TEACHING CHILDREN WITH AUTISM TO READ IN AN INCLUSIVE SETTING:
MEETING THE NEEDS OF ALL STUDENTS

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Teachers enter the classroom with a myriad of responsibilities and can easily become overwhelmed by all that is asked of them. One of the greatest concerns they may encounter is how to meet the needs of all of the students they have at the same time, specifically in the area of reading instruction. If the school district happens to practice inclusion, the needs of their students become much more diverse. The purpose for this study was to address this dilemma with regards to one disability in particular, Autism. In the last year, the prevalence of children diagnosed with Autism increased substantially, justifying the need for research. From this, the research question developed; what are the best practices for teaching children with Autism to read in an inclusive classroom setting?

To discern answers to this question, a research site that works solely with students with Autism was chosen. The administrators and teachers at this school, who guide and instruct these students on a daily basis, were utilized as participants to gain valuable data from a variety of perspectives. The process of data collection was done through an interview, surveys, and a number of observations. Upon completing these elements, the data were coded, tallied, and compiled within tables and charts. From these data emerged recommendations in five areas of reading; phonemic awareness, phonics, fluency, vocabulary, and comprehension. These data also included suggestions around reading instruction in four areas; environment, behavior, communication, as well as materials and resources. From this study, teachers in all classrooms including students with Autism can gain valuable insight into their educational practices involving reading instruction.
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From the bottom of my heart,

I am thankful to those friends and family who believed in me
and believed in the value and importance of this project.

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Praise to the One who brought this passion for education
and this project into my life.
To Him be the honor and glory. Amen.
<table>
<thead>
<tr>
<th>TABLE OF CONTENTS</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHAPTER I. INTRODUCTION</td>
<td>3</td>
</tr>
<tr>
<td>Statement of the Problem</td>
<td>4</td>
</tr>
<tr>
<td>Research Question</td>
<td>6</td>
</tr>
<tr>
<td>Rationale</td>
<td>6</td>
</tr>
<tr>
<td>Definition of Terms</td>
<td>8</td>
</tr>
<tr>
<td>Limitations</td>
<td>12</td>
</tr>
<tr>
<td>CHAPTER II. REVIEW OF THE LITERATURE</td>
<td>14</td>
</tr>
<tr>
<td>The History of Autism and Instruction</td>
<td>15</td>
</tr>
<tr>
<td>Current Theory and Practice around Autism</td>
<td>19</td>
</tr>
<tr>
<td>Environment</td>
<td>19</td>
</tr>
<tr>
<td>Behavior and Social Skills</td>
<td>22</td>
</tr>
<tr>
<td>Communication</td>
<td>26</td>
</tr>
<tr>
<td>Materials and Resources</td>
<td>29</td>
</tr>
<tr>
<td>What Research Has to Say about Reading and Autism</td>
<td>34</td>
</tr>
<tr>
<td>Phonemic Awareness</td>
<td>35</td>
</tr>
<tr>
<td>Phonics</td>
<td>35</td>
</tr>
<tr>
<td>Fluency</td>
<td>36</td>
</tr>
<tr>
<td>Vocabulary</td>
<td>37</td>
</tr>
<tr>
<td>Comprehension</td>
<td>39</td>
</tr>
<tr>
<td>Summary</td>
<td>42</td>
</tr>
<tr>
<td>Chapter</td>
<td>Page</td>
</tr>
<tr>
<td>----------------------------------------------</td>
<td>------</td>
</tr>
<tr>
<td>CHAPTER III. METHODS AND PROCEDURES</td>
<td>44</td>
</tr>
<tr>
<td>Methods</td>
<td>44</td>
</tr>
<tr>
<td>Research Design</td>
<td>44</td>
</tr>
<tr>
<td>Context and Participants</td>
<td>46</td>
</tr>
<tr>
<td>Instrumentation</td>
<td>47</td>
</tr>
<tr>
<td>Interview</td>
<td>47</td>
</tr>
<tr>
<td>Survey</td>
<td>51</td>
</tr>
<tr>
<td>Observations and Field Notes</td>
<td>52</td>
</tr>
<tr>
<td>Procedure</td>
<td>52</td>
</tr>
<tr>
<td>Data Collection</td>
<td>56</td>
</tr>
<tr>
<td>Data Analysis</td>
<td>57</td>
</tr>
<tr>
<td>Summary</td>
<td>61</td>
</tr>
<tr>
<td>CHAPTER IV. DATA ANALYSIS AND DISCUSSION OF RESULTS</td>
<td>62</td>
</tr>
<tr>
<td>Discussion of School and Participants</td>
<td>62</td>
</tr>
<tr>
<td>Data Analysis</td>
<td>63</td>
</tr>
<tr>
<td>Results Gathered on Related Areas of Reading Instruction</td>
<td>64</td>
</tr>
<tr>
<td>Environment</td>
<td>64</td>
</tr>
<tr>
<td>Behavior and Social Skills</td>
<td>70</td>
</tr>
<tr>
<td>Communication</td>
<td>74</td>
</tr>
<tr>
<td>Materials and Resources</td>
<td>77</td>
</tr>
<tr>
<td>Results Gathered on Areas of Reading Instruction</td>
<td>85</td>
</tr>
<tr>
<td>Phonemic Awareness</td>
<td>86</td>
</tr>
<tr>
<td>Phonics</td>
<td>87</td>
</tr>
</tbody>
</table>
Fluency ........................................................................... 89
Vocabulary ................................................................. 91
Comprehension .......................................................... 94
Summary ................................................................. 96

CHAPTER V. SUMMARY, CONCLUSIONS AND RECOMMENDATIONS .... 98
Overview ..................................................................... 98
Conclusion ................................................................... 100
Classroom Setting ....................................................... 101
Social Interaction ......................................................... 102
Instructional Practices ............................................... 103
Call for Further Research ........................................... 104
Recommendations ....................................................... 106
Summary ..................................................................... 107

REFERENCES .................................................................. 109

APPENDIX A. INTERVIEW QUESTIONS FOR THE ADMINISTRATION ..... 114
APPENDIX B. SURVEY EXPLANATION LETTER ......................... 117
APPENDIX C. LITERACY INSTRUCTOR SURVEY ....................... 119
APPENDIX D. OBSERVATION FIELD NOTES .......................... 122
APPENDIX E. INFORMED CONSENT FORM FOR ADMINISTRATION ..... 127
APPENDIX F. INFORMED CONSENT FORM FOR TEACHERS .......... 129
APPENDIX H. TIMELINE..................................................... 131
<table>
<thead>
<tr>
<th>Table</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Coding Chart</td>
<td>59</td>
</tr>
<tr>
<td>2</td>
<td>Environment</td>
<td>68</td>
</tr>
<tr>
<td>3</td>
<td>Behavior and Social Skills</td>
<td>71</td>
</tr>
<tr>
<td>4</td>
<td>Communication</td>
<td>74</td>
</tr>
<tr>
<td>5</td>
<td>Phonics</td>
<td>88</td>
</tr>
<tr>
<td>6</td>
<td>Fluency</td>
<td>90</td>
</tr>
<tr>
<td>7</td>
<td>Vocabulary</td>
<td>92</td>
</tr>
<tr>
<td>8</td>
<td>Comprehension</td>
<td>95</td>
</tr>
</tbody>
</table>
**LIST OF FIGURES**

<table>
<thead>
<tr>
<th>Figure</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Sample Classroom Layout</td>
<td>66</td>
</tr>
<tr>
<td>2</td>
<td>Materials and Resources</td>
<td>78</td>
</tr>
<tr>
<td>3</td>
<td>Sample Edmark Reading Program Page</td>
<td>80</td>
</tr>
<tr>
<td>4</td>
<td>Discrete Trial Training Method (DTT)</td>
<td>83</td>
</tr>
<tr>
<td>5</td>
<td>Comprehension Recommendations</td>
<td>94</td>
</tr>
</tbody>
</table>
PREFACE

My family and I were about to conclude errands for the day when we ran into my former first grade teacher. Just the sight of this influential woman could stop me in my tracks, even then. She taught me just a few months prior, but in the process, she had left an indelible mark on my life. Years ago, while sitting at a desk in her classroom, I decided that was where I would always want to be, in the classroom teaching.

The school week was something to look forward to in her class. Her fun-loving and kind personality brightened our learning experience. When we struggled to understand something, she was ready and willing to provide the help we needed and hugs were as plentiful as the coveted stickers and kind remarks on our assignments. Ours was an open learning environment where all of our needs were met because our teacher worked hard to make that happen. We were motivated and excited to share and read in class; especially with her promise to bring her beloved cat Murphy into class when we completed our fifth reading book decorated with an identical picture of a cat on the cover.

During that chance encounter, all of those thoughts danced in my head as my brother and I raced to go see her. My family also knew her well and understood quickly my fondness for her and her profession. After some time later, my brother and I somewhat drifted from our initial meeting spot, but I remember hearing from afar that my favorite teacher would soon be retiring. Whether I understood this then or not, I did know that I was quickly saddened by the news of her not being there next fall. It was then that I overheard her saying that she was concerned about having students with very unique needs in her classroom and only because she did not feel properly trained. That conversation stayed with me for years to come. How could the one teacher who seemed so invincible be afraid to continue? There didn’t seem to be anything beyond her,
so how could this be? She always taught us that if we did not understand something, the answer was there somewhere and that we were capable of figuring it out, no matter how challenging.

Years later, I began to understand. During the early 1990s major educational changes were occurring throughout the country and more and more districts were practicing inclusion. General education public schools would now open their doors for students with a great range of milder forms of disabilities. This meant wonderful things for education, while raising great concern for the teachers who did not feel this was a part of their pre-service learning. My favorite teacher was one of those and she did not return to teach at my elementary school that next fall.
CHAPTER I. INTRODUCTION

Originally started in 1975, the Individuals with Disabilities Education Act (IDEA) created a series of great change for all educators. Educational laws and amendments to IDEA in 1997 decided how students with disabilities are to be educated within what is known as the least restrictive environment (LRE). For students with disabilities, this educational setting is where they are:

- included in the feeling of belonging among other individuals, teachers and supportive staff.
- This is accomplished through educational strategies designed for a diverse individual population and collaboration between educators so that specially designed instruction and supplementary aids and services are provided to all individuals as needed for effective learning (Ohio Developmental Disabilities Council & Autism Task Force, n.d., p. 64).

