agree
Teachers in this school are able to get through to the most difficult students with disabilities						
Teachers here are confident they will be able to motivate their students with disabilities.						
If a child with disabilities does not want to learn, teachers in this school give up.						
Teachers here do not have the assistive and adaptive technology skills needed to produce meaningful learning for students with disabilities.						
Teachers in this school believe that every child with diabilities can learn in the regular education classroom.						
Students with disabilities come to school ready to learn.						

22) Indicate the answer that best represents your level of agreement with each of the following statements:

	1 strongly disagree	2 moderately disagree	3 slightly disagree	4 slightly agree	5 moderately agree	6 strongly agree
Home life provides so many advantages that students with disabilities here are bound to learn.						
Students with disabilities here just are not motivated to learn.						
Teachers in this school do not have the skills to deal with students with disabilities with disciplinary problems.						
The opportunities in this community help ensure that students with disabilities will learn.						
Learning is more difficult at this school because students with disabilities are worried about their safety.						
Drug and alcohol abuse in the community make learning difficult for students with disabilities.						

23) Indicate the answer that best represents your level of agreement with each of the following statements:

	1 strongly disagree	2 moderately disagree	3 slightly disagree	4 slightly agree	5 moderately agree	6 strongly agree
Teachers here support each other to teach students with disabilities in the regular education classrooms.						
Teachers in this school have the assistive technology and accessible digital content needed to teach students with disabilities in the regular education classrooms.						
The school supports the inclusion of students with disabilities in the regular education classrooms by providing computers for students who require them to access the curriculum content.						
The school supports teachers who teach students with disabilities by giving them smaller classes.						
Teachers here have the computers, software, training, and support needed to use technology to teach students with disabilities.						

Next Page

SECTION D
This section is concerned with hearing the voice of teachers about teaching students WITHOUT disabilities.
It is designed to help gain a better understanding of the kinds of things that create difficulties for teachers in their school activities.

24) Indicate the number of the answer that best indicates your opinion about each of the statements.

	1 Nothing	2	3 Very Little	4	5 Some Influence	6	7 Quite a bit	8	9 A Great Deal
How much can you do to control disruptive behavior of students in the classroom?									
How much can you do to motivate students who show low interest in school?									
How much can you do to get students to believe they can do well in school work?									
How much can you do to help your students value learning?									
To what extent can you craft good questions for your students?									
How much can you do to get children to follow classroom rules?									

25) Indicate the number of the answer that best indicates your opinion about each of the statements.

	1 Nothing	2	3 Very Little	4	5 Some Influence	6	7 Quite a bit	8	9 A Great Deal
How much can you do to calm a student who is disruptive or noisy?	○	○	○	○	○	○	○	○	○
How well can you establish a classroom management system with each group of students?	○	○	○	○	○	○	○	○	○
How much can you use a variety of assessment strategies?	○	○	○	○	○	○	○	○	○
To what extent can you provide alternative explanations or examples when students are confused?	○	○	○	○	○	○	○	○	○
How much can you assist families in helping their children do well in school?	○	○	○	○	○	○	○	○	○
How well can you implement alternative strategies in your classroom?	○	○	○	○	○	○	○	○	○

26) I understand the following terms and how they apply to students with disabilities:

	no	somewhat	Yes
National Instructional Materials Accessibility Standard (NIMAS)	○	○	○
National Intructional Materials Access Center (NIMAC)	○	○	○

Thank you for participating in this Ohio State University research study.

Your opinions are highly valued and help to provide a deeper understanding of teacher beliefs and attitudes about teaching every student in the 21^{st} century.

Submit Survey

APPENDIX D

TEACHERS' SENSE OF EFFICACY SCALE (TSES)

Teachers' Sense of Efficacy Scale **(Tschannen-Moran & Woolfolk Hoy, 2001)**

Directions: This questionnaire is designed to help us gain a better understanding of things that create difficulties for teachers in their school activities. Please indicate your opinion about each of the statements below. Your answers will be kept confidential.

How Much Can You Do?

