

University of Northern Iowa
UNI ScholarWorks

Electronic Theses and Dissertations

Graduate College


2011

Effective professional development for teachers of students with autism

Erin Marie Torruella
University of Northern Iowa

Copyright ©2011 Erin Marie Torruella

Follow this and additional works at: <https://scholarworks.uni.edu/etd>

 Part of the [Mental Disorders Commons](#), and the [Special Education and Teaching Commons](#)

Let us know how access to this document benefits you

Recommended Citation

Torruella, Erin Marie, "Effective professional development for teachers of students with autism" (2011). *Electronic Theses and Dissertations*. 485.

<https://scholarworks.uni.edu/etd/485>

This Open Access Thesis is brought to you for free and open access by the Graduate College at UNI ScholarWorks. It has been accepted for inclusion in Electronic Theses and Dissertations by an authorized administrator of UNI ScholarWorks. For more information, please contact scholarworks@uni.edu.

EFFECTIVE PROFESSIONAL DEVELOPMENT FOR TEACHERS
OF STUDENTS WITH AUTISM

An Abstract of a Thesis
Submitted
in Partial Fulfillment
of the Requirements for the Degree
Specialist in Education

Erin Marie Torruella
University of Northern Iowa
July, 2011

ABSTRACT

The number of students with autism is on the rise. The main treatment for children with autism is their education. It is essential that teachers are prepared to work with students with autism. The purpose of this study was to determine the effectiveness of a teacher training workshop held by Area Education Agency 267. Fifty-one participants of the workshop training responded to a survey regarding their implementation of strategies learned, their understanding of the content and strategies learned, the change in their planning and delivery of instruction, and the impact on their students' achievement. The study found that the training was successful. However, the specific factors that led to the success of the training could not be identified due to the low number of respondents. Future directions would include information from less biased sources, such as interviews, tests of knowledge regarding autism, evaluation of student progress, or observations.

EFFECTIVE PROFESSIONAL DEVELOPMENT FOR TEACHERS
OF STUDENTS WITH AUTISM

A Thesis
Submitted
in Partial Fulfillment
of the Requirements for the Degree
Specialist in Education

Erin Marie Torruella
University of Northern Iowa
July, 2011

This Study by: Erin Torruella

Entitled: Effective Professional Development for Teachers of Students with Autism

has been approved as meeting the thesis requirement for the
Degree of Specialist in Education

6/7/11

Date

Dr. Radhi Al-Mabuk, Chair, Thesis Committee

6/7/11

Date

Dr. Kerri Clopton, Thesis Committee Member

6-7-11

Date

Dr. Christina Curran, Thesis Committee Member

8/3/11

Date

Dr. Michael J. Licari, Dean, Graduate College

TABLE OF CONTENTS

	PAGE
LIST OF TABLES.....	v
CHAPTER 1. INTRODUCTION	1
Statement of the Problem.....	1
Significance of the Problem	2
Definition of Terms	3
Organization of the Study	4
CHAPTER 2. LITERATURE REVIEW.....	5
What is Autism	5
Teacher Preparation is Essential.....	11
General Education Teachers.....	12
What Teachers Need to Know	14
Social Validity for Teacher Training	15
Methods of Professional Development	16
Characteristics of Effective Professional Development Programs	18
Perceived Need	18
Goal Setting.....	19
Program Evaluation.....	20
Duration	21
Collaboration/Collective Participation.....	22
Active Learning	23
Opportunities for observation	24

Opportunities for practice	25
Opportunities to plan for localization	25
Follow-up and Support.....	26
Professional Development for Teachers of Students with Autism	27
Effectiveness of Specific Training Programs.....	28
Effectiveness of Non-Specific Training in Autism.....	31
CHAPTER 3. METHODOLOGY	36
Participants.....	36
Instrument	37
Procedures.....	38
CHAPTER 4. RESULTS.....	41
Results.....	41
Summary.....	51
CHAPTER 5. DISCUSSION.....	54
Results.....	54
Tie Findings to Existing Research	55
Limitations.....	58
Implications for Future Research.....	60
REFERENCES	62
APPENDIX A: AUTISM SURVEY.....	66
APPENDIX B: SUGGESTIONS FROM SURVEY.....	75

LIST OF TABLES

TABLE		PAGE
1	Frequency of Implementation of Strategies Learned in Training	42
2	Whether Participants Understood the Concepts Learned in Training.....	42
3	Whether Training Changed Instruction.....	43
4	Whether Training has had a Positive Effect on Student Achievement	44
5	Factors Identified as Facilitators and Barriers.....	46
6	The Effect of Attending as Collaborative Team—Attended as Team.....	47
7	Anticipated Effect of Attending as Collaborative Team—Did Not Attend as Team.....	48
8	The Effect of Ongoing Support—Had Support.....	49
9	Anticipated Effect of Ongoing Support—Did Not Have Support.....	50
10	Suggestions for Improvement.....	51

CHAPTER 1

INTRODUCTION

Statement of the Problem

In 2001, the National Research Council released a report on improving the quality of services provided to students with autism, which stated, “Education, both of children, and of parents and teachers, is currently the primary form of treatment for autistic spectrum disorders [ASD]” (National Research Council, 2001, p. 1). The report also indicated that although there is considerable research regarding the education of children with autism, the information is not being used in decision making about how to educate these children.

The number of children diagnosed with autism, also known as autism spectrum disorder, is increasing (National Research Council, 2001; Simpson, Smith Myles, & LaCava, 2008). A new category was created under the Individuals with Disabilities Education Act of 1990 making autism a separate disability category under federal law (Individuals with Disabilities Education Act, 1990). According to the U. S. Department of Education’s Institute of Education Sciences (U.S. Department of Education, 2009), there were 42,517 children between the ages of 6 and 21 identified as having autism in 1997. In 2006, the number of children between 6 and 21 identified as having autism had increased to 224,594. Given the high number of children with autism, educators increasingly need to learn new ways to effectively teach students with autism.

Significance of the Problem

The wide variability in symptoms and the complicated nature of autism makes it important for teachers of children with autism to be skilled and knowledgeable about working with these children (National Research Council, 2001; Scheuermann, Webber, Boutot, & Goodwin, 2003; Schwartz & Davis, 2008; Simpson, Smith Myles, & LaCava, 2008). Children with autism will not pick up the skills that they need on their own. It is essential that someone who is qualified and knowledgeable about working with children with autism explicitly teach new skills (Scheuermann et al., 2003; Simpson, Smith Myles, & LaCava, 2008). In its report of Autism Program Quality Indicators, the New Jersey Department of Education (2004) mentioned that it is essential that educators be trained specifically in working with children with autism. Currently, teacher training is one of the weakest areas in programming for children with autism and there is a shortage of qualified personnel, which is a major challenge for providing services to children with autism (National Research Council, 2001; Simpson, 2004).

In order to meet the needs of children with autism, it is essential to understand professional development, specifically for teachers of students with autism. Along with adequate pre-service training for incoming teachers, the New Jersey Department of Education (2004) identified holding frequent in-service training, providing workshops and conferences, and providing ongoing consultation. Different methods of training have different characteristics and components. The particular focus of this study was to investigate the impact of a workshop training on teaching students with autism.

Definition of Terms

The autism spectrum is comprised of a number of developmental disorders that share common elements, including impairments in social interaction and communication; attention problems; and the presence of restricted, repetitive, or obsessive behaviors, interests, or activities (also called stereotyped behaviors; National Research Council, 2001; Schwartz & Davis, 2008; Simpson, Smith Myles, & LaCava, 2008; Smith Myles, Swanson, Holverstott, & Duncan, 2007; Turkington & Anan, 2007). The autism spectrum includes five subcategories: Autistic Disorder, Asperger's Syndrome, Pervasive Developmental Disorder-Not Otherwise Specified (PDD-NOS), Childhood Disintegrative Disorder (CDD), and Rett's Syndrome (Simpson, Smith Myles, & LaCava, 2008; Smith Myles et al., 2007; Turkington & Anan, 2007). For the sake of consistency, the term *autism* will be used throughout this study to describe all disorders that fall under the autism spectrum as described above.

Professional development can refer to a number of methods of training professionals for use of skills they need in their profession. The broad category of professional development includes pre-service training, workshops, in-service training, conferences, study groups, mentoring, and coaching (Garet, Porter, Desimone, Birman, & Yoon, 2001; National Research Council, 2001; New Jersey Department of Education, 2004). In this paper, the term *professional development* will refer to in-service or workshop trainings.

Organization of the Study

In addition to this chapter, this study has the following additional chapters:

Chapter 2 is a review of the literature on training teachers to work with students with autism; Chapter 3 describes the methods and procedures used; Chapter 4 reports the results of the study; and Chapter 5 is a discussion of the findings, limitations of the study, and future directions for research.

CHAPTER 2

LITERATURE REVIEW

The purpose of this chapter is to provide a review of the literature that exists regarding the need for teacher training for students with autism and the characteristics of effective professional development. The chapter begins with a discussion of the nature of autism. Next, the need for training teachers of students with autism is discussed. Then the various methods of professional development are described, followed by the characteristics of effective professional development. Finally, the research specific to training teachers of students with autism is discussed.

What is Autism?

The autism spectrum describes a broad range of neurologically-based developmental disorders that share common elements (National Research Council, 2001; Schwartz & Davis, 2008; Simpson, Smith Myles, & LaCava, 2008; Smith Myles et al., 2007; Turkington & Anan, 2007). These common elements include impairments in social interaction and communication; attention problems; and the presence of restricted, repetitive, or obsessive behaviors, interests, or activities (also called stereotyped behaviors; National Research Council, 2001; Schwartz & Davis, 2008; Simpson, Smith Myles, & LaCava, 2008; Smith Myles et al., 2007; Turkington & Anan, 2007). According to Simpson, Smith Myles, and LaCava (2008), impairments in social interaction include problems with relationships, eye contact, and interacting with others. Communication impairments include delayed or absent spoken language skills and unusual or stereotypical use of language. Stereotyped

behaviors include repetitive movements, unusual interest patterns, nonfunctional obsessive routines, and preoccupation with specific objects (Simpson, Smith Myles, & LaCava, 2008).

The Diagnostic and Statistical Manual of Mental Disorders-Fourth Edition-Text Revision (DSM-IV-TR, 2000; as cited in Simpson, Smith Myles, & LaCava, 2008) defines autism and the other disorders on the autism spectrum as Pervasive Developmental Disorders (PDD). This means that the symptoms of autism are life-long and present in all areas of life (Schwartz & Davis, 2008; Turkington & Anan, 2007). The terms autism, ASD, and PDD are often used interchangeably (Simpson, Smith Myles, & LaCava, 2008; Turkington & Anan, 2007). The autism spectrum includes five subcategories: Autistic Disorder, Asperger's Syndrome, Pervasive Developmental Disorder-Not Otherwise Specified (PDD-NOS), Childhood Disintegrative Disorder (CDD), and Rett's Syndrome (Simpson, Smith Myles, & LaCava, 2008; Smith Myles et al., 2007; Turkington & Anan, 2007).

There is not one singular definition of autism because autism is a spectrum made up of many different, but similar, disorders (Simpson, Smith Myles, & LaCava, 2008; Smith Myles et al., 2007; Turkington & Anan, 2007). Autism is diagnosed using the criteria in the DSM-IV-TR and includes the above-mentioned characteristics of social, communicative, and behavioral impairments. The diagnosis also requires that at least some of the symptoms be present before 3 years of age (Schwartz & Davis, 2008; Simpson, Smith Myles, & LaCava, 2008). The particular symptoms exhibited and the severity of those symptoms varies greatly from individual to individual (National Research Council, 2001; Schwartz & Davis, 2008;

Simpson, Smith Myles, & LaCava, 2008; Smith Myles et al., 2007; Turkington & Anan, 2007). As a result, autism can look very different across individual cases (National Research Council, 2001; Simpson, Smith Myles, & LaCava, 2008). Autism also often occurs in conjunction with other disabilities, such as mental retardation or speech and language disorders (National Research Council, 2001; Smith Myles et al., 2007; Turkington & Anan, 2007).