These laws and guidelines have also had a great impact on the quality of education received by students with disabilities; and for this study, specifically students with Autism. These practices of inclusion have often been thought to be synonymous with mainstreaming or being integrated into the general education classroom (Sapon-Shevin, 1999). However, those terms often implied that students with disabilities had to earn the right to be in a general education classroom or in other classroom settings like the lunchroom (Bauer & Kroeger, 2004, Sapon-Shevin). However, inclusion means that all students, no matter who they are or what their strengths and weaknesses are can be brought into the least restrictive environment of the general education classroom.

Also, the amount of inclusion that students experience, based on the degree to which they are in the general education classroom, created a continuum ranging from full inclusion to partial where only some concepts would be taught in the classroom. For the teachers of these
classrooms, the least restrictive environment creates changes in the kinds of services that are now available to their students with disabilities and to how they educate their diverse students. This topic is to be addressed later in this chapter.

Moreover, there have been other great alterations in this country’s educational system beyond IDEA (2004); specifically, the No Child Left Behind Act (2002). Within these federal guidelines exists something called the Reading First Initiative, which has strongly moved literacy into the spotlight. Within the forward of this latest mandate, President George W. Bush stated that “too many children in America are segregated by low expectations, illiteracy, and self-doubt” (2002, p. i). Combating that illiteracy is one of the greatest priorities in the primary grades for students with and without disabilities. Since the beginning of the written word, literacy has become a necessary element to everyday life for all. Calhoon (2001) describes also that “for individuals with cognitive disabilities, literacy is an important tool for functioning in inclusive education and vocational environments” (p. 491). All students should be given the chance to feel the sense of lifelong success that literacy brings, including those students with Autism.

Statement of the Problem

The concern that general education teachers are faced with is how to address the needs of these students with an Autism Spectrum Disorder (ASD) and help them become successful readers. For an elementary teacher, in one classroom, there could be over 30 students with different backgrounds, experiences, strengths and weaknesses that demand modifications in daily reading instruction. The conundrum arises with how to plan effective reading instruction for a student with Autism with his/her own unique background experience, strengths and weaknesses
along with those other students in the classroom. To address this dilemma, we must specifically consider why it is so important to look at Autism.

When this study began, the Centers for Disease Control and Prevention (2007) believed that the average occurrence of Autism was about 1 in 166 births. Yet surprisingly, as the study progressed, a more recent finding discovered that the prevalence rate is now about 1 in 150 births, according to the Centers for Disease Control’s press release on February 8th of 2007. The incidence rate, according to Rutter’s study (2004) is recognized as about 30 to 60 in 1,000, with about a fourth having all the characteristics of Autism. These numbers have likely increased in the last three years with the prevalence rate increasing as it has, yet these data have not been officially updated yet. Many of these children are diagnosed by the age of three or four because of the distinctive characteristics that make up Autism, (to be further identified in the definitions section of this study). Thus, the likelihood of having a student with Autism in a general education classroom over the course of only five years is almost inevitable, (with an average of approximately 30 students each year). Prior to the press release on February 8th of 2007, the growth of comparison from 1990s prevalence statistics to now has increased 172% according to the United States Department of Education’s “Twenty-First Annual Report to Congress on the Implementation of the Individuals with Disabilities Education Act” (1999). Autism is also five times as common as Down Syndrome and three times as common as juvenile diabetes (Nash, Bonesteel & Noble, 2002). However, with the recent increase in prevalence, these percentages would likely become even higher and more significant.

In addition, the Diagnostic and Statistical Manual for Mental Disorders-Text Revision, (DSM-IV-TR) criteria for defining the different types of Autism along the spectrum were recently modified in the year 2000. These adaptations have added clarity to what makes up a
definition for students labeled with Autism, allowing for more and more diagnoses to take place. In addition to the DSM-IV-TR (2000), a newer classification system known as the ICD-10, or the International Classification of Diseases was adopted into the World Health Organization in 1994 and also helped outline what Autism Spectrum Disorders are. Thus, with more diagnostic clarification by multiple sources of data, more cases of Autism can be identified, leading to a higher prevalence number in our society.

There is a narrow and limited amount of research available indicating a variety of beliefs, theories and current practices for teaching students with Autism. Yet, even less information has to do with actually teaching these students to read. So, when a teacher is being faced instructing a student with Autism to read may easily become overwhelmed with how to rightfully address the unique needs of all the students in their classroom. Herein lies the premise for this study.

Research Question

The purpose of this study was to address the concerns that general education teachers face when planning reading instruction for students with Autism in their classroom. Initially, these teachers could be wondering what the specific needs are for students with Autism. Also, what theory and practice has been tried and successful for teaching students with Autism? Then, what must be considered are the suggestions that research makes for reading instruction. Finally, these foundational queries will contribute with the research that was conducted to answer the overall question: What are the best practices for teaching students with Autism to read in an inclusive classroom setting?

Rationale

Since Autism was first recognized by psychiatrist Dr. Leo Kanner (1943), most of the related studies have been based on the identification and causation of Autism in twins, siblings,
and family members. The interesting phenomena of one child having, for instance Asperger’s Syndrome, and the other child without it allowed for comparative data to be collected, shaping the foundation of how these disorders are understood today. A few examples are Bruce Bower’s study called *Outside Looking in* (2006), a number of twin and sibling studies, and the *Journal of the American Academy of Child & Adolescent Psychiatry*’s study from June 2006 (Ronald, Happè, Bolton, Butcher, Price, Wheelwright, Baron-Cohen & Plomin). Related to these studies are those that involve looking at family histories of Autism and related disorders.

Another common type of study has been looking at specific cases of individuals with Autism. Within these case studies, rarely more than one person would be observed and conclusions would be drawn from there. Another such example is the article entitled, *Evidence-Based Practices for Young Children with Autism: Contributions for Single-Subject Design Research* which looked into the contributions of 37 studies of individuals with Autism Spectrum Disorder (Odom, Brown, Frey, Karasu, Smith-Canter & Strain, 2003).

The difficulty with using this data to apply to other students is that these are only small samples of one or two individuals being used to represent an entire population. The amount of error that is quite likely in this small sample size presents a problem for answering the questions at hand if based on these findings alone. Also, before the DSM-IV-TR (2000) criterion for recognizing Autism were clarified and before the statistics of prevalence of Autism was one in 10,000 ten years ago (compared to the one in 150 of today), opportunities for recognizing and understanding ASDs were simply not as common.

Another contributing factor to the issues that confine much of the previously recorded data is ethics. Even if scientists and doctors had found the cause of Autism, they would not be able to replicate or manipulate a study of children who have it. However, there are group studies
that can take place that follow ethical guidelines and a more substantial representation of the population of these unique children. One such location where this kind of research could take place is in a school that specializes in working with children who have Autism. Then, this school could be observed and studied to determine what best practices seem to appear across the spectrum and applied to inclusive classrooms.

In Ohio, there exists a specialized school for children with Autism called the Metalmark School (pseudonym). With a larger representative sample of students and instructors who work with them, (especially when compared to the sample size in much of the literature) recommendations for reading instruction can be made with a greater likelihood of success. This school was chosen; although it is not a setting practicing inclusion, because of the experience that the instructors have from working with students who have Autism on a regular basis. The theory is that they would have some of the best recommendations for teaching these children because of their own daily trial and error for answering the research question. This feat would not only have the potential for answering this study’s challenging questions, but greatly impacting the lives of those exceptional students in the classrooms who are awaiting the chance to learn to read along with their peers.

Definition of Terms

Most of the confusion that surrounds Autism is in understanding what this term really means. From the latest of the DSM-IV-TR of 2000, the five known types of ASDs are Autism, Rett’s Syndrome, Childhood Disintegrative Disorder, Asperger’s Syndrome and other Pervasive Developmental Disorders not otherwise specified, or PDD-NOS (DSM-IV-TR, 2000). For the purpose of this study, only Autism is being recognized. Quite frequently in the literature, Autism and the phrase Autism Spectrum Disorder are used synonymously. This is the case, even though
Autism has different characteristics than some of the other Spectrum Disorders. The International Classification of Disease Criteria or ICD-10 (2007) defines Autism as the following:

a type of pervasive developmental disorder that is defined by: (a) the presence of abnormal or impaired development that is manifested before the age of three years, and (b) the characteristic type of abnormal functioning in all the three areas of psychopathology: reciprocal social interaction, communication, and restricted stereotyped, repetitive behavior. In addition to these specific diagnostic features, a range of other nonspecific problems are common, such as phobias, sleeping and eating disturbances, temper tantrums and (self-directed) aggression. (International Classification of Mental and Behavioral Disorders-10, [ICD-10] 2007)

An educational definition that is less technical and most often referenced in this field is from the IDEA (1997). As defined by the Federal Regulation 34 CFR 300.7(c)(1), Autism is:

a developmental disability affecting verbal and non-verbal communication and social interactions, generally evident before age three, that adversely affects a child’s educational performance. Other characteristics often associated with Autism are engagement in repetitive activities and stereotyped movements, resistance to environmental change or change in routine, and unusual responses to sensory experiences. (Ohio Developmental Disabilities Council & Autism Task Force, n.d., p.10)

The Reading First Initiative is a component of the No Child Left Behind Act, signed January 8th, 2002 by President George W. Bush. This initiative defined reading instruction as having five main focus areas. These are phonemic awareness, phonics, fluency, vocabulary, and
comprehension. The following definitions for what these five elements of reading entail are as follows, as defined by the *Put Reading First* (Armbruster, Lehr, & Osborn, 2001) publication:

1. **Phonemic Awareness** is defined as “the ability to notice, think about, and work with the individual sounds in spoken words. The part of the word, phoneme, means sound” (p. 4).