(1) = Nothing
(3) = Very Little
(5) = Some Influence
(7) = Quite A Bit
(9) = A Great Deal

1. How much can you do to control disruptive behavior in the Classroom?	(1) (2) (3) (4) (5) (6) (7) (8) (9)
2. How much can you do to motivate students who show low Interest in school work?	(1) (2) (3) (4) (5) (6) (7) (8) (9)
3. How much can you do to get students to believe they can do well in school work?	(1) (2) (3) (4) (5) (6) (7) (8) (9)
4. How much can you do to help your students value learning?	(1) (2) (3) (4) (5) (6) (7) (8) (9)
5. To what extent can you craft good questions for your students?	(1) (2) (3) (4) (5) (6) (7) (8) (9)
6. How much can you do to get children to follow classroom rules?	(1) (2) (3) (4) (5) (6) (7) (8) (9)
7. How much can you do to calm a student who is disruptive or noisy?	(1) (2) (3) (4) (5) (6) (7) (8) (9)
8. How well can you establish a classroom management system with each group of students?	(1) (2) (3) (4) (5) (6) (7) (8) (9)
9. How much can you use a variety of assessment strategies?	(1) (2) (3) (4) (5) (6) (7) (8) (9)
10. To what extent can you provide an alternative explanation or example when students are confused?	(1) (2) (3) (4) (5) (6) (7) (8) (9)
11. How much can you assist families in helping their children do well in school?	(1) (2) (3) (4) (5) (6) (7) (8) (9)
12. How well can you implement alternative strategies in your classroom?	(1) (2) (3) (4) (5) (6) (7) (8) (9)

APPENDIX E

COLLECTIVE EFFICACY

Collective Efficacy Scale (Goddard, 2002)

Directions: Please indicate your level of agreement with each of the following statements from strongly disagree (1) to strongly agree (6)

1. Teachers in this school are able to get through to the most difficult students	(1) (2) (3) (4) (5) (6)
2. Teacher here are confident they will be able to motivate their students.	(1) (2) (3) (4) (5) (6)
3. If a child doesn't want to learn teachers here give up	(1) (2) (3) (4) (5) (6)
4. Teachers here don't' have the skills needed to produce meaningful learning	(1) (2) (3) (4) (5) (6)
5. Teachers in this school believe that every child can learn	(1) (2) (3) (4) (5) (6)
6. These students come to school ready to learn	(1) (2) (3) (4) (5) (6)
7. Home life provides so many advantages that students here are bound to learn	(1) (2) (3) (4) (5) (6)
8. Students here just aren't motivated to learn	(1) (2) (3) (4) (5) (6)
9. Teacher in this school do not have the skills to deal with student disciplinary problems	(1) (2) (3) (4) (5) (6)
10. The opportunities in this community help ensure that these students will learn	(1) (2) (3) (4) (5) (6)
11. Learning is more difficult at this school because students are worried about their safety	(1) (2) (3) (4) (5) (6)
12. Drug and alcohol abuse in the community make learning difficult for students here	(1) (2) (3) (4) (5) (6)