Autistic Disorder is characterized by the presence of specific symptoms within each of the three areas of impairment—behavioral, social, and communicative (Simpson, Smith Myles, & LaCava, 2008; Turkington & Anan, 2007). Examples of specific behavioral symptoms would include self-destructive behavior, stereotyped behavior, inflexibility, or rocking (Simpson, Smith Myles, & LaCava, 2008; Turkington & Anan, 2007). Lack of responsiveness to people, lack of attachment to caretakers, and lack of imaginative play are examples of social impairments (Simpson, Smith Myles, & LaCava, 2008; Turkington & Anan, 2007). Communication impairments can include refusal to speak, inability to maintain conversations, or the appearance of being deaf (Simpson, Smith Myles, & LaCava, 2008; Turkington & Anan, 2007). Children diagnosed with Autistic Disorder can have any combination of specific symptoms and those symptoms can vary in their severity (Simpson, Smith Myles, & LaCava, 2008; Smith Myles et al., 2007; Turkington & Anan, 2007). Many children diagnosed with Autistic Disorder have cognitive impairments, co-occurring medical conditions, and moderate to severe language impairments (Simpson, Smith Myles, & LaCava, 2008; Smith Myles et al., 2007; Turkington & Anan, 2007).

Children diagnosed with Asperger's Syndrome have the impairments in social interaction and behavior that are seen in Autistic Disorder, but lack the cognitive or language impairments that characterize Autistic Disorder (Atwood, 2007; Smith Myles et al., 2007; Turkington & Anan, 2007). There is a debate as to whether Asperger's Syndrome is a separate disorder or if it is simply a mild form of Autistic Disorder (Atwood, 2007; Simpson, Smith Myles, & LaCava, 2008; Smith Myles et al., 2007; Turkington & Anan, 2007). However, to be diagnosed with Asperger's Syndrome, the DSM-IV-TR requires that the early language development of the child is normal, which is not the case with children diagnosed with Autistic Disorder (Atwood, 2007; Turkington & Anan, 2007). Although children with Asperger's Syndrome may have seemingly accurate and well-developed language, they have problems with the social aspects of language, such as metaphor or indirect speech and must be specifically taught to interpret this type of language (Atwood, 2007; Smith Myles et al., 2007). The presence of highly restricted interests is a common characteristic of Asperger's Syndrome and these interests can be so encompassing that they interfere with the child's social life and schoolwork (Atwood, 2007; Smith Myles et al., 2007; Turkington & Anan, 2007).

Pervasive Developmental Disorder-Not Otherwise Specified (PDD-NOS) is a diagnosis that is used when a child has specific diagnostic symptoms that fall under at least one of the three categories for Autistic Disorder, but does not meet the full criteria to be diagnosed with Autistic Disorder (Jensen, Knapp, & Mrazek, 2006; Simpson, Smith Myles, & LaCava, 2008; Smith Myles et al., 2007; Turkington & Anan, 2007). Children with PDD-NOS are often characterized by significant

impairments in social interactions and/or the presence of stereotyped behaviors (Jensen et al., 2006; Turkington & Anan, 2007). Similar to children with Asperger's Syndrome, children with PDD-NOS tend to have a stronger desire to develop social relationships than children diagnosed with Autistic Disorder (Smith Myles et al., 2007; Turkington & Anan, 2007).

Childhood Disintegrative Disorder (CDD) is a rare condition that resembles Autistic Disorder (Cartalano, 1998; Simpson, Smith Myles, & LaCava, 2008; Smith Myles et al., 2007). However, CDD is characterized by at least 2 years of normal development and followed by regression of development (Cartalano, 1998; Simpson, Smith Myles, & LaCava, 2008; Smith Myles et al., 2007; Turkington & Anan, 2007). Researchers have suggested a link between the onset of CDD and serious neurological disorders (Cartalano, 1998; Turkington & Anan, 2007). However, the cause of the disorder is unknown and the prognosis for those diagnosed with CDD is poor (Cartalano, 1998; Simpson, Smith Myles, & LaCava, 2008; Smith Myles et al., 2007; Turkington & Anan, 2007).

Rett's Syndrome is a rare disorder that, like CDD, is marked by an early period of normal development (Simpson, Smith Myles, & LaCava, 2008; Smith Myles et al., 2007; Turkington & Anan, 2007). According to the National Institutes of Health (2006), Rett's Syndrome is associated with the X chromosome and is primarily found in girls. After several months of normal development, there is a sudden regression that includes the following: (a) deceleration of head growth, (b) loss of purposeful hand movement and development of stereotyped hand movements, (c) loss of social engagement, (d) development of poorly coordinated body movements,

and (e) impaired receptive and expressive language development (National Institutes of Health, 2006; Simpson, Smith Myles, & LaCava, 2008; Smith Myles et al., 2007). According to Smith Myles et al. (2007), there is an ongoing debate as to whether Rett's Syndrome should be included in the autism spectrum or whether it should be considered a separate neurological disorder.

Children with autism have some common strengths and weaknesses (Green, Fein, Joy, & Waterhouse, 1995; National Research Council, 2001; Schopler & Mesibov, 1995; Schopler, Mesibov, & Harsey, 1995; Simpson, Smith Myles, & Ganz, 2008). Children with autism have strengths in visual discrimination, visuo-spatial skills, motor skills, rote memory, puzzle-solving, and categorization (Green et al., 1995; Schopler & Mesibov, 1995; Schopler et al., 1995; Simpson, Smith Myles, & Ganz, 2008). Children with autism have weaknesses in auditory processing, cognitive sequencing, verbal expression, attention, relating incoming information to stored information, generalizing information, abstract thinking, perceptual organization, and coping with change (Green et al., 1995; Schopler & Mesibov, 1995; Schopler et al., 1995; Simpson, Smith Myles, & LaCava, 2008). People who work with children with autism need to be able to individualize around the child's particular strengths and weaknesses (Green et al., 1995; National Research Council, 2001; Schopler & Mesibov, 1995; Schopler et al., 1995; Simpson, Smith Myles, & Ganz, 2008; Schwartz & Davis, 2008).

Due to the variation in severity of and the uniqueness of the characteristics of children with autism, programming for children with autism requires certain components (National Research Council, 2001; Schwartz & Davis, 2008). The

National Research Council (2001) reviewed many specific programs and research regarding effective programming for children with autism. The Council did not suggest the use of any one specific program, but rather recommended specific components of programs that lead to the program's effectiveness (National Research Council, 2001; Schwartz & Davis, 2008). The recommendations were as follows: (a) intervention to be initiated immediately upon serious suspicion of an autism diagnosis; (b) a minimum of 25 hours per week in the classroom and year round programming, if it is appropriate; (c) sufficient one-on-one adult attention; (d) collaboration with parents, including parent training; (e) low student-teacher ratios; and (f) ongoing program evaluation and assessment (National Research Council, 2001).

There are an ever-increasing number of children being identified as having autism. In 1997, there were 42,517 children between the ages of 6 and 21 identified as having autism (U. S. Department of Education, 2009). In 2006, the number of children between 6 and 21 identified as having autism had increased to 224,594. This rise in numbers makes the need for teachers to understand autism and have the skills to work with student with autism even greater. Given the high number of children with autism, educators increasingly need to learn new ways to effectively teach students with autism.

Teacher Preparation is Essential

The wide variability in symptoms and the complicated nature of autism makes it important for teachers of children with autism to be skilled and knowledgeable about working with these children (National Research Council, 2001;

Scheuermann et al., 2003; Schwartz & Davis, 2008; Simpson, Smith Myles, & LaCava, 2008). Children with autism will not acquire the skills that they need on their own. It is essential that someone who is qualified and knowledgeable about working with children with autism explicitly teach new skills (Scheuermann et al., 2003; Simpson, Smith Myles, & LaCava, 2008). In its report of Autism Program Quality Indicators, the New Jersey Department of Education (2004) stated that it is essential that educators be trained specifically in working with children with autism. Currently, teacher training is one of the weakest areas in programming for children with autism and there is a shortage of qualified personnel, which is a major challenge for providing services to children with autism (National Research Council, 2001; Simpson, 2004).

General Education Teachers

Personnel preparation cannot be limited to just special education teachers (Simpson, 2004). The National Research Council (2001) noted that there is a lack of special education teachers. Even if there were enough qualified special education teachers, not all children with autism are taught in a special education setting (National Research Council, 2001; Simpson, 2004). Like all children with disabilities, children with autism should be educated in the least restrictive environment possible (Schwartz & Davis, 2008; Simpson, 2004). The wide variability in characteristics of autism means that children with autism may be served in any setting from general education classrooms to special residential schools (Simpson, 2004). More children with special needs are being integrated into general education classrooms who might otherwise have been in special education classrooms

(Humphrey, 2008; National Research Council, 2001; Williams, Johnson, & Sukhodolsky, 2005). Additionally, children with Asperger's syndrome do not have the cognitive deficits associated with some of the other disorders on the autism spectrum (Smith Myles et al., 2007; Turkington & Anan, 2007). According to Wilkinson (2005), most children with Asperger's syndrome are educated in the general education setting.

There is evidence that inclusion in the general education setting can lead to better outcomes for students with disabilities, including students with autism (Mesibov & Shea, 1996; Wilkinson, 2005). Regardless of the outcomes of inclusion, it is clear that more and more students with autism are integrated into the general education classroom (Humphrey, 2008; Mesibov & Shea, 1996; National Research Council, 2001; Wilkinson, 2005; Williams et al., 2005). Also, Mesibov and Shea (1996) and Wilkinson (2005) noted that in order to achieve beneficial outcomes, specialized knowledge and supports are necessary. As a result, it is necessary that general education teachers and administrators be trained so that they have the knowledge and are able to provide the support that is needed (Mesibov & Shea, 1996; New Jersey Department of Education, 2004; National Research Council, 2001; Scheuermann et al., 2003; Simpson, 2004; Simpson, Smith Myles, & LaCava, 2008; Schwartz & Davis, 2008; Wilkinson, 2005; Williams et al., 2005).

Osborne and Reed (2011) examined what school factors promoted inclusion of students with autism into the general education setting. Ten school districts across the United Kingdom that educate students with autism in an inclusive setting were asked to identify twenty random students with autism in their district. The

researchers sent questionnaires to the parents including the Autism Behavior Checklist to determine the severity of the child's autism, the Strengths and Difficulties Questionnaire to assess co-occurring psychological disorders, and the Psychological Sense of School Membership to identify the students' level of socialization and sense of belonging in their school. The researchers found that student socialization and sense of belonging increased as teachers' perception of adequate training increased.

What Teachers Need to Know

The Iowa Department of Education's Autism Services Consultant identified the New Jersey Department of Education's report of Autism Program Quality Indicators as an exemplary model for programming for students with autism (Sue Baker, personal communication, March 25, 2009). According to the New Jersey Department of Education (2004), to be able to work with children with autism, teachers should be knowledgeable and skilled in the specifics related to teaching children with autism in the areas of:

1. Diagnostic criteria and associated characteristics of autism spectrum disorders;
2. Familiarity with assessment methods;
3. Developing IEPs to meet the unique needs of each student;
4. Curriculum, environmental adaptations and accommodations, and instructional methods;
5. Strategies to improve communication and social interaction skills;

6. Crisis intervention techniques (New Jersey Department of Education, 2004, p.2).

Additionally, the National Research Council (2001) suggested that teachers be familiar with practices for working with children with autism including applied behavior analysis, incidental teaching, naturalistic learning, assistive technology, and effective data collection and use of data.