2. **Phonics** is identified as “the understanding that there is a predictable relationship between phonemes (the sound s of spoken language) and graphemes (the letters and spellings that represent those sounds in written language)” (p. 4).

3. **Fluency** is defined as “the ability to read a text accurately and quickly” (p. 31).

4. **Vocabulary** is referred to as “the words we must know to communicate effectively. In general, vocabulary refers to words that we use in speaking or recognize in listening. Reading vocabulary refers to words we recognize in print” (p. 34).

5. **Comprehension** is defined as “the reason for reading. Good readers are both purposeful and active” (p. 48).

Throughout this thesis, these five areas will become categories for outlining which area of reading to which the data refers. This organization is included because reading is an involved process and much more dynamic than just looking at words and being able to say them. Also, if an educator is using this material for reference, then a specific area that may need special attention with their student can quickly be referred to and utilized. Finally, three more terms that should be defined are Individualized Education Plan (IEP), Individualized Family Service Plan (IFSP), and 504 Plans. These terms describe the various documents that can be created for outlining goals, objectives, intervention, instruction, and individualized services for students with
disabilities or those with perceived disabilities. They have similar overall goals, yet all three are used in different situations. The following identifies the differences and similarities between these three plans.

1. Individualized Education Plan (IEP)-is defined as a “written document required by the Individuals with Disabilities Education Act (P.L. 94-142) for every child with a disability; includes statements of present performance, annual goals, short-term instructional objectives, specific educational services needed, relevant dates, regular education program participation, and evaluation procedures; must be signed by parents as well as educational personnel” (Heward, 2005, p. 624).

2. Individualized Family Service Plan (IFSP)-is identified as “a requirement of P.L. 99-457, Education of the Handicapped Act Amendments of 1986, for the coordination of early intervention services for infants and toddlers with disabilities from birth to age 3. Similar to the IEP, which is required for school-age children with disabilities” (Heward, 2005, p. 624).

3. 504 Plans-these plans are created for school-age children who do not qualify for special education status or an IEP under Section 504 of the Rehabilitation Act of 1973. Students who do not have a specific disability would likely be eligible for a 504 Plan (Waltz, 2002, p. 273).

By describing these three plans, the teacher investigating the best instructional practices for their student with Autism will understand the documentation of services and educational goals for these children. Knowing these and the other aforementioned terms will serve to demystify some of the confusion that surrounds Autism and education and provide better understanding with references in the following chapters.
Limitations

There are three limitations to recognize when viewing this study. First of all, the data that are presented as recommendations may not work for all students. Any child whether he/she has Autism or not, is a unique individual with different instructional needs. The recommendations that are made throughout this study are only suggestions that are likely to lead to success-be it through modifications, combinations, additions and/or subtractions to instructional routines. No one recommendation will solve a child’s reading needs, yet not all of these suggestions will apply either. Through careful observation, assessment, and some trial and error, these recommended practices could greatly impact a child with Autism’s reading ability. Also, not every child with Autism, or either of the related disorders, is able to learn to read. Some of the most prominent characteristics of an ASD, according to what the DSM-IV-TR indicates, are problems with verbal communication and comprehending language. Knowing a student’s abilities and being aware that not just one or all of these recommendations will solve any given learner’s needs will serve to prepare the instructor for more realistic outcomes and expectations.

Second, it is important to note that although some of the DSM-IV-TR (2000) information for how the ASDs are defined has been included in the definitions section, this criterion is for reference purposes only. Diagnosis is not a part of the data collection throughout this study and should not be used for those purposes. Only trained professionals in the field of psychology should be involved in deciding if a child has Autism, while the definitions of the terms can be used for understanding the material described in this research.

Finally, throughout the data collection, there are limitations in the array of suggestions that can be made. Only so many observations could take place and each area of reading may not have been witnessed in as much depth, depending on what materials the teachers were presenting.
and depending on the educational goals set for each child. Also, within the literature research not
every area of reading has been studied in great depth. The collection process was especially
difficult since much of the empirical data were originally written in German, and those who have
worked to translate the initial findings are much lesser known. With these difficulties, time was
not available to review every single literature study that exists and all will not be represented
here. With the unavoidable constraints that time and prior data created on this study, it is hoped
that future studies will assist in diminishing some of these limitations.
CHAPTER II. REVIEW OF THE LITERATURE

That all children need accommodations in instruction to meet their needs is a widely respected educational principle. However, this is particularly important to those students who come to the general education classroom with a desire and ability to read and with a diagnosed Autism Spectrum Disorder or ASD. This chapter first looks into addressing how Autism came to be recognized and what some of the characteristics of these children are in the section entitled The History of Autism and Instruction. This part further identifies the history of how students with Autism have been taught over the decades.

The second part of this chapter involves delving into the theory and practice that currently exists for teaching students with Autism. Not all of the theories apply directly to reading. However, they can build on suggestions of elements that effect literacy instruction, so they are also included here. From individual accounts and recommendations, to classroom testimonials, these are the theories that can provide meaningful insight into the research that is being done and the practices that are currently suggested around reading instruction.

Finally, the third and most important section of the literature research are the studies specific to reading instruction for children with Autism. These data come from a variety of experimental designs with a number of hypotheses serving to identify what research believes does and does not work for students with Autism. To organize the different areas of reading more clearly, each of the five categories, (phonemic awareness, phonics, fluency, vocabulary, and comprehension) defined in Chapter 1, from the Put Reading First (Armbruster, Lehr & Osborn, 2001) publication serve as sub-headings.
The History of Autism and Instruction

Just over 60 years ago, the study of Autism began and has been in a constant state of refinement and wonder ever since. The ways that Autism Spectrum Disorders have been defined by the Diagnostic and Statistical Manual of Mental Disorders-Text Revision (DSM-IV-TR) and the International Classification of Disease Criteria (ICD-10) changed over time have had a substantial impact on how Autism is understood and diagnosed. The causes of Autism and treatments for the disorder have become widely speculated upon, without any precise answers. Also, with the prevalence of Autism increasing at such an astonishing rate, even more questions have recently been posed about why this may be taking place, if the incidence can be lessened, and so on. Amidst all of these unresolved inquiries, clarification can be provided as far as the history of Autism and what instruction has looked like for these young learner’s lives.

Some of the clarity has come from the research that has shaped a definition of this spectrum disorder. The first person to study Autism was the psychiatrist Dr. Leo Kanner of Johns Hopkins University. During an analysis of 11 children displaying similar behaviors, Kanner developed his study (1943). He was the first to explain the social and communication differences that seemed to be taking place with these unique individuals. With the children he observed, he stated that “there is from the start an extreme autistic aloneness that, whenever possible, disregards, ignores, [and] shuts out anything that comes to the child from the outside” (p. 242). He further described an “excellent rote memory, [which was] coupled with the inability to use language in any other way” (Kanner, p. 243). Kanner’s empirical research was identifying many of the behavioral aspects of a child with Autism with frequent dependence on sameness, repetition, a lack of response to other individuals – even family members. In fact, “Kanner identified the pathognomonic features of the disorder that are still considered essential to its
diagnosis, highlighting both the profound difficulties of Autism but also noting the considerable talents that can be present” (Ozonoff, Rogers, & Hendren, 2003, p. 4). Kanner was well ahead of his time with his findings. He even proposed that despite how rare the cases seemed to be that he was observing that it was likely to be much more common, which continues to be the case today. His data collection became the spark that would later manifest itself into a number of various studies on the Autism Spectrum Disorders.

One of the most difficult aspects of the history of Autism was that it was originally believed to be an emotional disorder that was caused by the quality of care provided, mainly by the child’s mother. Initially questioned by Kanner in 1943, the reason for this assumption was based on the peculiar and still unexplainable social characteristics that tend to appear years into the child’s young life. Also, for some children, they initially appear to be developing at a typical rate for speech and social skills. Then, at about two to three years of age, they may completely stop speaking and responding to those around them, among a variety of other characteristics. Years later, Dr. Bernard Rimland (1964), a psychologist had been recognized as one of the first to classify Autism as a biological disorder instead.

A second difficult element to the history of Autism was the kind of treatment that they were initially provided. During Kanner’s study, before Autism was understood with the individuals being somewhat intelligent, he even recognized that children were “dumped” into care facilities (1943, p. 249). Laura Schriebman (2005) describes in her text how children as young as 4 or 5 during the late 1960s were often placed in residential situations with “little hope for a future outside the institution” (p. 254). Even though students who were mentally retarded or who had physical disabilities at that time were supposed to be afforded public education, children with Autism did not tend to fit in any of these categories (Schreibman). Usually parents
were forced to provide expensive private schooling, with ineffective programs (Schreibman), and since Autism was still not yet fully understood, educating these students was not understood either. With a lack of options and know-how, parents often resulted to admitting their children to institutional facilities (Schriebman).

During the mid-1970s, reform for students with Autism began and the parents started to “lead the charge to mandate educational programs for children with Autism” (Schriebman, 2005, p. 254). According to Schriebman, lawsuits began to be filed and legislation was finally passed in 1975 that mandated free and appropriate education for children with Autism and those with other disabilities. Public Law 94-142 was the legislation that was passed, so that students with disabilities were being “either “pulled out” of the special education classroom for socialization or “pulled out” of the general education classroom for more help” (Bauer & Kroeger, 2004, p. 61). This law did not create inclusion, but rather mandated that these students with disabilities like Autism be placed in a Least Restrictive Environment (LRE) described in Chapter 1, beginning the practices that led to inclusion. Even though these mandates were created and more studies were being done for educational recommendations and programs, some of them did not start to become practice in the classrooms until many years later.