APPENDIX F

CORRELATION MATRIX

Correlation Matrix

Varable	I-TSES	TSES	I-Collective	Attitude	TECHUSE	Q-T-Prep	TECHNEED	Male	> 3 yrs	African American	Hispanic
I-TSES	1.000	.637	.455	.511	.269	.207	.134	.101	.001	.181	.053
TSES	.637	1.000	.282	.273	.149	.165	.049	.049	.003	.080	.021
Collective	.455	.282	1.000	.215	.252	.258	-.012	.114	.071	.189	-.083
Attitude	.511	.273	.215	1.000	.029	.028	.088	-.114	.014	.061	.056
TECHUSE	.269	.149	.252	.029	1.000	.086	.356	.088	.031	.221	.069
Q Teach Prep	.207	.165	.258	.028	.086	1.000	.067	.103	-.151	.206	-.115
TECHNEED	.134	.049	.-.012	.088	.356	.067	1.000	.005	-.081	.278	.111
Male	.101	.049	..114	-.114	.088	.103	.005	1.000	-.020	-.019	.235
More than 3 yrs.	..001	.003	.071	.014	.031	-.151	-.081	-.020	1.000	.046	.093
African American	.181	.080	.189	.061	.221	.206	.278	-.019	.046	1.000	-.027
Hispanic	.053	.021	-.083	.056	.069	-.115	.111	.235	.093	-.027	1.000
Special Education	.172	-.063	.140	.229	.118	.338	.175	-.184	.023	.171	-.065
Correct License	-.078	.016	.012	.005	.064	-.083	.013	-.007	.151	-.089	.051
Praxis II passed	.009	.043	.031	.021	-.010	.177	.063	.017	-.278	-.106	-.138
Praxis II now	-.006	.032	.005	-.095	-.095	.113	.035	.077	-.267	-.076	-.105
Praxis PLT	-.088	-.115	-.047	.029	-.029	.157	.027	.024	-.317	-.076	.080
Praxis III	-.093	-.115	-.098	-.041	-.012	-.001	.081	.095	-.136	-.016	-.013
Masters Degree	-.015	.077	-.007	-.010	.023	.086	-.094	-.055	.218	.046	-.085
P-3	-.001	-.007	.039	-.038	-.138	-.127	-.029	-.323	.015	.006	-.063
4-6	.065	.072	-.084	-.041	-.041	.006	.039	-.126	.085	.053	-.065
7-8	-.063	-.045	.024	.010	.079	.007	.069	.002	-.109	-.075	-.030
P-12	-.028	.067	.026	-.016	-.079	-.036	-.092	-.043	.011	-.035	-.041
Specific Dis.	.155	-.057	.157	.151	..178	-.060	.237	-.091	.266	.130	.169
Urban	-.001	-.130	-.114	.060	-.007	.014	-.039	-.014	.174	.232	-.087
Rural	-.152	-.075	-.149	-.051	.-.029	.076	.063	-.020	-.182	-.101	.087
No. of Dis	.204	-.017	.079	.328	.079	.115	.173	-.094	.098	-.010	-.107
IEPs	.230	.045	.092	.351	.068	.152	.180	-.056	.074	000	-.099
IEPs INCL	.247	.054	.126	.363	.062	.174	.193	-.017	.069	.039	-.104

Correlation Matrix

Variable	Spec. Educ	License Now	Praxis II	Praxis II Now	Praxis II PLT	Praxis III	Masters	Grades P-3	Grades 4-6	Grades 7-8	Grades P-12
I-TSES	.172	-.078	.009	-.006	-.088	-.093	-.015	-.001	.065	-.063	-.028
TSES	-.063	.016	.043	.032	-.115	-.115	.077	-.007	.072	-.045	.067
Collective	.140	.012	.031	.005	-.047	-.098	-.007	.039	-.084	.024	.026
Attitude	.229	.005	-.021	-.095	.029	-.041	-.010	-.038	-.041	.010	-.016
TECH USE	.118	.064	-.010	-.095	-.029	-.012	-.023	-.138	.041	.079	-.079
QT_Prep	.338	-.083	.177	.113	.157	-.001	.086	-.127	.006	.007	-.036
TECHNEED	.175	.013	.063	.035	.027	.081	-.094	-.029	.039	.069	-.092
Male	-.184	-.007	.017	.077	.024	.095	-.055	-.323	-.126	.002	-.043
> 3 Years	.023	.151	-.278	-.267	-.317	-.136	.218	.015	.085	-.109	.011
African Am.	.171	-.089	-.106	-.076	-.076	-.016	.046	.006	.053	-.075	-.035
Hispanic	-.065	.051	-.138	-.105	-.105	.080	-.013	-.085	-.063	-.065	-.030
Spec.Educ	1.000	-.001	.052	-.047	.086	-.038	.023	.013	.187	-.062	.026
LicenseNow	-.001	1.000	-.008	.121	-.039	.201	.204	-.116	-.008	-.072	.066
Praxis II Pass	.052	-.008	1.000	.842	.756	.446	.007	.104	-.032	.129	.060
Praxis II now	-.047	.121	.842	1.000	.699	.573	.030	.144	-.056	.086	-.053
Praxis PLT	.086	-.039	.756	.699	1.000	.631	-.019	.087	-.056	.153	-.053
Praxis III Pass	-.038	.201	.446	.573	.631	1.000	.018	.071	-.050	.066	.007
Masters	.023	.204	.007	.030	-.019	.018	1.000	-.059	.085	.023	.093
Grades P-3	.013	-.116	.104	.144	.087	.071	-.059	1.000	-.229	-.236	-.111
Grades 4-6	.187	-.008	-.032	-.056	-.056	-.050	.085	-.229	1.000	-.175	-.082
Grades 7-8	-.062	-.072	.129	.086	.153	.066	.023	-.236	-.175	1.000	-.085
Grades P-12	.026	.066	.060	-.053	-.053	.007	.093	-.111	-.082	-.085	1.000
Specific Dis.	.357	.138	-.101	-.135	-.097	.007	.014	-.054	.040	-.070	.291
Urban	.141	.111	-.044	-.046	.012	-.092	.136	-.071	.155	-.118	-.007
Rural	.006	-.287	.108	.037	.204	-.007	-.146	.060	-.083	-.044	-.021
No. Disabilities	.448	-.092	-.001	-.043	.057	.000	-.045	-.149	.061	.099	.048
IEPs	.470	-.079	-.003	-.026	.082	.010	-.039	-.166	.042	.070	.018
IEPs Included	.480	-.096	-.022	-.069	.041	-.025	-.051	-.186	.012	.061	.060