Social Validity for Teacher Training

Callahan, Henson, and Cowan (2008) reported that there is social validity for having well-trained and qualified teachers for children with autism. Social validity is the extent to which something is viewed as acceptable by society (Callahan et al., 2008). The researchers surveyed teachers of children with autism, general education teachers, administrators, and parents of children with autism to determine the social validity of a number of components of autism programs (Callahan et al., 2008). The authors further divided the teacher category into teachers who identified themselves as teaching only students with autism and teachers who identified themselves as teaching students from a number of different disability categories.

The researchers asked the respondents to rate how important they thought each component of programs and interventions for children with autism by indicating how much they agreed with specific statements (Callahan et al., 2008). The statement that received the highest overall rating was “Teachers and service providers who are knowledgeable, experienced, and qualified in autism...” (Callahan et al., 2008, p. 688). The overall rating for this item was 6.90 on a 7-point scale (Callahan et al., 2008). Although ratings of this item were highly positive for all

groups, teachers who only teach students with autism and parents were the groups that rated this item highest, while the group of administrators gave the lowest rating for this item. Callahan et al. (2008) determined that among teachers, administrators, and parents there is social validity for training teachers to work with children with autism. This means that teachers, parents, and administrators would be likely to support measures to increase preparation for teachers of students with autism. Thus, it is to a discussion of the various methods of professional development for teachers that we must turn next.

Methods of Professional Development

It is essential to understand professional development in general and professional development for teachers of students with autism in particular. One method of preparing teachers to work with children with autism is through special education certification while they are still in pre-service programs (National Research Council, 2001; New Jersey Department of Education, 2004; Scheuermann et al., 2003). However, Scheuermann et al. (2003) noted that many of these certifications are non-categorical and the teacher may never learn any specifics related to teaching children with autism. Another limitation of only providing pre-service training is that it does not provide any assistance to teachers already working in the field who also need preparation (National Research Council, 2001; New Jersey Department of Education, 2004). In this paper, professional development will refer to in-service or workshop professional development programs unless specifically stated.

In its report on Autism Program Quality Indicators, the New Jersey Department of Education (2004) identified four methods of providing professional development for teachers working with children with autism, including adequate pre-service training for incoming teachers, holding frequent in-service training, providing workshops and conferences, and providing ongoing consultation. Others (i.e.—Garet et al., 2001) identified two major categories of professional development: traditional and reform. Traditional professional development is made up of activities such as workshops, courses, and conferences. This type of professional development is classified by the fact that it takes place outside the teacher's classroom. The second type of professional development is reform professional development, which is made up of activities such as holding study groups, mentoring, and coaching. Also, reform professional development activities often take place during the school day, in the teacher's own classroom, and they tend to be ongoing.

Several studies (Desimone, Porter, Garet, Yoon, & Birman, 2002; Garet et al., 2001; Penuel, Fishman, Yamaguchi, & Gallagher, 2007) have found that reform professional development models are more effective than traditional models. However, Garet et al. (2001) and Penuel et al. (2007) asserted that the characteristics that reform methods of professional development have in common lead to the effectiveness of professional development, not the type of professional development itself. There are numerous ways of defining effectiveness of professional development, such as change in student behavior, student achievement, or teacher knowledge. For the purposes of this paper, effectiveness of professional development refers to the ability of the professional development program to change

teacher behavior. The next section discusses more information into the characteristics of effective professional development.

Characteristics of Effective Professional Development Programs

Two characteristics of professional development programs that are essential to the effectiveness of the program take place during the planning phase (Green, 1995). These characteristics include the perceived need for professional development and goal setting. Some other influential components of a professional development program are: (a) the duration of the professional development program; (b) the amount of collaboration or collective participation incorporated into the professional development program; (c) the use of active learning techniques, which are observation, practice, feedback, and planning for implementation in the classroom; (d) program evaluation; and (e) follow up and support after the completion of the professional development program (Desimone et al., 2002; Garet et al., 2001; Green, 1995; Iowa Department of Education, 2009; Kontos & Diamond, 1997; Penuel et al., 2007; Showers, Joyce, & Bennett, 1987; Wilson & Berne, 1999).

Perceived Need

According to Green (1995), it is important that there be “clear evidence of a strongly felt need” for the professional development (p. 124). If the staff members understand that there is a need for change and are aware of how the professional development will help meet that need, the professional development will be more successful. When participants perceive a need to take part in professional development, they will be more motivated and interested, which leads to better outcomes (Green, 1995). Although Green argues for the importance this component,

there is a paucity of empirical research about the impact of perceived need on the effectiveness of the professional development program.

Goal Setting

After identifying an area of need, it is important to begin planning for a professional development program with a set of clearly stated goals (Green, 1995). Goals provide focus for the learning that will take place during the professional development. The goals should be clear and concrete and be directly related to participants' behavior in the classroom (Green, 1995). Goal setting includes choosing a behavior, determining how to measure the behavior, determining how much change is expected to take place, and determining how much time should be allotted to make the change (Locke & Latham, 1984, as cited in Green, 1995). Moreover, having clear, concrete, and measurable goals increases implementation by focusing attention on an exact behavior instead of a vague concept. The goals that are set during the planning of a professional development program should be used later to evaluate whether the program has been successful (Green, 1995). The Iowa Professional Development Model includes a requirement that goals be set and means for observing both teacher and student behavior related to those goals be in place (Iowa Department of Education, 2009).

Another aspect of goal setting is planning for content and linking the content with the desired outcomes of the training. There is little information in the professional development literature on the link between content and the training outcomes that are measured. In their meta-analysis of studies about the effectiveness of professional development programs, Yoon, Duncan, Lee, Scarloss,

and Shapley (2007) looked at the effect sizes across content areas and found that they were relatively consistent across science, mathematics, and reading. It is also important to plan for what level of learning (knowledge, application, etc.) will be taught and how the training methods will affect the outcome of the training. The role of content in the effectiveness of professional development programs needs further exploration.

Program Evaluation

Evaluating the success of the professional development program is essential (Green, 1995; Iowa Department of Education, 2009; Kontos & Diamond, 1997). Although summative evaluation takes place at the conclusion of the program, a plan for evaluation should be developed in the initial planning of the program. The evaluation should examine whether the goals that were laid out at the beginning of the professional development have been met. If the program is not evaluated, the program developers will not know what the outcomes of their professional development program are or they may attribute outcomes to the training that are actually caused by extraneous variables (Green, 1995). Kontos and Diamond (1997) stated that evaluation of the professional development program should be ongoing. Formative evaluation data should be collected during the training and used to determine whether the professional development program is meeting the desired goals. If the program is not meeting those goals, it should not be continued (Green, 1995; Kontos & Diamond, 1997). According to Penuel et al. (2007), the criteria used to determine whether the program has been successful should be objective and “tied to a model of implementation fidelity” (p. 927). If the developers used the goal-

setting procedures outlined above, then the objective criteria should be readily available for developing the evaluation procedure (Green, 1995). Both Green (1995) and Penuel et al. (2007) stated that direct observation of the implementation of the new practices is the most reliable means of determining whether the practices have been implemented with fidelity. There is little empirical research regarding the effect of planning for and carrying out program evaluation on specific training outcomes in terms of in-service professional development.

Duration

Another characteristic of effective professional development programs is duration (Desimone et al., 2002; Garet et al., 2001; Penuel et al., 2007). Reform professional development tends to be ongoing, which means that the participants are exposed to a greater duration of instructional activities than traditional professional development programs. Penuel et al. (2007) surveyed 454 teachers who had taken part in a professional development program for science teachers. The researchers asked the participants questions to determine which components of professional development predicted the teachers' knowledge and implementation. The researchers found that total hours of study were associated with implementation of the material in the classroom. Garet et al. (2001) used data from the Teacher Activity Survey (U. S. Department of Education, 2000, as cited in Garet et al., 2001) as part of a National Evaluation of an Eisenhower Professional Development Program, which looked at a large number of school districts that received funding from the Eisenhower Professional Development Program during 1997, 1998, and 1999. The survey was sent to all mathematics and science teachers in an elementary

school, middle school, and high school in a sample of 10 districts (U. S. Department of Education, 2000). The survey was administered three times over the course of the 3 evaluation years. Questions on the survey were intended to provide information regarding the characteristics of professional development as well as the effect on the teacher's classroom practice. Garet et al. (2001) found that duration exerted a substantial direct effect on the other characteristics of professional development and a moderate indirect effect on teacher practice. For example, Garet et al. (2000) found that duration had an effect on the amount of active learning activities included in the professional development program. Birman, Desimone, Porter, and Garet (2000) conducted a survey of 1,000 teachers who participated in a National Evaluation of an Eisenhower Professional Development Program during unspecified years. They reported that longer duration of training was related to greater effectiveness of the professional development program. The preceding studies found that the longer the duration of professional development, the greater the impact on the teacher's knowledge and implementation of practices in the classroom (Birman et al., 2000; Garet et al., 2001; Penuel et al., 2007). According to Garet et al. (2001), traditional professional development that was the same duration as reform professional development had the same outcomes.

Collaboration/Collective Participation

Another influential feature of effective professional development is what Garet et al. (2001) call "collective participation" (p. 922). Collective participation is when groups of teachers from the same school, department, or grade level participate in the professional development together (Birman et al., 2000; Garet et

al., 2001). The concept of collective participation includes collaboration, but the term collaborative participation is used to refer to both concepts. Desimone et al. (2002) conducted a survey of 207 teachers of mathematics and science regarding the components of professional development and the teachers' change in practice after the professional development. The researchers found that professional development that included collaborative participation was more effective than individual participation in changing teachers' classroom practice. Penuel et al. (2007) and Garet et al. (2001) found that making use of teacher collaboration was linked with effective implementation of the material learned in the professional development program. In its Iowa Professional Development Model, The Iowa Department of Education (2009) identified collaboration as an essential component to professional development. Garet et al. (2001) suggest that collaborative participation leads to increased implementation because it gives teachers an opportunity to discuss what they have learned and address any problems or confusion that arose during professional development. They also imply that collaborative participation may lead to longer maintenance of implementation because as teachers leave the school, the skills and knowledge learned during the professional development will not leave with them (Garet et al., 2001). The teachers who remain will be able to pass their knowledge on to new teachers who come into the school (Garet et al., 2001).

Active Learning

Active learning is a key component of adult learning (Desimone et al., 2002; Garet et al., 2001) and is comprised of activities that allow the participant to be actively involved in the learning process, such as observing experts model the

material, having the opportunity to practice, receiving feedback, and planning for implementation in their own classrooms. Green (1995) and Kontos and Diamond (1997) also identified observation, practice, and feedback as being essential components of an effective professional development program. According to Wilson and Berne (1999), when working with teachers, new knowledge should not “be bound and *delivered* but rather *activated*” (p. 194). Garet et al. (2001), Birman et al. (2000), and Desimone et al. (2002) found that active learning opportunities led to greater change in teacher behavior. In the research, active learning was studied as one, whole concept, but in their discussion sections, the authors broke the idea down into these subcategories: 1) opportunities for observation, 2) opportunities for practice, and 3) opportunities to plan for localization (Birman et al., 2000; Desimone et al., 2002; Garet et al., 2001). Each of the subcategories is elaborated next.

Opportunities for observation. The first major component of active learning is the opportunity for observation of experts modeling or demonstrating the material. According to Green (1995), the first step in professional development is presenting material clearly and making sure that the participants understand the material. Green (1995) observed that demonstration is an essential component to being sure that the participants understand the material because it is a concrete presentation. Further, Kontos and Diamond (1997) pointed out that modeling is most effective when it involves parents, family members, and students. They suggest including students in workshops and other professional development settings to maximize the effectiveness of observation. In reform type professional development, students are

included because the modeling takes place in the teacher's classroom or another teacher's classroom (Garet et al., 2001).