One such system designed specifically for children with Autism has been the Picture Exchange Communication System (PECS). This system is used to “teach the child to locate a communication partner, present a picture of a desired item, and get the item in exchange for the picture” (Janzen, 2003, p. 357). Sign language also began being taught to children with Autism. Signing allowed some children who had not spoken before to participate in communication for the first time. Janzen describes in her text that some students started to actually speak once sign language had been practiced and utilized regularly by their teachers. According to Waltz (2002)
the TEACCH method, developed by Eric Schopler in 1972, was another program which stands for the Treatment and Education of Autistic and Related Communication Handicapped Children. This method was founded on structured instruction with classroom scheduling and predictable, systematic teaching methods. Then in 1987, another study was completed and the DTT or discrete trial training method took shape by Lovass (Schriebman, 2005). This program was individualized, costly, and tended to be highly effective, where almost half of the children in the study reaching what was referred to as “normal functioning” (Schriebman). Two other instructional methods that have taken place in the home as well as school settings are Floortime and incidental learning (Marcus, Garfinkle, & Wolery, 2001). The Floortime method is one that focuses on building the social and emotional skills of the child through a play-based technique (Marcus et al., 2001). The incidental learning method is a systematic approach where teachers or parents plan specific learning goals, yet is based on a natural situation (Marcus et al., 2001).

Some of the more recent additions to the history of Autism have been the diagnostic classification system’s definitions and updates for identifying what these disorders are. In 1992, the American Psychiatric Association clarified the diagnostic criteria for autism in the DSM IV. The following year, the International Classification of Diseases also added diagnostic criteria for defining the Autistic Spectrum Disorders. The three main traits that make up Autism were identified by the text revisions of the DSM-IV (2000) as impairments in social interaction and with communication, and repetitive and stereotyped patterns of behavior, interests, and activities.

Since the various communication systems were developed and the diagnostic criteria advanced, the practices of inclusion also started to take shape. Yet, many people have begun to question if having students with Autism in the general education classroom is beneficial. Thus, various levels of inclusion now exist from full-inclusion, where the student is in the general
education classroom all day, to pull-out methods, where students were taken from their general education classrooms for individual or small group instruction (Shriebman, 2005). No matter what level of inclusion is found to be best, with more and more students being diagnosed with Autism, the practice is most likely to more often as well. Knowing how to make the most of the learning environment and experiences for these children is completely necessary.

Overall, the tremendous contributions of these and so many other researchers, writers, founders and supporters have created the definitions, assistance, acceptance and understanding for individuals with Autism. As history has progressed over time in the study of Autism, so has the need for best practices with more and more individuals receiving the diagnosis. The next step in creating a better world for children with Autism is by recognizing the instructional theory and practice that currently exists today.

Current Theory and Practice around Autism

Ever since Autism was recognized, generalized recommendations have been being made to explain ways to help these students learn. Some of these suggestions have to do with creating a suitable classroom environment, to building positive behavioral and social habits, communicating effectively, providing appropriate materials and resources, and implementing a variety of other recommendations. All of these areas have a significant impact on how students will learn and ultimately affect how they learn to read.

Environment

One of the first elements of instruction that a teacher must consider in preparing to teach any student is the kind of environment that he/she will need to create. Some basic principles for the classroom design are setting up an inviting and welcoming space, a safe place, with plenty of materials to cover the necessary learning objectives, and so on. However, an environment that
includes a student with Autism should be conscious of a few other key elements in addition to these already described.

Students with Autism need structure and should know what to expect when they enter the classroom as much as possible. According to a study done by Kaufman (2002) one of the most important practices in an effective learning environment is one that is highly organized and consistent. Janzen’s text (2003) describes how there should be a balanced plan for each day with schedules that include opportunities for, “learning developmental, academic, creative, and functional skills; work play and leisure; and instruction and practice in both natural and simulated settings” (p. 128). This element is necessary to consider in the environment because there are a number of examples where schedules are visual and based on the physical environment of the classroom. For example, in an article by Kimball, Kinney, Taylor and Stromer (2003), a visual cuing system was computer generated with pictures to help guide a student through the activities of each day. In order for those pictures to make sense, the environment in them would have to have stayed the same. Akin and MacKinney (2004) found that the use of these Picture Activity Schedules were shown to increase the student performance the reverse affect occurred when the students’ picture schedules were removed. This kind of structure allows a student to know what to expect and helps to lead them through the day.

One of the characteristics of children with Autism is that they are mainly visual learners, so picture clues in the environment that outline the room, rules, and other important notes can greatly aid in understanding and influence behavior. In a publication by the Ohio Developmental Disabilities Council and Autism Task Force (n.d.) it is believed that appropriate physical space modifications also should include “visual barriers, reduced visual and sound distractions, temperature adjustments, preferential seating, and visual organization of material” (p. 24).
Creating a learning place with minimal distractions and clear boundaries will provide a positive setting for all of the students by providing more focus for the lessons at hand. Stanton (2000) wrote that unknown elements to a student with Autism can be a place for fear to take the place of that void. If a student is uncomfortable or afraid in their environment, they are not likely to be able to concentrate on learning.

The Ohio Developmental Disabilities Council and Autism Task Force (n.d.) further states that a well organized educational setting requires that the concept of time be taught, through the use of analogue clock and calendars so that the students can understand the daily routines that are established more clearly. Well-organized may also include a visually simple setting. Grandin (1995) describes how for one individual, “when her visual system became completely overloaded with stimuli, all meaning in visual sensation was lost” (p. 74). She also explains how for one person with Autism struggled to see with florescent lighting in a classroom because they could almost see the constant flickering of the light (Grandin). Considering less harsh lighting alternatives such as desk lamps may avoid this situation in a classroom, or lessen the visual strain.

All of these physical adjustments help to create a welcoming space for the learners with Autism, as does consistent routine, physical visual clues and cues for transitions and repetition so that the students can become comfortable in their environment. In fact, it is believed that these established and predictable routines may even increase the student’s independence and cooperation leading to positive behaviors in the classroom (Akin & MacKinney, 2004). Providing the best opportunities for positive behavior and social skills are addressed in the following section of this chapter.
Behavior and Social Skills

When it comes to behavior and social situations in the classroom, there are a number of valuable suggestions that can create an optimal setting for overcoming the social obstacles that can occur with children who have Autism.

There has been debate of whether individuals with Autism have something known as the Theory of Mind. The Theory of Mind is a mental understanding possessed by an individual that others think differently than them. This was believed to be the case because people with Autism do not always imitate or mimic other people around them in (Nash, Bonesteel, & Nobel, 2002). Bower (2006) argues that those with an ASD do not lack a Theory of Mind, but rather focus too intently about what others think and feel. What results is a lack of clear understanding of how to interact and understand elements of social interaction. Even practices of modeling a lesson for a student with Autism could potentially become difficult.

Gestures, figures of speech, terms and phrases with multiple meanings all tend to be difficult for those with Autism. In the general education classroom, even in the younger grades, it is not uncommon for all of these potentially confusing elements to be communicated. All of these characteristics of Autism have serious implications for the educational setting from how these students interact with their teachers and their peers. Farrell (2004) reports how Dr. Volkmar from the University of Yale describes the way students with Autism struggle to gain the message from teachers presenting material because of the social barriers that exist. From the overall lesson that a teacher is presenting, to the gestures that accompany the message, all the while, trying to decide what is really important, a learner with Autism can become lost in the shuffle very quickly (Farrell). Knowing that these behaviors exist in a student with Autism and
that it is not merely defiance or a lack of attention is very important for continuing positive
teacher-student relationships.

Stanton (2000) continues by asking educators to be aware of using sarcasm and terms with multiple meanings because students with Autism tend to be very literal thinkers. Being specific and aware of gestures and the use of hypothetical questions can serve to avoid future behavior and or communication problems. If a student has become overwhelmed with a social situation, it is also valuable to know when they are frustrated, because to ignore the problem will only overwhelm them more (Stanton).

The Ohio Developmental Disabilities Council and Autism Task Force recommend that social awareness activities take place and that students are taught how to read ‘body language’ and gestures, empathy and humor, and recognize emotions by drawing attention to situations where emotions are expressed (n.d.). In an informal survey, a number of educators of children with Autism from Dallas, Texas, indicated that there were frequent occasions where students would mimic behaviors seen in videos (Akin & MacKinney, 2004). Though these children usually do not appear to be able to imitate behaviors that they see in others they can watch videos to help them understand how to act in social situations. Through the use of technology, there is one more way to help students with Autism overcome the confusion that can exist in interacting with and understanding others.

The barriers in social skills must also be broken by the peers in the room that do not have Autism. Presenting situations for all of the students to have a special role in each other’s learning can have a great impact on the overall learning environment. One way to make this happen is through peer tutoring which can “help the other pupils to get to know and understand the pupil with the Autistic Spectrum Disorder” (Jordan & Jones, 1999, p. 21). Although it will be
described more thoroughly in the next section of this chapter, the use of social stories is another popular recommendation for helping students with Autism adapt socially. The benefit of social stories is that they “illustrate a problem or situation, and then explicitly present the appropriate behavior so children learn common social conventions” (Akin & MacKinney, 2004, p. 37). With this way, they do not have to actually go through the situation without having strategies given to them first. However, Jordan (1999) believes that it is equally important to make sure there is a motivating factor with working on adapting basic social situations. She states that unless the student with Autism has an authentic reason, it will not help them to simply mimic social situations which will likely appear unnatural to them and potentially discourage them further and make their social actions seem more unnatural (Jordan).

Social relationships, beyond those between the students with Autism and their peers, must also be considered such as the relationship between the student and the teacher. Lorna Wing (2001) describes how a student with Autism will tend to not understand the “concept of hierarchy based on age, class, lines of authority or anything else-they are natural democrats” (p. 151). She goes on further to describe how these children tend to openly express their feelings or opinions about things or situations around them, and that this great level of honesty can sometimes pose problems in social settings (Wing). Wing says that they are not trying to be rebellious, but that educators must be aware of this trait to avoid becoming annoyed with the issue. In keeping with these considerations, Wing expresses the importance of building a student with Autism’s self-esteem as much as possible. Remaining positive and encouraging even during social situations that may be awkward or difficult is very important to continue building these students’ positive self images.
Wendy Lawson (2001), who has Autism herself, suggests that the social stories deal first with issues of immediate importance, such as those dealing with safety or injury, and that only one issue is taught at a time for a good length of time. Teaching these appropriate behaviors in social settings have the potential for solving problems before they arise that any of the students may encounter, thus improving the environment for everyone. An important note for educators about negative behavior or social skills is that they need to be recognized “as communicative rather than an intentional effort to disrupt” (Ohio Developmental Disabilities Council & Autism Task Force, n.d., p. 32). Knowing how to find the cause of the behavior or social issue is vital for solving the problem and doesn’t necessarily mean that the student is acting out, but rather struggling to communicate a message.