Correlation Matrix

Variable	Specific Disabilities	Urban	Rural	Number of Disabilities	IEPs	IEPs Included
I-TSES	.155	-.001	-.152	.204	.230	.247
TSES	-.057	-.130	-.075	-.017	.045	.054
Collective	.157	-.114	-.149	.079	.092	.054
Attitude	.151	.060	-.051	.328	.351	.363
TECH USE	.178	-.007	-.029	.079	.068	.082
QT_Prep	-.060	.014	.076	.115	.152	.174
TECHNEED	.237	-.039	.063	.173	.180	.193
Male	-.091	-.014	-.020	-.094	-.056	-.017
> 3 Years	.266	.174	-.182	.098	.074	.069
African Am.	.130	.232	-.101	-.010	.000	.039
Hispanic	-.041	.169	-.087	-.107	-.099	-.104
Spec.Education	.357	.141	.006	.448	.470	.480
LicenseNow	.138	.111	-.287	-.092	-.079	-.096
Praxis II Passed	-.101	-.044	.108	-.001	-.003	-.022
Praxis II Now	-.135	-.046	.037	-.043	-.026	-.069
Praxis PLT	-.097	.012	.204	.057	.082	.041
Praxis III Passed	.007	-.092	-.007	.000	.010	-.025
Masters Degree	.014	.136	-.146	-.045	-.039	-.051
Grades P-3	-.054	-.071	.060	-.149	-.166	-.186
Grades 4-6	.040	.155	-.083	.061	.042	.012
Grades 7-8	-.070	-.118	-.044	.099	.070	.061
Grades P-12	.291	-.007	-.021	.048	.018	.060
Specific Dis.	1.000	.105	-.146	.425	.385	.399
Urban	.105	1.000	-.296	.051	.025	-.008
Rural	-.146	-.296	1.000	-.059	-.030	-.013
No. Disabilities	.425	.051	-.059	1.000	.942	.923
IEPs	.385	.025	-.030	.942	1.000	.972
IEPs Included	.399	-.008	-.013	.923	.972	1.000