Opportunities for practice. It is also important that teachers are able to practice the new skills once they have observed them being modeled (Desimone et al., 2002; Garet et al., 2001; Green, 1995; Iowa Department of Education, 2009; Kontos & Diamond, 1997). Kontos and Diamond (1997) stated that it is best if participants can practice what they have learned with real students, although it may not always be possible. Practice reinforces what has been learned (Green, 1995; Kontos & Diamond, 1997). Kontos and Diamond stated that practice is equally important as didactic instruction. Desimone et al. (2002) and Garet et al. (2001) found that practice was linked with more effective implementation. In order to be effective, practice must also include feedback on how well the participants are performing the skills that they are learning (Green, 1995).

Opportunities to plan for localization. Another important aspect of professional development is the opportunity for the participants to "localize", or apply, what they have learned to their own classrooms (Penuel et al., 2007, p. 950). Penuel et al. (2007) define this as the opportunity for participants to plan for how they will use the knowledge they have gained from the professional development program in their own classrooms. They found that whether or not participants had the opportunity to actively plan to localize their learning to their own classrooms was a major predictive factor for degree of implementation. Trainers accomplish this when they plan the training and should consider the context in which the participants must implement the changes when planning professional development.

Green (1995) asserted that the difference in context between the in-service setting and the classroom is large and must be taken into account when planning in-service training.

Follow-up and Support

Follow-up and post-implementation support is a common factor identified in the research as being related to the success of professional development (Garet et al., 2001; Green, 1995; Iowa Department of Education, 2009; Kontos & Diamond, 1997; Penuel et al., 2007; Showers et al., 1987; Yoon et al., 2007). Once the participants have had the opportunity to practice the new skills and plan for implementing them in their own classroom, they must receive feedback and follow-up as to how well they have transferred the skills to their classroom (Green, 1995; Iowa Department of Education, 2009; Kontos & Diamond, 1997). As Kontos and Diamond (1997) note, this step can be fairly time consuming and expensive, but it is essential to ensure that the participants are implementing the skills they have learned with fidelity. According to Showers et al. (1987), the professional development program itself is not sufficient to ensure transfer of the new skills to the classroom. Follow-up with the participants about their performance in their own classrooms is necessary (Green, 1995; Kontos & Diamond, 1997; Showers et al., 1987).

The evaluation component of the professional development program is a form of follow-up because it allows trainers to determine whether the changes have been implemented. However, the information gained from the evaluation process must also be used to give the participants feedback about their implementation if it is to

be of any use (Green, 1995; Iowa Department of Education, 2009; Kontos & Diamond, 1997). This formative evaluation data must be used to inform both future professional development programs, as well as the practices of the participants who have taken part in past professional development (Green, 1995; Iowa Department of Education, 2009).

According to Kontos and Diamond (1997), collaborative participation is another way that participants can increase the feedback and follow-up that they receive. They stated that participating in professional development with a group of co-workers can help increase the long-term implementation of the changes because the teachers are able to collaborate and support each other during the implementation and maintenance periods. Also, Green (1995) stated that encouraging collaboration reduces staff isolation and increases implementation. According to the Iowa Professional Development Model, collaboration should be ongoing and regular and should be part of the day-to-day operations of the staff (Iowa Department of Education, 2009).

Professional Development for Teachers of Students with Autism

The National Research Council (2001) report includes a recommendation that staff working with children with autism be knowledgeable and have specific skills for working with children with autism in order to have good outcomes. In-service professional development is one way to prepare teachers already in the field to work with students with autism (Scheuermann et al., 2003). There are a number of workshops offered by the developers of specific programs for children with autism, such as Treatment and Education of Autistic and Communication Handicapped

Children (TEACCH; as cited in National Research Council, 2001; as cited in Scheuermann et al., 2003) and the Early Start Denver Model (National Research Council, 2001; U. C. Davis Extension, 2009) as well as many local, non-specific training programs. There are other specific programs for training teachers to work with children with autism, but information is not available regarding their training programs. Although there are numerous studies that support the effectiveness of specific interventions for students with autism, there is little research into the effect of training teachers to use the specific interventions on teacher behavior.

Effectiveness of Specific Training Programs

The University of North Carolina at Chapel Hill's Division TEACCH and the University of California Davis' M.I.N.D. Institute (Early Start Denver Model) both offer weeklong in-service training workshops aimed at training teachers to work with children with autism (National Research Council, 2001; Scheuermann et al., 2003; U.C. Davis Extension, 2009). Both the TEACCH training and the Early Start Denver Model training are intensive, provide active learning opportunities, and encourage follow-up support and collaboration-including several essential components to any quality professional development program (National Research Council, 2001; Scheuermann et al., 2003; U. C. Davis Extension, 2009).

Research specific to the Early Start Denver Model Training was not available. The researcher contacted the TEACCH Training Director at the University of North Carolina, who replied by saying that there is not much research available about the training (Roger Cox, personal communication, May 28, 2009). Cox (2009) identified a dissertation by Grindstaff (n.d.) as the only existing research

of the TEACCH training, in which Grindstaff cited the research she completed for her Master's thesis as the only existing research into the effectiveness of the TEACCH training on teacher behavior.

The TEACCH method is a structured teaching program that teaches to the strengths of the child with autism (Schopler et al., 1995; Simpson, Smith Myles, & Ganz, 2008). There are six guiding principles of the TEACCH program: improvement of the child's adaptation through modifications to the environment, parental collaboration, the use of formal and informal evaluation procedures to develop an individualized education program for each child, a focus on cognitive and behavioral theory, the use of structured teaching, and skill development (Campbell, Schopler, Cueva, & Hallin, 1996; Panerai, Ferrante, Caputo, & Impellizzeri, 1998). The structured teaching method is a widely used method for working with children with autism that was described by the developers of TEACCH. There are four main components to the structured teaching method of TEACCH: physical organization, visual schedules, work systems, and task organization (Panerai et al., 1998; Schopler et al., 1995; Simpson, Smith Myles, & Ganz, 2008). These four components use the relative strengths in visual skills of children with autism and create clearly defined physical and temporal spaces in the classroom, as well as clear schedules and expectations of what is to occur (Panerai, Ferrante, & Zingale, 2002; Schopler et al., 1995; Simpson, Smith Myles, & Ganz, 2008; Van Bourgondien, Reichle, & Schopler, 2003). The goal of the four components is modification of the environment. Skill development is accomplished using clear directions, prompts from an adult, and reinforcers (Schopler et al., 1995).

Grindstaff (n.d.) sent follow-up questionnaires to 283 participants of a TEACCH training held at the University of North Carolina and received responses from 101 of the participants. The author stated that the content of the training included information regarding the characteristics of autism; the assessment of children with autism; the implementation of communication, social, and vocational goals; behavior management; and inclusion of the family. Although there was not more specific information regarding content, the content of the training likely included the above-mentioned components of the TEACCH method. Grindstaff pointed out that approximately half of the training time was spent working hands on with students with autism, but did not specify what training methods were used during the remainder of the training. Knowledge gained about autism specific to the content learned in the TEACCH training was evaluated based on scores on a measure that was designed and validated by the researcher, the TEACCH Training Quiz (TTQ).

Grindstaff (n.d.) also evaluated the teachers' attributions regarding the behavior of children with autism, such as believing that children with autism have control over their behavior, and the teachers' self-efficacy for teaching students with autism, using a revised and validated form of the Attribution Questionnaire (Grindstaff, n.d.). Observations were also conducted on a small number of the participants (an exact number was not reported). A self-report component was used to determine whether participants felt that the training had impacted their interactions with students with autism. The results showed that post-test scores on the TTQ for participants were significantly higher than for the control group,

indicating that the participants increased their knowledge. The author also found that the teachers' were less likely to attribute the negative behavior of students with autism to the children's control than the control group, although she did not find significant differences between the participants and the control group in terms of self-efficacy. The author concluded that the TEACCH training was effective at increasing knowledge, changing attribution of the cause of autistic behaviors, and increasing the use of structure in the classroom.

Effectiveness of Non-Specific Training in Autism

Probst and Leppert (2008) conducted a study to determine the outcomes of a teacher-training program that is based on the principles of, but not officially associated with the TEACCH program. There was no information in the report regarding the content of the training, although it can be expected that because it was based on the TEACCH program, it included at least some of the content of the structured teaching method described earlier. There was also no information about what training methods were used. The researchers evaluated the effect of the training based on teacher reports of the classroom behavior of their students with autism, teacher stress reaction to autistic behaviors, and implementation of the structured teaching strategies. The participants were 10 special education teachers, each with one student with autism in his or her classroom. Classroom behavior of the child with autism was evaluated based on the Classroom Child Behavioral Symptoms Questionnaire (CCBSQ; Probst & Leppert, 2008). Teacher stress reaction was measured as an additional component to the CCBSQ, asking teachers to rate how stressful they found the behavior (Probst & Leppert, 2008). Both of these

measures were collected pre- and post-training. Implementation of the structured learning strategies was measured by a semi-structured questionnaire, observation, and brief, informal interview (Probst & Leppert, 2008). The researchers found a significant decrease in reported behavioral symptoms of students and a significant decrease in teacher stress reaction to the observed behaviors with moderate effect sizes (Probst & Leppert, 2008). The researchers also found that 9 out of the 10 participants implemented at least one structured learning strategy in their respective classrooms and the participants implemented an average of 1.8 out of 5 strategies (Probst & Leppert, 2008). The researchers noted that not all 5 of the strategies were appropriate for each student, so they did not expect all 5 would be implemented in each classroom. The results showed that teacher perceptions of child behavior as well as implementation of learned material can be affected by training. However, the small number of participants involved in the study and the lack of information regarding content and training methods used in the study limits the interpretation of the results (Probst & Leppert, 2008).

Lerman, Vorndran, Addison, and Kuhn (2004) conducted a study to evaluate the number of strategies that teachers can learn during a week-long summer training session. The participants consisted of five individuals enrolled in a Master's of Education program. All of the sessions were videotaped and the authors evaluated the participants' ability to learn techniques in three areas for working with children with autism by coding each component. The areas were preference assessment, direct teaching, and incidental teaching. The authors used a multiple-baseline design to determine the effects of the training on the teachers' behavior. Baseline

and post-treatment data was collected during the training and they collected additional post-treatment data by having the teachers demonstrate the skills that they learned approximately one week after the training. The researchers found that the teachers were able to implement some of the material that they learned, but that the accuracy of the teachers' behavior fell below a pre-specified level that was considered successful. The interpretation of the results of this study is limited by the small number of participants and by the fact that the data were collected outside of the teachers' classroom.

Lerman, Tetreault, Hovanetz, Strobel, and Garro (2008) conducted a study in a similar manner to the Lerman et al. (2004) study, but tried to eliminate the generalization limitations. In the Lerman et al. (2008) study, the authors collected data on nine participants in a week-long training. Baseline data was collected in the teacher's classroom at the end of the school year. The nine teachers then participated in a week-long summer training session. Data collection occurred in the same manner as the prior study, however, the follow-up data collection took place 2 to 3 months after the completion of the training and took place in each teacher's classroom (Lerman et al., 2008). The authors found that the teachers retained the skills that they had learned and were able to perform the skills in their own classrooms after the training was over (Lerman et al., 2008). This study also had a very small number of participants, however, so the results must also be interpreted with caution.

McDougall, Servais, Meyer, Case, Dannenhold, Johnson, et. al. (2009) conducted a program evaluation of a training aimed at increasing the knowledge of

autism and the effectiveness of teachers of students with autism. The teachers were randomly assigned to the training program, but they took part voluntarily. The teachers were given pre-test packets before taking part in the training that included the *Autism Spectrum Disorder Knowledge Quiz for Educators* (ASD-KQE, McDougall et al., 2009), which was designed for the study and reliability and validity were established. McDougall (2009) gave the ASD-KQE to assess the teachers' understanding of autism spectrum disorders and evidence-based strategies that can be used when working with students with autism. The packet also included *Factors for a Supportive Learning Environment Profile* to determine the nature of the environment in their building. Then the teachers were trained through workshops and in-service training.