Individuals with Autism have also been described as having low self-esteem. Lawson (2001), who has an Autism Spectrum Disorder herself, states in her text:

> if I am to have a sense of pride and dignity, of high self-esteem, then I need to accept me as being who I am, value my sense of difference and work with my talents, attributes and disposition. I also need others to do the same! (p.158)

She recommends that to help others accomplish these same positive personal behaviors and views, the focus is placed on the positive elements that an individual can accomplish (Lawson). Further suggestions are to discuss progress with children who have Autism and ask how they view their achievements, ask permission to comment on areas for improvement and ways to make those improvements, and be careful to not compare their improvements with your [the teacher] own, “only state the facts” (Lawson, p. 159). These steps will help to avoid a student with Autism developing negative views of themselves and their accomplishments.
Grandin (1995) describes how sudden changes in the surroundings can cause a person with Autism to act out. She describes how familiarity in an environment can keep individuals with Autism very calm, but when that suddenly changes, sudden aggression can also follow (Grandin). The suggestions of routines in the environment in the last section can have a profound impact on a child with Autism’s behavior. The parallel that Grandin makes with people with Autism is to “high-strung, excitable animals. In other words, they are shy to avoid danger. The ancient systems that protected us from predators are working overtime in these children” (p. 173). Her relationship further identifies why it is necessary for routine and sameness in the learning environment to take place to promote positive behavior.

The stereotyped and repetitive behaviors that are often displayed by children with Autism can sometimes take the shape of a preoccupation with certain objects, repetitive motions or movements, and so on. Akin and MacKinney (2004) further state that attempts to stop or disrupt those repetitive and fixated behaviors may result in the child becoming frustrated and acting out. To avoid these negative behaviors of acting out, it is important to be aware of what may frustrate the child. Akin and MacKinney described these stereotyped and repetitive behaviors to be periods that children with Autism pass through. In other words, avoiding these frustration areas for students with Autism are likely to decrease or change over time.

Communication

Communication is a two-way street in the classroom environment; either what the teacher or other individuals are trying to communicate or what the student with Autism is communicating. This section of Chapter 2 helps to ease some of the barriers that can frequently arise in getting the message across. Also, because communication can be verbal or nonverbal, the
suggestions from research in the last section of this chapter regarding gestures and the use of sarcasm and indirect language hold true in this section as well.

Miscommunications are oftentimes directly related to the social and behavioral issues that sometimes manifest themselves in children with Autism. Stanton (2000) explains how the literal thinking that is typical in students with Autism can lead to problems in communication. Sarcasm, words and phrases with multiple meanings can be particularly difficult for students with Autism because they literally tend to mean something completely different from the meaning they have in a particular context. Stanton describes how he had to practice stating things as exactly as possible, such as stopping the instant remark of “Yes?” when his student called his name. What tended to happen was that the student would assume that this was an affirmative remark for whatever he was inquiring about, because the teacher had immediately said yes. Communication needs to be as unambiguous as possible to avoid misunderstandings.

In the text from the Ohio Developmental Disabilities Council and Autism Task Force, a series of modifications are recommended for overcoming communication roadblocks that could likely occur (n.d., p. 37):

- Decrease question asking and increase comments and descriptions of activities, emotions, and environments that the person experiences.
- The communicating partner needs to fully understand that situations, certain individuals, sensory issues and stress will affect the quality of communication and the communication intention.
- Modify the speaker’s language and provide visual supports if there is no response of undesired responses to a direction or question.
• Allow time for auditory processing and formulation of information. For example, instruction and conversation may need to move at a slower rate. 
• Develop a protocol to gain the individual’s attention. The protocol should include how to initiate joint focused attention.

All of these ideas of modifying speech, slow and literal instructions, were also practiced by Stanton (2000) when he had problems when a student would not sit down when he asked for everyone to be seated. He had to change his outlook to telling the individual by name, what exactly he needed to do (Stanton). He relates his communication modifications to relate to those of a public speaker who needed to remember to “tell the audience what you are going to say, and then say it” (Stanton, p. 91). By addressing the student individually by name, the student clearly knew that they had to respond.

One of the main characteristics of severe cases of Autism is a lack of oral communication altogether. Then there are some children with Autism that communicate only through echolalia, or through constant repetition of words and phrases said to them (Jordan, 1999). It is further believed that difficulties in communication with students with Autism may be hard to detect because they can be hidden by good language ability (Jordan). Grandin (1995) describes how words and ideas were visualized in pictures when they were presented to her. Even verbs tended to be associated to nouns and things that could be more clearly visualized so that they could be understood (Grandin). She states that “as a child, [she] left our words such as “is,” “the,” and “it,” because they had no meaning by themselves. Similarly, words like “of” and “an” made no sense” (Grandin, p. 31). As someone with an Autism Spectrum Disorder herself, Temple Grandin clearly identifies some of the mysteries of communication for people with Autism.
Culturally, in the United States, making eye contact frequently indicates that one is listening to the person who is speaking. However, for students with Autism, they may not make eye contact or do so rarely (Jordan, 1999). Yet, “some children with Autism only go through a fleeting phase of avoiding eye contact, and may be subject to training that encourages them to make eye contact” (Jordan, p. 35). As previously mentioned by Stanton (2000), by getting a student’s direct attention, miscommunications with a lack of eye contact can be avoided.

The Ohio Developmental Disabilities Council and Autism Task Force (n.d.) further suggests that individuals with Autism “must communicate back understanding to the teacher” (p. 23). This way, teachers and instructors can immediately gather whether or not their communication with the student was clear enough without guessing. They go on further to state that social situations can be very stressful, which impacts communication and so, students may be unable to become involved in class discussions (Ohio Developmental Disabilities Council & Autism Task Force, n.d.). If a student does not understand what is being said, he/she is likely to become highly frustrated and his/her behavior can then begin to change. Janzen (2003) explains that, “nearly every learning and behavior problem is, in some way, related to misunderstanding the language and the inability to express oneself effectively” (p. 42). Thus, recognizing this potential problem can serve to improve behavior and social skills as well.

Materials and Resources

Individuals with Autism can benefit greatly from tactile and manipulative materials for learning about any and all topics across the curriculum and beyond. Students with Autism tend to not be as strong in auditory processing (Akin & MacKinney 2004) and have a difficult time understanding that a concept applies in a variety of situations and circumstances. By providing multiple and varied experiences learning the same concepts can help students to understand how
to apply concepts, no matter the circumstances. This process of generalization can be taught by showing students with Autism the same type of object in different situations, of varying colors, sizes, textures, etc. The Ohio Developmental Disabilities Council and Autism Task Force (n.d.) also describes that with some objects and situations, overgeneralization can be developed. For example, if a child decides that “the critical feature of an animal is four legs and are not identifying with the other features, then the individual will assume that all four-legged creatures are the same animal” (Ohio Developmental Disabilities Council & Autism Task Force, n.d., p. 30). Thus, having a variety of similar tactile items can be very beneficial learning tools that are realistic, so that they can be applied to the real life examples Ohio Developmental Disabilities Council & Autism Task Force, n.d.).

Myles and Simpson (2003) identify other educational materials that aid student’s understanding. Their list comprises of: graphic organizers, outlines and maps, timelines, and notebooks for keeping assignments listed (Myles & Simpson). These guides help to model effective mental mapping strategies, and help students to build their metacognition, (or thinking about one’s own thinking) skills.

Since many students with Autism tend to prefer visual stimulation, word processing may be an easier means of communication and a widely beneficial learning tool (Akin & MacKinney, 2004). The Ohio Developmental Disabilities Council and Autism Task Force (n.d.) also provides a detailed list of potential materials and resources that could add to the list of objects and technology-based tools already mentioned. The following is a list of recommended materials and resources that are “Low Tech, which require no training and are fairly inexpensive: Dry Erase boards, clipboards, three-ring binders, Picture Symbol Cards, Choice Board (no voice output), ear plugs, use of a pointer, visual schedules and routines” (Ohio Developmental Disabilities
Council & Autism Task Force, n.d., p. 38). The “Mid-Tech Tools” that are recommended by the Ohio Developmental Disabilities Council and Autism Task Force (n.d.) that require minimal practice and some electricity or batteries are: “tape recorder, timers, calculators, head phones, Assistive Learning Devices, portable Word Processor, and Simple Voice Output Devices” (p. 39). Finally, the educational tools that could be utilized that tend to be more expensive and require some training are, but are not limited to: “Computer Software and Adaptive Computer Hardware, video cameras, and complex Voice Output Devices” (Ohio Developmental Disabilities Council & Autism Task Force, n.d., p. 39). Many of these materials are already in general education classrooms and could be highly beneficial for the students included who have Autism.

Beyond all of the materials and resources listed, there is a resource that is sometimes overlooked and can be fairly easy to obtain. That resource is the parents and family members of the students with Autism. Janzen (2003) explains that “the ideal situation is for parents and the professionals to build a sharing and problem-solving relationship or partnership” (p. 55). She goes on to state that this necessary element can only serve to highly benefit the children involved (Janzen). Bauer and Kroeger (2004) agree that there is a vital resource in parents, especially so that they understand exactly what and why everything is taking place in the classroom. They further describe the usefulness of gathering resources, not just by educators reaching out to the parents, but also into the community to benefit the students in their classroom (Bauer & Kroeger).

Another potentially overlooked resource in the classroom is simply time. The Ohio Developmental Disabilities Council and Autism Task Force (n.d.) describe how extra time to complete an activity and practicing planned breaks in instruction can benefit learners with
Autism. An example that is described is for the educator to “build in planned breaks with no requirement for completion at that time, in order to prevent individuals from spending too much time on an activity, becoming frustrated or inattentive” (Ohio Developmental Disabilities Council & Autism Task Force, n.d., p. 49).