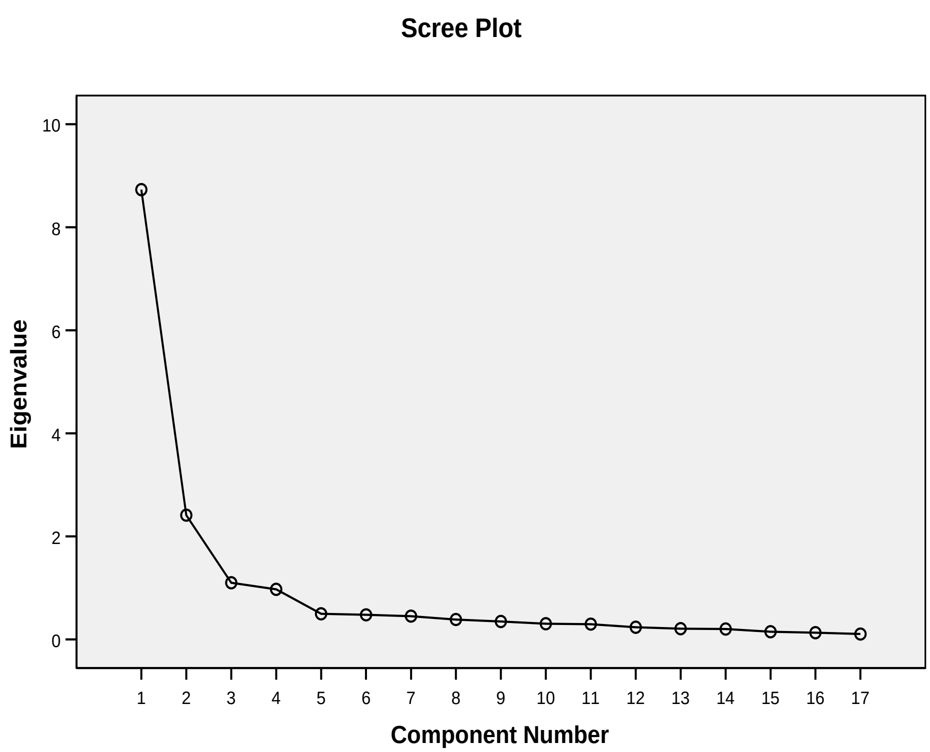
Variable	Specific Disabilities	Urban	Rural	No. Disabilities	IEPs	IEPs Included
I-TSES	.155	-.001	-.152	.204	.230	.247
TSES	-.057	-.130	-.075	-.017	.045	.054
Collective	.157	-.114	-.149	.079	.092	.054
Attitude	.151	.060	-.051	.328	.351	.363
TECH USE	.178	-.007	-.029	.079	.068	.082
QT_Prep	-.060	.014	.076	.115	.152	.174
TECHNEED	.237	-.039	.063	.173	.180	.193
Male	-.091	-.014	-.020	-.094	-.056	-.017
> 3 Years	.266	.174	-.182	.098	.074	.069
African Am.	.130	.232	-.101	-.010	.000	.039
Hispanic	-.041	.169	-.087	-.107	-.099	-.104
Spec.Education	.357	.141	.006	.448	.470	.480
LicenseNow	.138	.111	-.287	-.092	-.079	-.096
Praxis II Passed	-.101	-.044	.108	-.001	-.003	-.022
Praxis II Now	-.135	-.046	.037	-.043	-.026	-.069
Praxis PLT	-.097	.012	.204	.057	.082	.041
Praxis III Passed	.007	-.092	-.007	.000	.010	-.025
Masters Degree	.014	.136	-.146	-.045	-.039	-.051
Grades P-3	-.054	-.071	.060	-.149	-.166	-.186
Grades 4-6	.040	.155	-.083	.061	.042	.012
Grades 7-8	-.070	-.118	-.044	.099	.070	.061
Grades P-12	.291	-.007	-.021	.048	.018	.060
Specific Dis.	1.000	.105	-.146	.425	.385	.399
Urban	.105	1.000	-.296	.051	.025	-.008
Rural	-.146	-.296	1.000	-.059	-.030	-.013
No. Disabilities	.425	.051	-.059	1.000	.942	.923
IEPs	.385	.025	-.030	.942	1.000	.972
IEPs Included	.399	-.008	-.013	.923	.972	1.000