Post-test packets including the ASD-KQE and the *Factors for a Supportive Learning Environment Profile* were sent out to the participating teachers and a naturally occurring comparison group of teachers who did not receive the training (McDougall et al., 2009). The researchers reported small beneficial effects on the supportiveness of the school environment in the areas of support and teaming and collaboration. The researchers did not report any significant difference between groups in their knowledge of autism or evidence based practices for working with students with autism. The study was limited by the fact that the participants were voluntary and the researchers were not able to control for pre-existing differences between the groups, so the results should be interpreted with caution.

There is a significant amount of literature that assesses effective professional development. The literature identifies some specific characteristics that are common

to effective professional development. However, there is little literature into the effectiveness of professional development for teachers of students with autism. The purpose of this study is to determine the effectiveness of a workshop training for teachers of students with autism. The methodology used in this study is described in the next chapter.

CHAPTER 3

METHODOLOGY

The purpose of this chapter is to describe the methods that were used to gather the data regarding the teacher training workshop for teachers of students with autism that was the subject of this study and the procedures used to analyze the resulting data. The chapter begins with a description of the participants. Next, the instrument is described. Then the procedures used in the training and data collection are discussed.

Participants

The teacher training workshop was presented by Area Education Agency 267 (AEA) and all aspects of the training and data collection were performed by the AEA's Autism Resource Team. The information was made available to the researcher by the AEA with all identifying information removed. The information that was removed was the name of the participant, the school district that the participant works in, and the participant's email address. The AEA recognized that it collects a significant amount of data regarding its trainings, but rarely analyzes them and makes decisions regarding the effectiveness of their trainings based on the results. Such analysis takes time and the AEA's resources are dedicated elsewhere. The AEA agreed to provide the data on the condition that the researcher makes the results of the evaluation available to the AEA upon completion of the study. Consequently, the information regarding the participants of this study available to the researcher is minimal.

There were 51 participants that responded to the survey. The specific make-up of the participants is unknown because it was not asked for in the survey, but typically the participants of the training are primarily teachers, but several paraeducators also take part in the training. The training is open to any school staff member who would like to take it, so the participants could include administrators, counselors, and AEA consultants, social workers, or psychologists.

The participants work in all school levels. The majority (68.6%) of the participants work at the elementary level, 11.8% work at the middle school level, 7.8% work at the high school level, and 11.8% work at the preschool level. The majority of the participants (74.6%) work in the special education setting, 23.5% work in the general education setting, and 2% work in another capacity (specifically, as an educational consultant for the AEA). The majority of the participants work in elementary, so the results of this study can really only be said to be true for elementary staff.

Instrument

The evaluation of the teacher training program was conducted using a survey. The survey was created by the AEA for the purposes of evaluating this particular professional development offering. The survey was created by an employee of the AEA. The role and qualifications of the creator of the survey are unknown to the researcher. Typically, a member of the training team creates the tools that will be used to assess participant learning. However the AEA employs persons with backgrounds in assessment who are knowledgeable about survey-making and those persons could have been accessed in the creation of the survey.

Reliability and validity of the survey have not been analyzed. The survey is a self-report measure, a copy of which can be found in Appendix A.

Procedures

Participants of the study took part in 1 of 3 Autism trainings offered by the AEA. The trainings were offered in 3 different locations across the AEA and varied in length and organization of training, number of participants, and dates the training was offered. All 3 trainings are based on the TEACCH model.

Training A was the largest training; it was offered in June and was 5 days long. There were two sessions offered and they were taught over two consecutive weeks. The dates of the training were June 8, 2009-June 12, 2009 and June 15, 2009-June 19, 2009. There were 25 participants in each week of the workshop, for a total of 50 total participants in Training A. Training B was offered in September, 2009; it was the smallest training and it was 3 days long. There were 15 participants that took part in Training B. Training C was offered in August 2009; it was the second largest training and the training was 4 days long.

All of the three trainings used a model of didactic instructional approach, followed by examples, modeling, opportunities for practice, feedback and opportunities for reflection. The difference between Training A and the other trainings was that there were more opportunities for practice and feedback than the other two trainings. There were students with autism who attended the training and the participants watched the trainers use the strategies taught with the students and then the participants practiced each skill as it was learned. The participants spent the entire fifth day working directly with students and received feedback on

their use of the strategies learned. Training A also had an entire day dedicated to communication systems. The trainers showed the participants the difference between trying to communicate with the students using no established communication system, a poorly developed communication system, and a high quality communication system. Then the participants practiced using communication systems with the students.

Training B was the smallest training and was only 3 days long. It had the most limited opportunities for practice and did not include a component of training in communication systems. Training B was a TEACCH training, which was taught by a TEACCH certified trainer and follows the TEACCH training exactly. Although the other trainings were based on TEACCH, Training C is the only TEACCH approved training. Training C was 4 days and compared to Training B, training C had more opportunities for practice. The component of Training A that was not included in Training C was the day of communication systems training.

After the training was completed, the participants were expected to return to their schools and implement the strategies that they learned in the training. As a requirement of the training, the teachers were asked to implement at least two strategies and then reflect on their implementation and the effect of the implementation. The trainers referred to these brief descriptions and reflections as “case studies.” The case studies were submitted in October 2009.

The participants were sent a link for the survey by email in November 2009, following the submission of their case studies. The thought process was that the participants would have had time and opportunities to practice implementing the

strategies they had learned and would be able to answer the questions on the survey at that point. The length of time from the completion of the training course and the time the participants received the survey varied based on what training they attended. There were 6 months between when the participants of Training A completed the training and when they received the survey. There were 2 months between when the participants of Training B completed the training and when they received the survey. And there were 4 months between when participants of Training C completed training and when they received the survey.

Not all of the participants in the training workshops completed the survey. Although the participants were told that the completion of the survey was required for credit in the course; the identities of those who took the survey and who did not was not able to be tracked. The trainers did not know who had responded and who had not. Therefore, the completion of the survey was not truly required. Thirty-five participants from Training A completed the survey. Fifteen participants from Training B completed the survey. And 1 participant from Training C completed the survey.

The research questions of this survey are: (a) Was the training successful?, (b) What factors had an impact on the participants' implementation of the strategies learned in the training?, and (c) What effect did attending as a collaborative team and having ongoing support have on the participants' implementation of what they learned in the training? The results are reported in the next chapter.

CHAPTER 4

RESULTS

In this chapter, the results of the survey data are reported. The research question and sub-questions are identified and the statistical procedures completed to answer each are described, along with the outcome of the statistical analysis. Then the results of the statistical analyses are summarized.

Results

The main research question of this study was whether or not the AEA's autism training is effective at enhancing teachers' ability to work with students with autism. In order to answer this question, what would indicate whether the training was effective needed to be determined. Four indicators were identified to answer this question. First, teachers were asked to indicate how often they implemented strategies that they had learned in the training when doing so would be appropriate. Higher frequency of implementation would indicate greater success of the training. The results are presented in Table 1.

The second indicator of the effectiveness of the training was whether the participants understood the concepts that were taught during the training. The participants were asked to state to what degree they agreed with the statement "I adequately understood the concepts taught in the AEA 267 Autism Training." The results are presented in Table 2.

Table 1

Frequency of Implementation of Strategies Learned in Training

Frequency of Implementation	Frequency	Percent
91-100	17	33.3
81-90	10	19.6
71-80	3	5.9
61-70	7	13.7
51-60	6	11.8
41-50	1	2.0
31-40	1	2.0
21-30	2	3.9
11-20	2	3.9
Less than 11	2	3.9

Table 2

Whether Participants Understood the Concepts Learned in Training

Response	Frequency	Percent
Strongly Agree	25	49.0
Agree	25	49.0
Disagree	1	2.0
Strongly Disagree	0	0.0

The third indicator of the effectiveness of the training was whether the participants felt that attending the training content changed their planning and delivery of instruction. The participants were asked to state the degree to which they agreed with the statement “Using the AEA 267 Autism Training content has changed my planning and delivery of instruction.” See Table 3.

Table 3

Whether Training Changed Instruction

Response	Frequency	Percent
Strongly Agree	11	21.6
Agree	36	70.6
Disagree	3	5.9
Strongly Disagree	1	2.0

The fourth indicator of whether the training was effective was whether the participants felt that the skills they learned in the training had led to positive achievement for their students. The participants were asked to state the degree to which they agreed with the statement “Using the strategies from the AEA 267 Autism Training has positively impacted classroom achievement for my students.” Table 4 provides the results for the fourth indicator.

Table 4

Whether Training has had a Positive Effect on Student Achievement

Response	Frequency	Percent
Strongly Agree	17	33.3
Agree	29	56.9
Disagree	4	7.8
Strongly Disagree	1	2.0

The above results of each indicator point to a positive outcome of the training. The majority of the participants (84.3%) implemented the strategies more than 50% of the time, 98% of the participants reported that they understood the concepts learned in the training, 92.2% of the participants reported that they changed their planning and delivery of instruction based on the training, and 90.2% reported that the knowledge they gained from the training had a positive impact on the achievement of their students. Based on these indicators, the training was effective.

The next question was why the training was effective and whether the results above were caused by the training or if there were other outside factors that affected the participants' responses. The participants were asked to identify the presence of a number of factors that could act as facilitators or barriers to each of the indicators above, and thereby influence the results.

The possible external facilitators and barriers were: number of sessions attended, the support of an AEA consultant in the participant's building, the support

of an AEA social worker in the participant's building, the support of an AEA speech-language pathologist in the participant's building, the support of an AEA school psychologist in the participant's building, the support of an autism team member in the participant's building, some other support available, if administrative support was identified by the participant as a facilitating factor, if collegial support was identified by the participant as a facilitating factor, if AEA support was identified by the participant as a facilitating factor, if opportunity to collaborate was identified by the participant as a facilitating factor, if time for planning was identified by the participant as a facilitating factor, if adequate resources was identified by the participant as a facilitating factor, if parental support was identified by the participant as a facilitating factor, if lack of administrative support was identified by the participant as a barrier, if lack of collegial support was identified by the participant as a barrier, if lack of AEA support was identified by the participant as a barrier, if lack of opportunity to collaborate was identified by the participant as a barrier, if lack of time for planning was identified by the participant as a barrier, if lack of adequate resources was identified by the participant as a barrier, if lack of parental support was identified by the participant as a barrier, and if not having a student with autism in their classroom was identified by the participant as a barrier. The frequency of identification of the factors as facilitators and barriers can be presented in Table 5.

Table 5

Factors Identified as Facilitators and Barriers

Factor	Facilitator	Barrier
Administrative Support	14	8
Collegial Support	18	5
AEA Support	20	1
Opportunities to Collaborate	15	14
Time to Plan	10	29
Adequate Resources	12	12
A Component of the Training	13	1
Use of Concrete Examples	18	4
Time to Reflect	6	2
Parental Support	9	2
None	6	15
Other	13	4

Many more factors were identified as facilitators than were identified as barriers, indicating that the participants generally felt that their environments were favorable for implementation. Opportunities to Collaborate and Adequate Resources had approximately the same number of responses that they acted as barriers as responses that they acted as facilitators. Time to plan had many more responses that it acted as a barrier than responses that it acted as a facilitator.

The participation of collaborative teams in training and the availability of ongoing support were identified in the literature as being effective components of professional development. Twenty-eight participants reported that they had not attended as a part of a collaborative team and 23 participants reported that they had attended as part of a collaborative team. The participants who attended as a collaborative team also identified what effect they believe that participating as a collaborative team had on their understanding and implementation of the concepts and strategies learned in the training. The results are reported in Table 6. The participants who did not attend as a part of a collaborative team were asked to report what effect they believe attending as part of a collaborative team would have had on their understanding and implementation of the concepts and strategies learned in the training. The results of are reported in Table 7.

Table 6

The Effect of Attending as Collaborative Team—Attended as Team

Effect	N
Greatly enhanced	8
Enhanced	12
Neither enhanced nor reduced	3
Reduced	0
Greatly reduced	0

Table 7

Anticipated Effect of Attending as Collaborative Team—Did Not Attend as Team

Effect	N
Greatly enhance	9
Enhance	12
Neither enhance nor reduce	7
Reduce	0
Greatly reduce	0

Both participants who did and did not attend the training as part of a collaborative team reported that attending as part of a collaborative team would result in an enhanced ability to understand and implement the concepts and strategies learned in the training.