One study by Ludlow, Wilkins, and Heaton (2006) found the use of colored overlays for when a student with Autism was reading to be highly successful. Like transparency films in various colors, these researchers studied the affects of 19 children reading with the films and discovered that 15 of them or 79% showed an improvement of at least 5% of their reading speed (Ludlow et al.). No specific color seemed to be more successful than others, but the general use was then highly recommended as a literacy resource (Ludlow et al.).

Another separate category of research suggested materials and resources has to do with technology and the use of computers. Similar to the environmental recommendations earlier in this chapter, computers have been found to be useful tools to generate classroom schedules for organizing the day (Kimball, Kinney, Taylor, & Stromer, 2003). A group of researchers suggested that computer programs, such as PowerPoint, could be utilized to create picture cues and schedules for students to visualize certain concepts and activities (Kimball et al.). What was found was that with the use of this technology, visual supports were able to be created and utilized “to help students develop independent schedule-following as an overarching self-management skill” (Kimball et al., p. 43). Each PowerPoint slide was created with a picture of a basic step and a small amount of text, compiled in a series to ultimately complete an entire task (Kimball et al.). There was even a way to motivate a student in the study to look at the words on the slides and determine their meaning without the pictures by using a fade technique for all of the graphics on the slides (Kimball et al.). This system is very similar to the Picture Exchange
Communication System identified earlier in the chapter, identifying another recommended resource in the classroom.

Another study researching the usefulness of computer technology as a resource for learners with Autism was done by Williams, Wright, Callaghan, and Coughlan (2002). What this group of researchers sought to find was if computer assisted instruction helped students with Autism learn to read more readily compared to literature methods alone (Williams et al.). It was discovered that with the computer based activities, the students spent three times as many minutes on task, twice as much language was produced by the students during the computer methods and they seemed to openly prefer the technology over the traditional book methods (Williams et al.). This study may not have been seeking to dismiss books for literacy instruction, but rather promote the uses of available technologies for teaching reading to students with Autism.

Akin and MacKinney (2004) agree that the use of CD-ROM and interactive talking books have seemed to lead to literacy increases. Akin and MacKinney also make recommendations for materials that they suggest to be included in the classroom, such as “videos, audiocassettes, books (especially repetitive books for read-alouds), kits, toys, games, computer software, puppets, and children’s and young adult magazines in alternative formats” (p. 36).

In summary, there are a number of strategies and recommendations, according to the theory and practices on children with Autism that can be implemented immediately and have a significantly positive effect on their education. Through the use of visual and tactile materials, concepts can be learned, explored and applied. From there, with better understanding of these concepts and the right accommodations in the classroom, communication and understanding can improve. By enhancing communication, relationships between the teacher and student and
student and peers can build and flourish. Then the potential for better social skills can surface, because of the improved communication and an understanding of how to increase desired behaviors. Even minor successes in any or all of these areas can then create a more positive learning environment allowing for the focus to be placed on the lessons and content; specific to reading, or otherwise. Nonetheless, these literature-based suggestions also include a final caveat by the Ohio Developmental Disabilities Council and Autism Task Force that states the importance of creating instruction and classroom plans that support a student’s strengths and weakness as they change and grow as well as a continually promoting independence and learning (n.d.). This important suggestion also carries over into the current research and recommendations for teaching reading to students with Autism.

What Research Has to Say about Reading and Autism

The organization of the following section of Chapter 2 has been based on the five elements of reading instruction identified in the *Put Reading First* publication; phonemic awareness, phonics, fluency, vocabulary and comprehension (Armbruster, Lehr & Osborn, 2001). For the educators who need a quick reference for a specific area of reading instruction, these sub-categories identify researched practices and findings from a variety of reports. An unfortunate fact and further reasoning behind the existence of this study is due to the lack of information for teaching students with Autism to read, specifically to the five categories mentioned. Reading is a complex process that cannot be summarized solely by any of these; from phonemic awareness to comprehension. By omitting or in lacking of this data, our educators are at a loss for answers and parents may be left to wonder about their child’s instruction. Most of all, the students with Autism are likely to be impacted by not receiving educational attention in one or all of these areas of literacy instruction. Overall, as much data that
could be obtained have been described in the following five categories to provide valuable recommendations for teaching students with Autism to read.

**Phonemic Awareness**

Phonemes, or sounds, are the building blocks of language and knowing how to manipulate them is how an individual demonstrates phonemic awareness. For children with Autism, it has been stated that this can be an immensely challenging task. Janzen (2003) states that the sounding out of words can be taught if the word is immediately said right after the word is sounded. However, she does agree that to take a word’s sounds apart, and put them back together and so on, can be very confusing to the child and can be very hard to correct later on (Janzen). Janzen explains that if word sounds are “distorted when taught, as they often are (i.e., b=buh, d=duh), it is difficult to put these back together to make the real sound of the word (i.e., “duh-o-guh”)” (p. 333). The long sounding out of words like dog, with letters that can be dragged out in sound create extra syllables in words that then take too much effort to blend fluidly back together. Although some would argue that working with words in the process of teaching phonemic awareness is incorrect because this area of reading should strictly be taught with sounds alone; the processes of reading are all connected and should be explained in a specific sense to these literal thinkers and readers.

**Phonics**

The studies on students with practices of phonics also closely relate to the findings from phonemic awareness. For instance, Bower (2006) describes a neurophysiologist’s work from Carnegie Melon University who studied individuals with Autism Spectrum Disorders. He describes how Behrmann found in her research that if a student was looking at a letter S made of the small letter h, he/she would only identify the small letter h and not the S (Bower, 2006). The
inability to recognize how the pieces make up the whole is another cause for teaching material
through whole language or real applications.

As a part of phonics instruction, Akin and MacKinney (2004) discovered that students with Autism preferred to work with texts that included rhymes. They suggested that these books contain a low ratio of words to pictures and concrete themes and also found that the materials that were preferred did not include abstract concepts or endings that were left open (Akin & MacKinney).

In a study that looked for the ability for readers with Autism to understand and work with the onset and rime structure of words, it was discovered that they tended to notice the rime with more accuracy (Calhoon, 2001). She further discovered that the study of rime was significantly more accurate when the reading was connected to actual text (Calhoon). She concluded that the study or word families and use of word walls would greatly utilize this strength in the readers she studied (Calhoon). By connecting phonics lessons to specific texts, rules are learned and can be understood for how they can be applied. Phonics can still be taught to a student with Autism, though a caution is that this curriculum does not simply become rote memorization.

*Fluency*

The most under-described element of reading in the literature research was fluency. This third piece of reading is defined as the process of reading material correctly and quickly (Armbruster et al., 2001). Although there are a number of studies that outline other areas of reading instruction, fluency is rarely addressed, despite its relationship to the rest of these skills.

Akin and MacKinney (2004) stated that peer-tutoring situations appeared to have a significantly positive impact on not only reading fluency, but also comprehension. They did however advise caution when planning peer tutoring with students who have Autism because
social situations are one area that they frequently struggle with (Akin & MacKinney). More theoretical suggestions on comprehension will be addressed further in this chapter.

Nation, Clarke, Wright, and Williams (2006), found a number of studies that suggest that reading accuracy tends to be very high in students with Autism. They describe that other studies have found that with readers who have Autism, it is frequent that the reading accuracy, or fluency, tends to be higher than what is expected by their IQ levels (Nation et al.). Reading fluency, or as they refer to it, reading accuracy also has tended to be better in children with Autism, and what really seems to suffer is the comprehension (Nation et al.). Another key point that these researchers make is that reading accuracy can oftentimes be greatly impeded by a lack of phonological decoding skills (Nation et al.). This further identifies how the relationships of these reading elements can greatly impact one another.

*Vocabulary*

Making meaning of the words that we must know in print is the process of building vocabulary. The most highly suggested practice for showing students with Autism how to make meaning of new words is by using words that are specifically meaningful to the student (Broun, 2004). For example, Broun states that words should “hook” the child into the process by the use of words of favorite objects, names of family members, and specific interests the child has. From these words of interest and already existing meaning for the child, other words that are considered sentence builders are added to help students create complete ideas so that they may be recognized in print (Broun). These interest-based texts can actually be created for the child for them to read which gives them a sense of meaningful success and accomplishment as a reader (Broun).
Another recommendation for building vocabulary is repeated readings for building vocabulary and other areas of literacy instruction. “Repeated tellings of the same story help the child focus attention, build vocabulary [and] inculcate the structure of literary experiences” (Akin & MacKinney, 2004, p. 36). Texts related to a similar theme may even provide success with developing vocabulary as found in a study by Colasent and Griffith (1998). In their study that focused on comprehension, written assessments were given to students as they listened to a series of related stories (Colasent & Griffith). They found that the students tended to write more and used more advanced vocabulary by the time a third story was read within the same theme (Colasent & Griffith).

In one research study, it was discovered that students with cognitive disabilities showed more accuracy when identifying words and non-words than their peers without Autism (Calhoon, 2001). When they were solving unknown words, they performed equally as well as their peers without Autism, only they tended to focus on the rime of the word instead of the initial letters or onset (Calhoon). This again explains the recommendation that words are learned through the use of word walls and the study of word families for children with Autism (Calhoon). Calhoon further suggests that known words are taught to introduce words that are unfamiliar to these readers, to capitalize on their strength or looking at parts to words.

These data may appear to conflict with the studies that recommend that words are not broken down into single sounds, for the difficulty that students with Autism tend to have with this concept. However, when studying rimes of words single letters or sounds are not studied in the words, but rather larger chunks of the ends of words.
Comprehension

Comprehension is the most studied element of all of the five pieces to reading and most likely because it appears to be the most difficult task. First of all, the other four pieces of reading need to be developed first, which is a challenge in of itself. Focusing on building to this point of reading instruction in gradual steps and being aware that comprehension may be the most difficult task, will bring to light what much of the research has already identified.