APPENDIX G

SCREE PLOTS

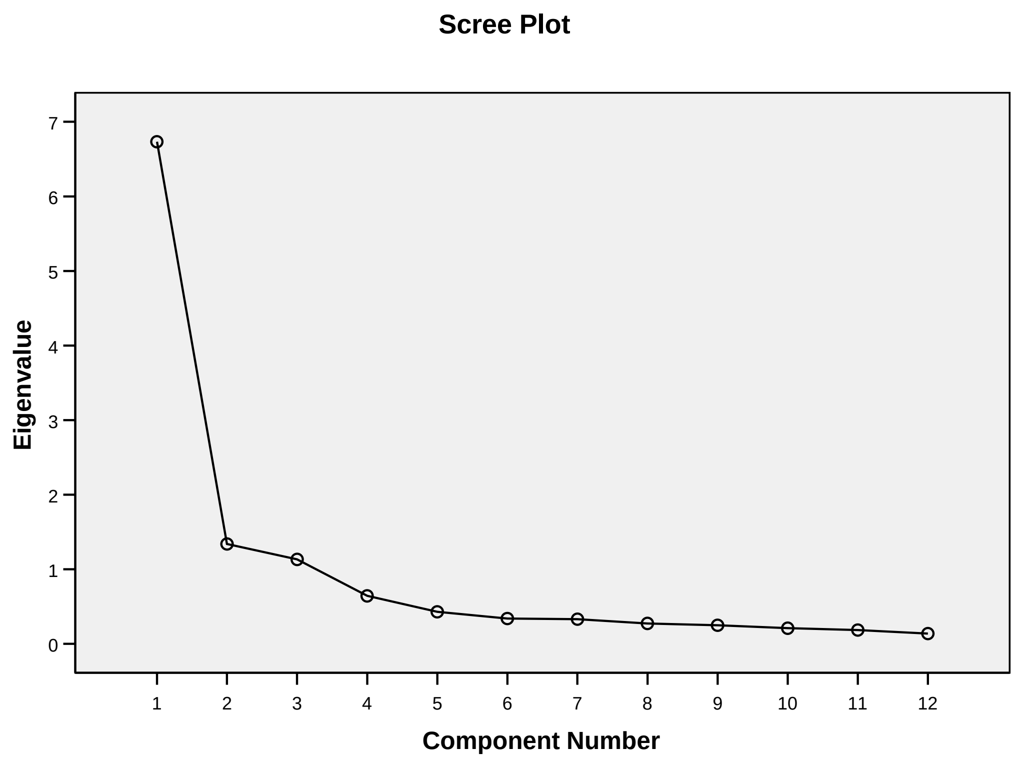
SCREE PLOT

FOUR COMPONENT MODEL
TEACHERS' SENSE OF INCLUSION EFFICACY SCALE (I-TSES)