When asked if they had ongoing support after completion of the training, 28 participants reported that they did not have ongoing support and 23 participants reported that they did have ongoing support. The participants who did have ongoing support also identified what effect they believe that having that support had on their understanding and implementation of the concepts and strategies learned in the training. Their results are reported in Table 8. The participants who did not have ongoing support were asked to report what effect they believe having ongoing

support would have had on their understanding and implementation of the concepts and strategies learned in the training. The results of are reported in Table 9.

Table 8

The Effect of Ongoing Support—Had Support

Effect	N
Greatly enhanced	5
Enhanced	15
Neither enhanced nor reduced	3
Reduced	0
Greatly reduced	0

Both participants who did and did not have ongoing support after the completion of the training reported that ongoing support would result in an enhanced ability to understand and implement the concepts and strategies learned in the training

Table 9

Anticipated Effect of Ongoing Support—Did Not Have Support

Effect	N
Greatly enhance	10
Enhance	14
Neither enhance nor reduce	4
Reduce	0
Greatly reduce	0

The participants were asked to give suggestions as to how the training could be improved. The full responses can be found in Appendix B. Responses were coded according to the type of suggestion. The frequency of the type of suggestion can be found in Table 10.

Table 10

Suggestions for Improvement

Suggestion Category	N
More time/support to plan for practice	7
No improvement needed	7
Content suggestions	5
Clarify goals and expectations	4
Follow-up or refresher	4
More examples or modeling	3
More time for questions	3
More time to plan for own classroom	3
More time to reflect	2
Slower pace	1
Less Practice	1

Summary

The results of the four indicators identified showed that the training was successful. There were only 3 factors that were identified by more participants as

barriers to their implementation of the strategies learned in the training than were identified as facilitators for implementation. Those factors are Opportunities to Collaborate, Adequate Resources, and Time to Plan.

Approximately half of the participants reported that they had attended the training as part of a collaborative team and that they had ongoing support. Both the participants who attended as part of a collaborative team and those who did not reported that attending as part of a collaborative team would enhance their understanding and implementation of the concepts and strategies learned in the training. Both the participants who had ongoing support and those who did not have ongoing support reported that ongoing support would enhance their understanding and implementation of the concepts and strategies learned in the training.

When asked for suggestions to make improvements in the training, seven participants reported that more scaffolding for the practice would be beneficial. The next largest number (five) reported suggestions for additional content. Four participants suggested that the goals and expectations of the training be made clear from the start and the same number suggested that the trainers should offer some kind of ongoing follow-up or refresher course. Three participants suggested the following things: (a) more examples or modeling, (b) more time for questions, (c) more time to plan for their own classroom and students. Two participants suggested more time to reflect after practicing, one participant suggested a slower pace and one participant suggested more direct instruction and less practice.

The next chapter will discuss the results and their implications, the limitations of this study, and the need for further research.

CHAPTER 5

DISCUSSION

The purpose of this study was to determine the effectiveness of a teacher training workshop aimed at increasing teachers' knowledge and skill for working with students with autism. The goal was to determine the relationship between the training and the teachers' implementation of the strategies they learned in their classroom, as well as the effect the training had on their instruction and their students' achievement. In this section, the findings described in the previous chapter are discussed and tied to the existing literature, limitations of this study are described, and future directions for further research are addressed.

Results

The main question of this research was whether or not the AEA's teacher training workshop was effective. There were four survey questions that were used as indicators of the effectiveness of the training: the percent of the time that the participants used the strategies learned in the training (when doing so would be appropriate), the degree to which the participants understood the concepts and strategies taught to them during the training, whether the participants had changed the planning or delivery of instruction in their classrooms, and if the participants felt that attending the training had a positive impact on the achievement of the students in their classrooms.

The results of the study showed that 84.3% of the participants implemented the strategies more than 50% of the time and 52.9% implemented the strategies they learned more than 80% of the time. 98% of the participants reported that they

understood the concepts learned in the training, 92.2% of the participants reported that they changed their planning and delivery of instruction based on the training, and 90.2% reported that the knowledge they gained from the training had a positive impact on the achievement of their students. Based on these indicators, the training was effective.

The participants were also asked to identify factors that had acted as either facilitators or barriers to their implementation of the strategies learned in the training. The majority of the possible factors were identified as facilitators more frequently than they were identified as barriers. There were 3 factors that were identified as barriers as frequently or more frequently than they were identified as facilitators. Those factors were: (a) Opportunities for Practice, (b) Adequate resources, and (c) Time to Plan.

Tie Findings to Existing Research

There were a number of characteristics identified in the literature as characteristics of effective professional development. Some of these factors were addressed in the survey while others were not. Collaborative participation and ongoing support, or follow-up, were identified as effective characteristics in the research (Desimone et al., 2002; Garet et al., 2001; Green, 1995; Iowa Department of Education, 2009; Kontos & Diamond, 1997; Penuel et al., 2007; Showers et al., 1987; Yoon et al., 2007). Both of these characteristics were addressed in the survey.

When advertising the training, the trainers encouraged the participants to attend the training in collaborative teams if possible. The survey asked if the participants had taken part in the training as a member of a collaborative team.

45% of the participants answered that they took part in the training as a member of a collaborative team. The majority of the participants reported that attending the training as part of a collaborative team either did have or would have had a positive effect on their understanding and use of material learned in the training. None of the participants reported that they felt that attending the training as part of a collaborative team did have or would have had a negative effect on their understanding and use of the material learned in the training. One of the factors identified more frequently as a barrier to implementation than it was identified as a facilitator was Opportunities for Collaboration. This indicates that the participants felt the need for more collaboration.

The survey also asked the participants if they had ongoing support after the completion of the training. 45% of the participants responded that they had ongoing support after the training was over. The majority of the participants reported that having ongoing support either did have or would have had a positive effect on their understanding and use of material learned in the training. None of the participants reported that they felt that having ongoing support did have or would have had a negative effect on their understanding and use of the material learned in the training. There was also a section of the survey asking for suggestions. The suggestions that were made were coded into categories. Four of the participants' suggestions included a request for follow up, ongoing support, or a refresher course, which indicates that the participants felt that more follow-up would be beneficial.

Another component of training that was identified as being an effective characteristic of workshop trainings is perceived need (Green, 1995). Although the

survey did not address this characteristic, it can be cautiously assumed that the participants felt the need for professional development in this area. Participation in the training is generally voluntary. The participants seek out the training. However, this cannot be said definitively because the participant's district could require them to take the training, which would make their participation involuntary.

Goal-setting was another characteristic identified in the literature as being a component of effective professional development (Green, 1995; Iowa Department of Education, 2009; Yoon et al., 2007). The survey did not address the area of goal setting. However, in the suggestions section of the survey, four of the participants' suggestions included a request for clarification of goals and expectations for the training.

The broad category of active learning was identified as an effective characteristic of professional development and was broken down into the smaller sub-characteristics of: opportunities for observation, opportunities for practice, and opportunities to plan for localization (Birman et al., 2000; Desimone et al., 2002; Garet et al., 2001; Green, 1995; Iowa Department of Education, 2009; Kontos & Diamond, 1997; Penuel et al., 2007; Wilson and Berne, 1999). The survey did not address the characteristics of opportunities for observation or opportunities for practice. Time for planning was included in the portions of the survey that asked participants to identify factors that acted as facilitators and acted as barriers to their implementation of the strategies learned in the training. Time for planning was identified as a barrier to implementation more frequently than it was identified as a facilitator. This indicates that the participants felt the need for more time to

plan. In further support of this desire, the responses to the question asking for suggestions for improvement were categorized and three participants identified a need for more time to plan for localization to their own classroom.

Duration is another component of trainings that was identified in the literature as being effective (Birman et al., 2000; Desimone et al., 2002; Garet et al., 2001; Penuel et al., 2007). Duration was addressed in this study. There were three trainings each with slightly different durations. The large majority of participants attended the five day training, so there were not enough participants who attended the 4- or 3-day trainings to determine if there was actually a relationship between the duration of the training and the indicators. Also, the difference in length between the trainings was not very large. The literature did not identify a set length as being effective, just that longer duration tended to lead to better results (Birman et al., 2000; Garet et al., 2001; Penuel et al., 2007). It cannot be said whether the duration of the training had an effect on the success of the training.

Limitations

As with all studies, this study has limitations. To begin with, the instrument used to measure the success of the training was developed in-house and the validity and reliability of the instrument were not assessed prior to being used as a tool. Without knowing the validity and reliability of the instrument, we cannot say with certainty that the results are meaningful.

A second limitation, which derives from the same source of difficulty as the lack of reliability and validity data, is the fact that there was very little demographic data available. The creators of the survey did not ask certain demographic questions

that may have been important to know, such as how much experience the participants had prior to the training. It is possible that participants with more experience as teachers or with more experience working with children with autism could have an effect on the results of the training.

Another limitation is the small sample size. There were 80 participants in the three trainings and 51 of the participants responded to the survey. Although that is a good proportion of the attendees, the N is still very small and makes comparisons of responses difficult.

The fidelity of implementation of the training is something that would be beneficial to know when assessing the training. However, there was no observation conducted during the training. The data were collected by the AEA and no training implementation information was supplied. Because we cannot say whether the training was implemented with fidelity, we assume that it was. In order to truly determine that the training was responsible for the results, though, we need to know that the training was implemented the way that it was described. This is another limitation of this study.

A final limitation is the nature of the evaluation. The instrument used is a self-report measure. The participants' perception of their understanding and use of the skills learned in the training is valuable information. However, having less biased information regarding the participants' use of the strategies learned would be beneficial. The participants could be over-confident in what they learned. Also, their perceptions of the achievement of their students may or may not be accurate.

Having the corroborating support of some other measures would have been beneficial to this study.

Implications for Future Research

It is well known that autism is on the rise. The research indicates that teachers need to be trained to work with students with autism (National Research Council, 2001; Scheuermann et al., 2003; Schwartz & Davis, 2008; Simpson et al., 2008). This study assessed the effectiveness of a workshop training aimed at increasing teachers' knowledge and skill for working with students with autism.

The results indicate that the training was effective. However, more information regarding the specific components that led to the outcome of the training is needed. There were a number of limitations to the study, including the need for an instrument that has been assessed and is reliable and valid, the small number of participants, the need for more demographic data, and the need for additional assessment methods.

For future studies, it would be beneficial to update the instrument and to determine its validity and reliability. It would also be beneficial to incorporate another component beyond the survey. For example, adding participant interviews or observations of the participant's classrooms would give a more complete picture of the participants' implementation of what they learned in the training. Having the teachers keep a log of the strategies that they have used in their classrooms could also give insight into how often the teachers implement the strategies that they learned.

To assess whether the participants understood what they were taught in the training, the trainers could administer a pre-test and post-test. The teachers' pre-test scores could be compared to their post-test scores to determine growth. And the pre-test scores could be compared to the interviews or observations to get a more complete picture of their understanding.

Another component that could be considered would be determining the degree to which the students' achievement was impacted by the training. One way to assess this would be using a pre-test and post-test of the students functioning, such as having the teachers fill out a survey on functioning before and after. Another way to assess student achievement could be by looking at progress on IEP goals before the teacher attended the training and after the teacher attended the training. This would give a more objective view of whether there has been an increase in the students' achievement than simply asking the teacher if there has been a change.