Reading comprehension refers mainly to an understanding that is reached once material has been read. However, in some cases, comprehension is measured by the asking of different kinds of comprehension questions. The *Put Reading First* (2001) manual describes these questions as:

- text explicit ([where the answer is] stated explicitly in a single sentence);
- text implicit ([where text answers are] implied by information presented in two or more sentences; or
- scriptal ([where answers are] not found in the text at all, but part of the reader’s prior knowledge or experience). (Armbruster et al., p. 51)

As already mentioned, Autism is accompanied with very literal thinking and the overall picture tends to be missed on the attention to details (Bower, 2006). In a study involving 16 students with an Autism Spectrum Disorder, it was found that they were able to comprehend about a third more material that was literal based and answered two thirds of the scriptal, or inferential questions incorrectly (Myles, Hilgenfeld, Barnhill, Griswold, Hagiwara, & Simpson, 2002). Questions that are not based on literal information will naturally be difficult for students with Autism to answer unless they relate directly to a specific interest of the child or common experience.
For demonstrating literal comprehension, students are often asked to do a retelling of what they read. Colasent and Griffith (1998) found in their study that thematic stories were easier for students with Autism to do oral retellings. Thematic stories were presented by giving students three stories that had to do with the same topic (Colasent & Griffith). They also describe that students with Autism were likely to be more successful with retelling a story if they were given an opportunity to write or draw about the text first (Colasent & Griffith). Students even appeared to be more successful with these themed units in answering literal and personal opinion questions, such as questions about specific events and favorite elements of the stories (Colasent & Griffith).

Comprehension can also sometimes appear to be taking place with students who have Autism, when what is really happening is echolalia. This process of imitating a series of words or phrases is identified by Akin and MacKinney (2004). They describe how rote memory can be utilized to make it appear that they really understand a concept or text, when in reality they have not actually associated meaning to what they are saying.

Broun (2004) poses a series of suggestions for comprehension instruction. First, she describes that for students who have Autism, it is likely that their fine motor skills may make writing difficult and that written comprehension may be more successful if done with a keyboarding program instead (Broun). She further states that comprehending material around a student’s interest areas may help them to be more successful in demonstrating this reading skill (Broun). “When the purpose of reading is specifically to evaluate comprehension, begin by using stories one or two grades below the child’s decoding and word recognition level” (p. 39) is another recommendation by Broun. Repeated readings can also be helpful for building comprehension for students with Autism, as well as the use of videos that present the story and
copies of text for when other students are reading (Broun). These suggestions build on the visual strengths of students with Autism. For comprehension tests, Broun also suggests simple formats that involve true and false questions, or multiple-choice formats, or even yes or no questions that are less open-ended. Finally, she points out that due to the social understanding problems that are likely to exist with Autism, questions that ask how a character feels, or how a character’s expression makes them look, may be too difficult to interpret correctly and should be avoided (Broun). These kinds of interpretive questions are likely to be the most difficult type of question to answer because of the social understanding that they require.

Questions of comprehension that require the use of prior knowledge, such as inference questions are particularly difficult for students with Autism for another reason. O’Connor and Klein (2004) describe how students with Autism struggle to monitor their own comprehension and, as is the chance with all students, may not have the right background knowledge. Yet, when they do have the right background knowledge for comprehending a piece of text, because of their lack of comprehension monitoring, they may not be able to apply the prior knowledge or recognize the importance of bringing out that prior knowledge (O’Connor & Klein). Walberg and Magliano (2004) suggest based on their research findings that “readers with Autism may benefit from reading instructions that facilitate their ability to activate and use relevant background knowledge” (p. 136). They further describe the importance of making sure that lower level literacy skills are developed before these kinds of strategies are taught (Walberg & Magliano). Following an order of progression from simple to more difficult concepts will naturally ensure that a student with Autism experiences success and a sense of accomplishment in literacy practices.
Summary

No matter the focus point, area of strength or weakness, one practice must remain constant. Although students with Autism share common characteristics, they are not all the same and require different instruction. “Treatment must be individualized and tailored for each child. Treatment [or instructional] decisions should not be based solely on what the teacher or therapist knows how to do, what the clinician likes, what the parent wants, or the latest fad” (Shreibman, 2005, p. 251). Instructional decisions can include all of these resources, but must think of the needs that are determined by the child’s needs first.

The research identified in this chapter outlined a great number of suggestions for the environment, social and behavioral aspects, communication elements, and material and resources recommended around reading instruction. However, finding literature based on teaching the five identified areas of reading; phonemic awareness, phonics, fluency, vocabulary and comprehension, to students with Autism was significantly lacking. Many studies addressed comprehension, and some with recommendations based on studies that included only two or three students with Autism. Some studies even indicated that their findings were inconclusive and did not answer the question that their research was seeking to solve. These studies were not included for the lack of data that was presented or incredibly small number of participants. In the research that exists, some questions arise with where they may seem to contradict one another, such as if phonemic awareness skills should be taught or if breaking apart words is too difficult a task for students with Autism. Also, words seem to be able to be broken down with success, but only if they are in the study of onset and rime. Teachers and parents must be left with a great number of questions upon reading the literature themselves.
In summary, there is no complete definition of reading instruction for all children with Autism. Yet, by studying current information, flexibility to try new methods, and awareness of the student’s needs, successes are bound to take place in teaching reading to a student with Autism.
CHAPTER III. METHODS AND PROCEDURES

With the research topic being pursued in this thesis, a number of data collection strategies were employed. A mixed-method approach, utilizing qualitative methods as well as quantitative survey methods equally created the data collection process. Through this combination approach, a substantial amount of complete information has been gained and triangulated to the gathered literature research. Triangulation is a process where data is gathered from multiple sources to add to the validity of the information provided (Mertler, 2006). These means have all worked together to answer the research question, which is: What are the best practices for teaching students with Autism to read in an inclusive classroom setting?

Methods

In Chapter 4 of his text, Mertler (2006) describes that qualitative data collection involves a long in-depth study, whereas quantitative data collection is short and covers a lot of breadth. Thus, in combining these methods, a wide range of substantial findings were able to be determined. The following sections will describe in more detail the methods and procedures for this study and for how the data were collected and analyzed.

Research Design

This study was created with the purpose of finding practices for future implementation in any classroom, where students with Autism are learning to read. Mertler (2006) identifies this form of research, known as Action Research, as a means by which teachers can analyze what is taking place in their own classrooms to make them better and more effective learning environments. There are a series of steps that make up this process of research. They are creating a topic of focus, gathering information on it, studying and interpreting the collected data and deciding on a plan of action to take (Mertler). For this particular study, data were collected
utilizing a mixed method of qualitative and quantitative measures. Final recommendations exist in the later chapters and it is hoped that they become practiced in the classrooms of those instructors who read this study.

As previously mentioned, the two research strategies employed for this study were both qualitative and quantitative. Quantitative data collection is usually the means by which statistics are gathered. The information that is being researched is generally attached to numerical values that can be averaged, tallied, organized and then synthesized to answer questions about how much of something increased, decreased, or stayed the same. Usually the manipulation of variables are included creating an experimental research design. In this study, quantitative data collection was utilized by giving an interview, a survey to the reading teachers, and observing their teaching practices. The observations even included a field notes form for keeping a written record for how reading was being taught. Next, those instructional practices were coded and charted to find what occurred most frequently and compared to the literature research compiled in Chapter 2 of this study.

Qualitative data collection, unlike quantitative, does not involve numbers. Rather, qualitative measures are usually written narratives of observations of what is taking place, the observer is usually not involved in the study, and there are no variables being manipulated. Rather in this study, the observer was only an instrument for gathering information. The research takes a format that is more openly interpreted and organized, all-the-while keeping in mind that the question could be answered in a number of ways. Theories are usually a part of what guides this type of research, while in quantitative collections, the answers create the theories. It might be wondered how this study has taken on qualitative data collection? The answer is simply, through observations, part of the survey, and the interview transcripts. The interview began the data
collection process, providing valuable information about the school and recommended practices. From there, surveys were given to the teachers, as noted previously, and then observations took place. The field notes form was also been utilized to track notes throughout the observations. More detail as to the kinds of questions and to whom they were given are provided in the following sections of this chapter.

**Context and Participants**

The focus location for research and data collection was the Metalmark School (pseudonym) in Ohio. This school specifically opened its doors for children with an Autism Spectrum Disorder (ASD). The location of the school is in a large city amidst a population of around 300,000. A total of approximately 50 students were being taught during the 2006-2007 school year. This large sample is the exact reason for why this location has been selected for studying literacy practices. Also all of the students presented a wide range of ability across the spectrum and all of them had literacy related learning goals.

The individuals involved in gaining information for this study were the administrators and the reading teachers, all of whom made up the participants in this study. The administrator participated in the interview and those data were recorded and transcribed, followed by the tape recording being returned to them for their own records. Afterwards, surveys were given to the teachers involved in literacy instruction. Those surveys (to be further identified in the next section of the chapter) were then gathered, read, coded and analyzed to provide the recommendations for reading instruction. Finally, those same teachers’ literacy instruction practices were recorded on the observation field notes form, (which will be included in the following section) and coded. Although the students had been in the rooms that were observed, the researcher had not participated in any part of their school day with them, so they are not
considered participants in the study. The students in the classrooms were not a focus of this study; only what the teachers were doing to help them learn. However, knowing that the students represented a range of ability across the spectrum does help to demonstrate that the instructional recommendations that are gathered do not apply to just one area of the Autism Spectrum or one level of ability.

Instrumentation

To answer the important question of how to teach students with Autism to read, three main strategies have been used. The combination of qualitative and quantitative data has been collected through an interview, surveys, and observations. The ways that each of these methods had been practiced at the Metalmark School are described in the following sections.