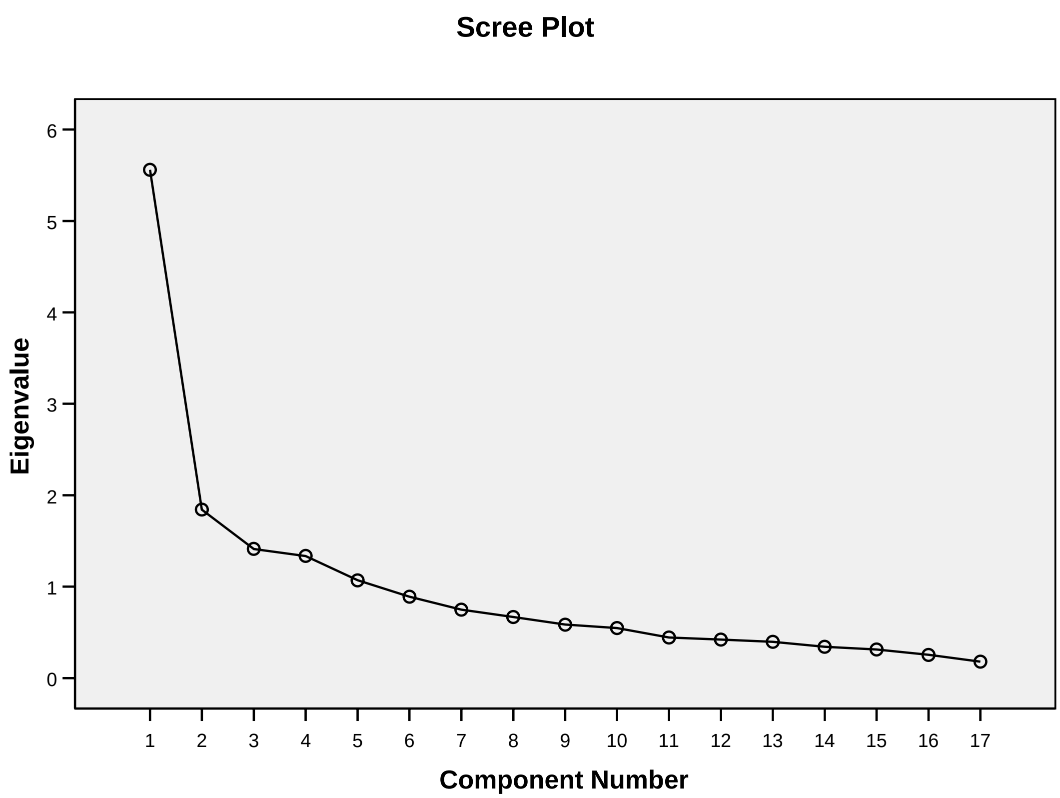
SCREE PLOT

THREE COMPONENT MODEL
TEACHERS' SENSE OF EFFICACY SCALE (TSES)



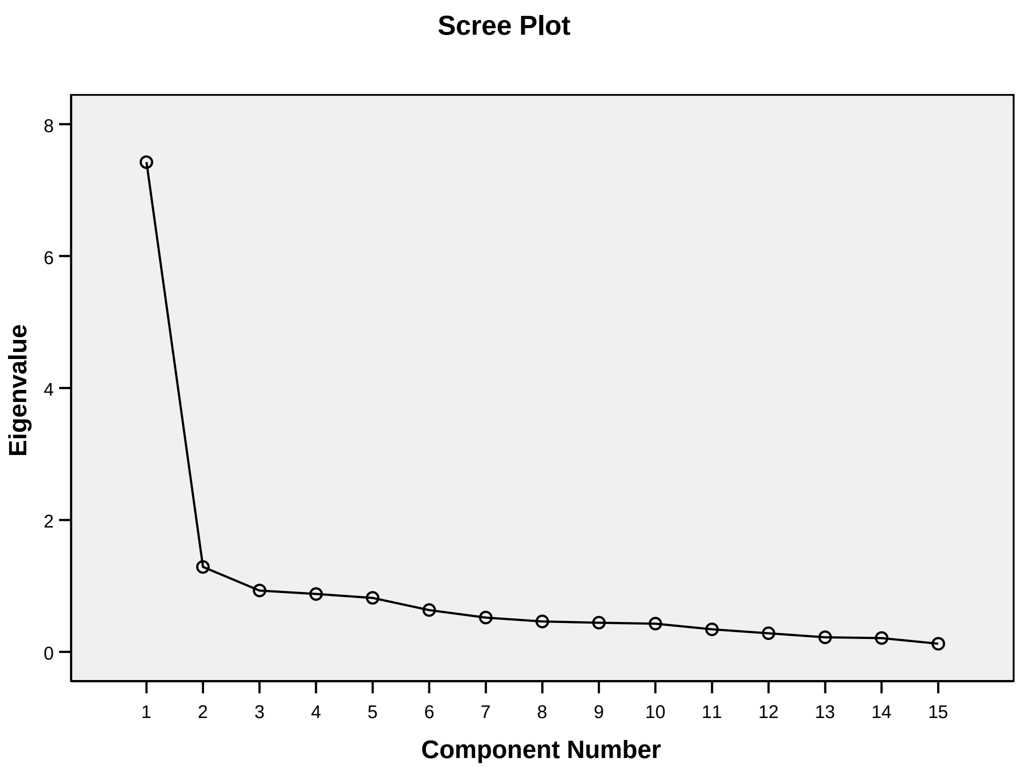
SCREE PLOT

FIVE COMPONENT MODEL
COLLECTIVE INCLUSION EFFICACY



SCREE PLOT

TWO COMPONENT MODEL
TECHNOLOGY USE



SCREE PLOT

TWO COMPONENT MODEL
TECHNOLOGY NEED