REFERENCES

- Atwood, T. (2007). *The complete guide to Asperger's syndrome*. Philadelphia, PA: Jessica Kingsley.
- Birman, B. F., Desimone, L., Porter, A. C., & Garet, M. S. (2000, May). Designing professional development that works. *Educational Researcher*, 28-33.
- Callahan, K., Henson, R. K., & Cowan, A. K. (2008). Social validation of evidence-based practices in autism by parents, teachers, and administrators. *Journal of Autism and Developmental Disorders*, 38, 678-692.
- Campbell, M., Schopler, E., Cueva, J. E., & Hallin, A. (1996). Treatment of Autistic Disorder. *Journal of the American Academy of Child and Adolescent Psychiatry*, 35, 134-143.
- Cartalano, R. A. (Ed.). (1998). *When autism strikes: Families cope with childhood disintegrative disorder*. New York: Plenum Press.
- Desimone, L. M., Porter, A. C., Garet, M. S., Yoon, K. S., & Birman, B. F. (2002). Effects of professional development on teachers' instruction: Results from a three-year longitudinal study. *Educational Evaluation and Policy Analysis*, 24, 81-112.
- Garet, M. S., Porter, A. C., Desimone, L., Birman, B. F., & Yoon, K. S. (2001). What makes professional development effective? Results from a national sample of teachers. *American Educational Research Journal*, 38, 915-945.
- Green, L., Fein, D., Joy, S., & Waterhouse, L. (1995). Cognitive functioning in autism: An overview. In E. Schopler & G. B. Mesibov (Eds.), *Learning and cognition in autism* (pp. 13-32). New York: Plenum Press.
- Green, S. K. (1995). Best practices in implementing a staff development program. In A. Thomas & J. Grimes (Eds.), *Best practices in school psychology III* (pp. 123-133). Washington, DC: NASP.
- Grindstaff, J. (n.d.). Further evaluation of TEACCH's experiential training programs: Change in participants' knowledge, attributions, and use of structure. Unpublished doctoral dissertation, University of North Carolina—Chapel Hill.
- Humphrey, N. (2008). Including pupils with autistic spectrum disorders in mainstream schools. *Support for Learning*, 23, 41-47.
- Individuals with Disabilities Act of 1990, 20 U.S.C. § 1400 et seq.

- Iowa Department of Education. (2009). Iowa Professional Development Model technical guide. Retrieved July 7, 2009, from http://www.iowa.gov/educate/index.php?option=com_content&view=article&id=1616:autism-and-autism-spectrum-disordersasd&catid=811:iep&Itemid=2395
- Jensen, P. S., Knapp, P., & Mrazek, D. A. (2006). *Toward a new diagnostic system for child psychopathology: Moving beyond the DSM*. New York: Guilford.
- Kontos, S. & Diamond, K. (1997). Preparing practitioners to provide early intervention services in inclusive settings. In P. J. Winton, J. A. McCollum, & C. Catlett (Eds.), *Reforming personnel preparation in early intervention: Issues, models, and practical strategies* (pp. 393-410). Baltimore: Brookes.
- Lerman, D. C., Tetreault, A., Hovanetz, A., Strobel, M., & Garro, J. (2008). Further evaluation of a brief, intensive teacher-training model. *Journal of Applied Behavioral Sciences, 41*, 243-248.
- Lerman, D. C., Vorndran, C. M., Addison, L., & Contrucci Kuhn, S. (2004). Preparing teachers in evidence-based practices for young children with autism. *School Psychology Review, 33*, 510-526.
- McDougall, J., Servais, M., Meyer, K., Case, S., Dannenhold, K., Johnson, S., et al. (2009). A preliminary evaluation of a school support program for children with Autism Spectrum Disorders: Educator and school level outcomes and program processes. *Exceptionality Education International, 19*, 32-50.
- Mesibov, G. B., & Shea, V. (1996). Full inclusion and students with autism. *Journal of Autism and Developmental Disabilities, 26*, 337-346.
- National Institutes of Health. (2006). *Rett syndrome*. Retrieved July 23, 2009 from http://www.nichd.nih.gov/publications/pubs/upload/rett_syndrome_2006.pdf
- National Research Council. (2001). *Educating children with autism*. Washington, DC: National Academies
- New Jersey Department of Education (2004). Autism program quality indicators: A self review and quality improvement guide for programs serving young students with autism spectrum disorders. (ERIC Document Reproduction Service No. ED486480)..
- Osborne, L. A. & Reed, P. (2011). School factors associated with mainstream progress in secondary education for included pupils with Autism Spectrum Disorders. *Research in Autism Spectrum Disorders, 5*, 1253-1263.

- Panerai, S., Ferrante, L., Caputo, V., & Impellizzeri, C. (1998). Use of structured teaching for treatment of children with autism and severe and profound mental retardation. *Education and Training in Mental Retardation and Developmental Disabilities, 33*, 367-374.
- Panerai, S., Ferrante, L., & Zingale, M. (2002). Benefits of the Treatment and Education of Autistic and Communication Handicapped Children (TEACCH) programme as compared with a non-specific approach. *Journal of Intellectual Disability Research, 46*, 318-327.
- Penuel, W. R., Fishman, B. J., Yamaguchi, R., & Gallagher, L. P. (2007). What makes professional development effective? Strategies that foster curriculum implementation. *American Educational Research Journal, 44*, 921-958.
- Probst, P., & Leppert, T. (2008). Brief report: Outcomes of a teacher training program for autism spectrum disorders. *Journal of Autism and Developmental Disorders, 38*, 1791-1796.
- Scheuermann, B., Webber, J., Boutot, E. A., & Goodwin, M. (2003). Problems with personnel preparation in autism spectrum disorders. *Focus on Autism and Other Developmental Disorders, 18*, 197-206.
- Schopler, E. & Mesibov, G. B. (1995). Introduction to learning and cognition in autism. In E. Schopler & G. B. Mesibov (Eds.), *Learning and cognition in autism* (pp. 3-12). New York: Plenum Press.
- Schopler, E. & Mesibov, G. B., & Hearshey, K. (1995). Structured teaching in the TEACCH system. In E. Schopler & G. B. Mesibov (Eds.), *Learning and cognition in autism* (pp. 243-268). New York: Plenum Press.
- Schwartz, I. S., & Davis, C. A. (2008). Best practices in effective services for young children with autistic spectrum disorders. In A. Thomas & J. Grimes (Eds.), *Best practices in school psychology V* (pp. 1517-1528). Bethesda, MD: National Association of School Psychologists (NASP).
- Showers, B., Joyce, B., & Bennett, B. (1987, November). Synthesis of research on staff development: A framework for future study and a state-of-the-art analysis. *Educational Leadership, 77-87*.
- Simpson, R. L. (2004). Finding effective intervention and personnel preparation practices for students with autism spectrum disorders. *Exceptional Children, 70*, 135-144.
- Simpson, R. L., Smith Myles, B., & Ganz, J. B. (2008). Efficacious interventions and treatments for learners with autism spectrum disorders. In R. L. Simpson & B. Smith Myles (Eds.), *Educating children and youth with autism* (pp. 477-512). Austin, TX: Pro-Ed.

- Simpson, R. L., Smith Myles, B., & LaCava, P. G. (2008). Understanding and responding to the needs of children and youth with autism spectrum disorders. In R. L. Simpson & B. Smith Myles (Eds.), *Educating children and youth with autism* (pp. 1-59). Austin, TX: Pro-Ed.
- Smith Myles, B., Swanson, T. C., Holverstott, J., & Duncan, M. M. (Eds.). (2007). *Autism spectrum disorders: A handbook for parents and professionals*. Westport, CT: Praeger.
- Turkington, C. & Anan, R. (2007). *The encyclopedia of autism spectrum disorders*. New York: Facts on File, Inc.
- U. C. Davis Extension (2009). Early Start Denver Model – Advanced workshop offered by UCD M.I.N.D. Institute. Retrieved July 8, 2009 from http://extension.ucdavis.edu/unit/education/course/description/?type=I&unit=EDU&prgList=AUT&course_title=Early%20Start%20Denver%20Model%20Advanced%20Workshop%20offered%20by%20UCD%20M.I.N.D.%20Institute&CourseID=36482
- U. S. Department of Education. (2009). Program announcement: Autism spectrum disorders CFDA 84.324A. Retrieved May 9, 2009, from http://ies.ed.gov/funding/ncser_rfas/ncser_autism.asp?page=all
- U. S. Department of Education. (2000). Does professional development change teaching practice? Results from a three-year study. Retrieved July 29, 2009 from <http://www.ed.gov/rschstat/eval/teaching/epdp/execsum.pdf>
- Van Bourgondien, M. E., Reichle, N. C., & Schopler, E. (2003). Effects of a model treatment approach on adults with autism. *Journal of Autism and Developmental Disorders*, 33, 131-140.
- Wilkinson, L. A. (2005). Supporting the inclusion of a student with Ausperger syndrome: A case study using conjoint behavioral consultation and self-management. *Educational Psychology in Practice*, 21, 307-326.
- Williams, S. K., Johnson, C., & Sukhodolsky, D. G. (2005). The role of the school psychologist in the inclusive education of school-age children with autism spectrum disorders. *Journal of School Psychology*, 43, 117-136.
- Wilson, S. M. & Berne, J. (1999). Teacher learning and the acquisition of professional knowledge: An examination of research on contemporary professional development. *Review of Research in Education*, 24, 173-209.
- Yoon, K. S., Duncan, T., Lee, S. W., Scarloss, B., & Shapley, K. L. (2007). Reviewing the evidence on how teacher professional development affects student achievement. Retrieved July 28, 2009 from http://ies.ed.gov/ncee/edlabs/regions/southwest/pdf/REL_2007033.pdf

APPENDIX A

AUTISM SURVEY

Thanks for taking a few moments to complete this survey regarding your participation in the Autism training opportunities at AEA 267. The resulting information from all respondents will assist staff at AEA 267 in better meeting your needs in this important area.

At which location did you attend the AEA 267 Autism Training?

Please pick one of the answers below.

- 1 = Clear Lake
- 2 = Cedar Falls
- 3 = Marshalltown

Which sessions (days) of the AEA 267 Autism Training did you attend?

Please check all that apply.

- 1 = all sessions
- 2 = session 1
- 3 = session 2
- 4 = session 3
- 5 = session 4

Which sessions (days) of the AEA 267 Autism Training did you attend?

Please check all that apply.

- 1 = all sessions
- 2 = session 1
- 3 = session 2
- 4 = session 3
- 5 = session 4
- 6 = session 5

Which sessions (days) of the AEA 267 Autism Training did you attend?

Please check all that apply.

- 1 = all sessions
- 2 = session 1
- 3 = session 2
- 4 = session 3

At which school level do you primarily work?

Please pick one of the answers below.

- 1 = Elementary
- 2 = Middle school
- 3 = High school
- 4 = Preschool

In which school district or setting do you primarily work?

Please pick one of the answers below.

- 1 = AGWSR
- 2 = Alden
- 3 = Allison-Bristow
- 4 = Aplington-Parkersburg
- 5 = BCLUW
- 6 = Belmont-Klemme
- 7 = BGM
- 8 = CAL
- 9 = Cedar Falls
- 10 = Charles City
- 11 = Clarksville
- 12 = Clear Lake
- 13 = Corwith-Wesley
- 14 = Denver
- 15 = Dike-New Hartford
- 16 = Dows
- 17 = Dunkerton
- 18 = East Buchanan
- 19 = East Marshall
- 20 = Eldora-New Providence
- 21 = Forest City
- 22 = GMG
- 23 = Garner-Hayfield
- 24 = Gladbrook-Reinbeck
- 25 = Greene
- 26 = Grinnell-Newburg
- 27 = Grundy Center
- 28 = Hampton-Dumont
- Page 3 of 11
- 29 = Hubbord-Radcliff
- 30 = Hudson
- 31 = Independence
- 32 = Iowa Falls
- 33 = Janesville
- 34 = Jesup
- 35 = Lake Mills
- 36 = Marshalltown
- 37 = Mason City
- 38 = Montezuma
- 39 = Nashua-Plainfield
- 40 = Nora Springs-Rock Falls
- 41 = North Central
- 42 = North Iowa
- 43 = North Tama

- 44 = Northwood-Kensett
- 45 = Osage
- 46 = Rockwell-Swaledale
- 47 = RRMR
- 48 = St. Ansgar
- 49 = SCMT
- 50 = South Tama
- 51 = Sumner
- 52 = Tripoli
- 53 = Union
- 54 = Ventura
- 55 = Wapsie Valley
- 56 = Waverly-Shell Rock
- 57 = Waterloo
- Page 4 of 11
- 58 = West Hancock
- 59 = West Marshall
- 60 = Woden Crystal Lake
- 61 = Iowa Juvenile Home (Toledo)
- 62 = Independence Mental Health Center
- 63 = Price Laboratory
- 64 = State Training School (Eldora)
- 65 = AEA 267 Instructional Programs

In what setting do you primarily work?

Please pick one of the answers below or add your own.

- 1 = General education
- 2 = Special education
- 3 = Co-teaching (general education teacher)
- 4 = Co-teaching (special education teacher)
- 5 = Paraprofessional
- Other

.....

.....

Which of the following supports are available in your building?

Please check all that apply and/or add your own variant.

- 1 = Special education consultant
- 2 = Social worker
- 3 = Speech language pathologist
- 4 = School psychologist
- 5 = Autism team member
- Other

.....

.....

What percentage of the time have you implemented the interventions learned in the AEA 267 Autism Training with fidelity in your classroom (when interventions were appropriate)?

Please pick one of the answers below.

1 = 91%-100%

2 = 81%-90%

3 = 71%-80%

4 = 61%-70%

5 = 51%-60%

6 = 41%-50%

7 = 31%-40%

8 = 21%-30%

9 = 11%-20%

10 = 1%-10%

11 = I have not implemented any of the interventions learned in the AEA 267 Autism Training

Which of the following factors have helped facilitate implementation of the AEA 267 Autism Training content in your classroom?

Please check all that apply and/or add your own variant.

1 = Administrative support

2 = Collegial support

3 = AEA support

4 = Opportunity to collaborate

5 = Time for planning

6 = Adequate resources

7 = Aspects of the training (please describe in the "other" box below)

8 = Concrete classroom examples

9 = Adequate time to reflect

10 = Parental support

11 = No facilitators

Other

.....

What aspects of the training do you feel facilitate your understanding and implementation of the AEA 267 Autism Training content?

Please write your answer in the space below.

.....

.....
.....
.....
.....

Which of the following factors are barriers to implementation of the AEA 267 Autism Training content in your classroom?

Please check all that apply and/or add your own variant.

- 1 = Lack of administrative support
- 2 = Lack of collegial support
- 3 = Lack of AEA support
- 4 = Lack of opportunity to collaborate
- 5 = Lack of time for planning
- 6 = Lack of resources
- 7 = Aspects of the training (please describe in the "other" box below)
- 8 = Lack of concrete classroom examples
- 9 = Lack of time to reflect
- 10 = Parental objections
- 11 = No student with autism in my class
- 12 = No barriers

Other

.....
.....

What aspects of the training do you feel acted as barriers to your understanding and implementation of the AEA 267 Autism Training content?

Please write your answer in the space below.

.....
.....
.....
.....
.....
.....
.....
.....

Did you participate in the AEA 267 Autism Training as a part of a group of teachers or staff from a single building training as a collaborative team?

Please pick one of the answers below.

- 1 = Yes
- 2 = No

How do you think that attending the training as a member of a collaborative team affected your understanding and implementation of the AEA 267 Autism Training?
Please pick one of the answers below.

- 1 = Greatly enhanced
- 2 = Enhanced
- 3 = Neither enhanced, nor reduced
- 4 = Reduced
- 5 = Greatly Reduced

How do you think that attending the training as a member of a collaborative team would have affected your understanding and implementation of the content of the AEA 267 Autism Training?

Please pick one of the answers below.

- 1 = Greatly Enhanced
- 2 = Enhanced
- 3 = Neither enhanced, nor reduced
- 4 = Reduced
- 5 = Greatly reduced

Do you have ongoing support, such as a mentor or coaching?

Please pick one of the answers below.

- 1 = Yes
- 2 = No

How do you think having ongoing support affects your understanding and implementation of the content of the AEA 267 Autism Training?

Please pick one of the answers below.

- 1 = Greatly enhances
- 2 = Enhances
- 3 = Neither enhances, nor reduces
- 4 = Reduces
- 5 = Greatly reduces

How do you think having ongoing support would affect your understanding and implementation of the content of the AEA 267 Autism Training?

Please pick one of the answers below.

- 1 = Greatly enhance
- 2 = Enhance
- 3 = Neither enhance, nor reduce
- 4 = Reduce
- 5 = Greatly reduce

I adequately understood the concepts taught in the AEA 267 Autism Training.
Please pick one of the answers below.

- 1 = Strongly agree
- 2 = Agree
- 3 = Disagree

4 = Strongly disagree

Please describe the concepts that you feel you did not adequately understand.
Please write your answer in the space below.

.....

.....

.....

.....

.....

.....

.....

Using the AEA 267 Autism Training content has changed my planning and delivery of instruction.

Please pick one of the answers below.

- 1 = Strongly agree
- 2 = Agree
- 4 = Disagree
- 5 = Strongly disagree

Using the strategies from the AEA 267 Autism Training has positively impacted classroom achievement for my students.

Please pick one of the answers below.

- 1 = Strongly agree
- 2 = Agree
- 3 = Disagree
- 4 = Strongly disagree

The content and strategies I learned in the AEA 267 Autism Training have assisted me in supporting my fellow teachers, which results in academic gains for students.

Please pick one of the answers below.

- 1 = Strongly agree
- 2 = Agree
- 3 = Disagree
- 4 = Strongly disagree

I have increased my ability to identify, collect and analyze data in order to make instructional and IEP decisions.

Please pick one of the answers below.

- 1 = Strongly agree
- 2 = Agree
- 3 = Disagree

4 = Strongly disagree

My administrator has supported my learning and use of the AEA 267 Autism Training content.

Please pick one of the answers below.

1 = Strongly agree

2 = Agree

3 = Disagree

4 = Strongly disagree

My administrator consistently monitors and provides feedback regarding the implementation of the AEA 267 Autism Training content.

Please pick one of the answers below.

1 = Strongly agree

2 = Agree

4 = Disagree

5 = Strongly disagree

How could the AEA 267 Autism Training be improved?

Please write your answer in the space below.

.....

.....

.....

.....

.....

.....

.....

Is the AEA 267 Autism website helpful?

Please pick one of the answers below.

1 = Yes

2 = No

3 = Haven't used it

How could the AEA267 Autism website be improved?

Please write your answer in the space below.

.....

.....

.....

.....

.....

.....

.....

What is your email address?
Please write your answer in the space below.

.....
.....
.....
.....
.....
.....
.....
.....

APPENDIX B
SUGGESTIONS FROM SURVEY

Response Number	Text of Response
1	I think the homework for the class should be explained on the first day, rather than at the very end.
2	Information given slower, more examples.
3	N/A
4	.
5	The trainings were great! The one thing that was difficult was at times a teacher of the autism training seemed a little pushy.
6	k
7	I think that we worked with the students too much. I have very severe cases and would have preferred more instruction instead. I did like working with the students, but felt it took too much of our training time.
8	More team collaboration time. Time to work on materials, lessons, plans, etc. Time to discuss OUR students and make plans, implimentations for OUR students.
9	more training. High school related ideas
10	I really enjoyed the training. It would be nice to have a refresher course 1-2 years later. It would also be nice to have consistent AEA support, where they could be here more frequently to assist with barriers to student learning.
11	I thought this class was designed very well. There was no wasted time. We were continually engaged and progressing towards covering the information. The hands on activities reinforced the concepts of the day very well. More time with questions we have as to how to put the concepts in action in our own situations would have been nice.
12	..
13	** revise the course requirements page, specifically the case study description (we found it vague and hard to interpret what you wanted) ** MAKE TIME to share further expectations/examples of the case study in class; this would also assist us in completing the project ** in the notes taken during class, don't have all the sentences be fill in the blank activities
14	It was fine
15	Give us more time to finish our products
16	How about a refresher (observation) every so often so we could keep our training fresh..Maybe without students but with teachers who could share ideas and successes.
17	Maybe to have a little more prep time when setting up materials for working with the students in the training

18	Time to plan for specific students.
19	More time to reflect after hands on experiences. Examples and direct teaching of PECS starting from the beginning.
20	More information on how to help students achieve academically, how to help them in an integrated classroom situation where transitions are part of a schedule, how to help teachers balance autistic students and other students in social situations, how to help other students understand about a autistic student and why their needs and actions may be different.
21	Much more observation
22	A little more time to reflect on activities to be planned would be nice.
23	I think that the training is really most beneficial in Special Education settings. I would like to see some things specifically for the General Education setting. How to help autistic students transition from Resource room to recess, PE, art, music, media, Content areas. These are less structured settings and the settings that students are most often integrated. With out a paraprofessional to work with students during these times, it can be difficult to implement strategies learned as the student is often with a specialist teacher.
24	As a general ed. classroom teacher, I felt inadequate in understanding some of the strategies and curriculum talked about. Currently I do not have a student with autism in my classroom.
25	NA
26	Follow up with teachers to see if they are using the information and how they can help.
27	Friendlier trainers, more time in the morning to look over our student for the day's data. Ideas from the lead teacher who had bonds with the students. Rather than us rushing to throw something together, then the lead teacher rejecting our idea.
28	Not really
29	It was good.
30	I dont beleive it needs improvement.
31	?
32	More time to plan.
33	Instructors could have made a better attempt to answer questions and be more patient. Training the trainers during our training was distracting and took away from our opportunities to learn. Trainers were impatient, snide, and rude at times. Comments made were sometimes inappropriate. I truly needed the training and did learn from it, but learned by watching the staff interacting with the participants. Those staff were wonderful and answered more questions than the 'trainers'.
34	on going not just a class and done
35	Don't know.

-
- 36 none
- 37 I don't have any autism students at this time
- 38 Maybe allowing a few more minutes for group planning. Our group felt rushed many times through out the week. Don't hand out materials until you want people to look at them. It was confusing at times to be given materials and as to what the expectation was for that time. So clear expectations. I would have really liked a list of the goals used during the training. I think that helps sort out the types of information you can document when working with these children. It comes easily for people who have done this a long time, but for people for whom this is new it's a little more difficult to figure out how to document.
- 39 voluntary participation
- 40 I was very impressed with the way it was organized and implemented. I especially liked the hands-on activities, both teaching, & reflecting with their teachers and the parent panel! The handouts by a couple of the presenters have been useful to me, maybe even more useful than the course manual. Useful activities and websites were shared. The only negative was some 'friction' with a group of teachers that attended. That was a little distracting, but handled very professionally by the instructors of the course, I felt. Thank-you for this AWESOME, intense class!
- 41 If the associates at our school (who are one-on-one with the autistic student) were given the training it would greatly help them. Also, if the students with autism are in our classrooms most of the time then there are so many issues that need to be addressed in your training about how to cope with the constant noisemaking and outbursts.
- 42 There were resources I was shown but was not sure how to acquire them.
- 43 I thought it was pretty good.
- 44 More follow up
- 45 I thought it was set up nicely, and provided use with good information and examples.
- 46 The training is very intense and it moves along quickly. This is frustrating at times for people trying to learn the concepts. I would have liked a list of the goals used during the sessions to look back on for ideas to use with future students.
- 47 Clarity on expectations at the beginning, to reduce confusion and focus attention on learning activities
- 48 The project at the end seems a little like busy work. It takes away time from teachers that could be used for planning in their own classroom. I had so much on my plate already and then I had that assignment on top of it. I'm not sure if that is a necessary part of the training.
- 49 give us more time to work on the lessons that we have to teach the
-

	kids their.
50	Make it apply to realistic settings. I have 12 other students along with autistic students and they need to be a part of group.
51	More time