Interview

The person who had been interviewed is the education director of the Metalmark School for children with Autism. The interview began by asking 10 main questions and a series of sub-questions (see Appendix A). Though this may appear to be a structured interview, as Mertler (2006) describes, the method of asking these questions had actually been semi-structured. The specific questions asked created a solid basis for some of the inquiries that may have arisen in addition to these. Clearly, in this early part of the data collection process, it cannot be expected that all of the research would yet be known, so all of the necessary questions were likely to be unknown until the interview commenced. Also, much benefit could have been obtained from the researcher being asked questions throughout the interview. Mertler suggests learning can take place for both individuals involved with no specific person dominating the conversation. The initial questions had been created as a semi-structure, so that the responses could lead to more questions and so on, yet the final questions had purposefully been designed to be open-ended.
Additionally, the interview was recorded for later reference to obtain a complete and accurate transcription. This element of the data collection process had been agreed upon in advance with a signed consent form. Upon completion of the interview, the audiotape was stored in a locked box when not in use, along with the permission forms identified further in this chapter. Once the interview had been transcribed, the audiotape was then returned to the director to either keep or discard.

The rationale for the interview questions is identified in the following paragraphs, with each question number, to easily reference the questions in Appendix A. With the first question, the goal had been to understand the background of the individual being interviewed and some information about the school. Depending on the amount of education for working with students who have Autism, licensure in the field, or if he/she mainly had administrative training, this could all greatly impact the interviewee’s responses. If he or she taught children with Autism, multiple viewpoints could then be presented and benefit the conversation in a different way, from the perspective of an administrator and a teacher. Knowing the level of education and training the administrator had, provided credibility to recommendations that were made at a later date.

The second question was for discerning if children identified with a certain kind or severity of Autism was admitted to the school. This information could have greatly impacted the research and changed the question to possibly only making recommendations for children with high-functioning Autism, for example. To the same degree, if there were high percentages of students with an additional disorder; such as depression, the accommodations that are witnessed in observations or the recommendations that are made in surveys could have been greatly
influenced by that information. Thus, the implications for the inclusive, general education classroom would have been derived with those variables in mind.

If the Ohio English Language Arts Academic Content Standards (Ohio Department of Education, n.d.) created the curriculum, then a clear framework could be identified and made known to the educators who view this research. The third question identified what guided the curriculum. Even for a teacher in another state, the basis would roughly be the same; state mandated standards. However, because Metalmark is not a general education school, it was expected that if the state standards are in use that it was with a great amount of modifications and accommodations. Then the question becomes how these modifications and accommodations are decided upon? All of the students may have been on an Individualized Education Plan (IEP) but are there any common literacy goals among all of the students? These questions were all answered by this section of the interview.

With the fourth question, understanding the dynamic of how the classrooms were organized was likely to lead to recommendations for instruction. If the respondent indicated that there was a philosophy of only a certain number of students per teacher then this could have some direct implications for how the curriculum was to be administered; especially if this was dependent on the subject matter, like reading. Also, if there were specific teachers of reading instruction, this information would be needed for determining who to give surveys to later on.

The questions around number five assisted in learning about the teachers’ training at the school and if related to reading. Also, if there was information that differed between the two types of Special Education licensure, it would need to be identified. Depending on the severity, some students’ needs may have been quite different than those students who are high-functioning, (which depended on the answers gleaned from question number 2).
Question number six inquired about the percent of students who read may not have been necessary but the sub-questions were important for indicating other valuable data. If very few children were able to read, there may not have been an established curriculum, or the modifications may have been unique to those students alone and not common practice. If all of the students could read and/or write, then there would be much to be recorded during the observations.

Question seven asked about how the students’ progress was measured. Assessment may have only been based on the students’ individual IEPs if they all had them. However, it may also have provided clues about the structure for what, when, and how the material was taught. This may have even included reading instruction directly, or related implications.

Much of the data gleaned from question eight helped to directly ask about reading instruction and provided clues of what to look for in the observations. These observations were not used to determine how theory compares to what is being practiced, but rather identified common trends of what seems to be working in the classrooms. The format of this question was open-ended and likely to lead to a conversation instead of just a single answer.

With question number nine, any specific suggestions that someone in this concentrated environment could apply to an inclusive classroom setting were sought out. If there were key suggestions, they would be related to questions found in the surveys and information recorded during the observations. This data were then able to be triangulated to the literature research. This then identified the common recommendations for answering the research question.

Similarly, with the last open-ended question, the researcher was looking for as many recommendations about reading instruction. The administrator may not have been able to provide an exact answer to this question. However, the tenth question was likely to prompt a
discussion of who could be asked, what practices she did not recommend, and other valuable insights. The interview did not take more than an hour and a half to complete and was tape recorded all the way throughout for transcription purposes.

Survey

A teacher’s extra time is very limited from the planning, implementation and evaluation of their day; not to mention, conferences, meetings, and other personal responsibilities. In taking these facts into consideration, a brief letter had been created (see Appendix B) that described a streamlined survey (see Appendix C) for the teachers of reading at the Metalmark School to complete. The letter elaborately identified the directions for proper submission, ways to maintain anonymity, and the researcher’s contact information if questions happened to arise.

The style of the survey questions was a combination of a number of methods. First there were a few open-ended questions, with short answers, and a number of closed-responses where the participant was to circle a choice from about five options. One question used a Likert-type scale to ask about the perceived importance of literacy instruction in these teachers’ classrooms. This type of scale required a response on a continuum (Mertler, 2006). These initial inquiries were short in nature because they were only to provide background information and not intended for answering the overarching question. The final questions were much more open-ended for gaining uninhibited information on suggestions for five areas of reading instruction: phonemic awareness, phonics, fluency, vocabulary and comprehension.

The survey (See Appendix C) consisted of ten questions overall, so to not take too much time for the teachers to answer. They were given to the school with two weeks for the surveys to be completed. The questions should not have taken more than 30 minutes to answer but could have taken less depending on the detail provided by the instructor.
Observations and Field Notes

The final method of data collection utilized for this study was observations. To provide some structure to this third piece, the researcher arrived at the school with a form for field notes. Shown in Appendix D, this figure created a format for recording data such as technological tools, other specific materials, or the ways literacy was presented to the students. This chart was likely to also identify literacy practices within the five areas: phonemic awareness, phonics, fluency, vocabulary and comprehension, outlined in the Put Reading First manual (Armbruster et al., 2001). Nonetheless, the focus remained on the teacher, instead of observing the students, who are not among those who were participants in the study.

For the participants involved in this study, two informed consent forms had been created. These forms were given to the administrator who completed the interview and the teachers who completed the surveys. Appendix E, (for the administration interview) and F, (for the teachers’ survey) show the two consent forms that explain the purpose of the study, the description of voluntary participation, a guarantee of confidentiality and anonymity, offer for findings to be made known and formal agreement to participate (Mertler, 2006). Both of the consent forms were designed from a model in Mertler’s text. These forms were created to inform the participants and establish an ethical and sound study by abiding by the principle of accurate disclosure.

Procedure

After reviewing a great amount of the literature related to reading and Autism, one particular study was found to have very similar methodology to the one conducted here. Akin and MacKinney (2004) were in search of the best ways for the libraries to service children with Autism. “Results were gathered from interviews with autism specialists, a survey, and an
analysis of literature on literacy and autism” (Akin & MacKinney, p. 35). At the Metalmark School for children with Autism, there is one main administrator who was interviewed for obtaining necessary background information about the school and its curriculum for reading instruction. Also involved were the teachers who worked with the students each and every day guiding their literacy performance. These are the Autism specialists who were studied, just as Akin and MacKinney had done, for advice on how to actually teach children with Autism to read. Their data were collected by the means of a survey and observations. However, these methods could not be completed in of themselves. Rather, some preliminary work had to be done which is identified in the following paragraphs.

Upon obtaining approval (January, 2007) from the Human Subjects Review Board at Bowling Green State University and the committee members who also reviewed the proposal of the study, contact with the Metalmark School officially began. The first stage, gaining entry, took place in the middle of January where the researcher outlined the study to the administration at the school and gave the consent form (Appendix E) for doing the initial interview. Next, permission forms were given to the administrator of the Metalmark School for the reading instructors to decide if they wanted to participate in the study. They were given time to read over the study information and reminded to contact the researcher with any questions about what they were voluntarily committing to do.

After the preliminary work was done, the interview took place with the format represented in Appendix A. Only one day was needed to complete the interview and about one and a half hours. The number of questions was 10, so time only depended on the amount of questions asked of the Interviewer. At no time was anyone asked to identify his/her name or the name of the school, but they were encouraged to utilize the pseudonym for the purposes of
anonymity. The interview was recorded, upon the interviewee’s consent with protocol created for continuing confidentiality. First, the tape was only used by the interviewer and when not in use, was kept in a locked box. After the initial meeting, the tape was replayed and transcription was started. Before transcription was finalized, the process of member checking was made available where the administrator reviewed the responses she gave and what information she wanted to be included in the final study. Member checking is a term that comes from Patton’s text on qualitative analysis (1990). On January 17, 2007, the tape was returned to the participant for her records and purposes, concluding the interview process. Immediately, these data were reviewed and analysis could begin.

The second part to this research study was the survey portion. Upon the teachers’ agreement to voluntarily participate in the study, surveys (see Appendix C) were given in an envelope to the administration of the Metalmark School to be distributed. There were nine surveys handed out for all of the instructors who agreed to participate. With each survey, a letter of introduction (see Appendix B) which explained the process and protocol for maintaining confidentiality and a sealable envelope was provided to each participant. This letter was to be returned with the survey upon completion to maintain confidentiality in the study. The tentative amount of time given for completion was just over two weeks, with three reminder notices distributed to all of the participants by the administrator. The notice simply reminded them to return the survey at their earliest convenience on or before February 2, 2007. The notice also included a memo to disregard the message if the survey had already been returned. This could have taken place since those who had or had not returned it were not recorded in any way in a record or log to maintain anonymity and confidentiality. The designated method for returning or turning the surveys in, was to put them in the sealed envelope, (with the date of completion
written across the sealed flap) to a large brown envelop held by the administrator. The procedure of writing the date helped to make sure each envelope had not been opened or tampered with.

The survey consisted of only 10 questions, in a variety of formats and should only have taken about 30 minutes to complete. All returned surveys were collected immediately on Friday, February 2, 2007 to try to prevent them from being lost or forgotten.

The third part of the procedures to this study was the observations of the classroom instruction related to reading. The Observational Field Notes, (see Appendix D) allowed for all of the data to be recorded. Everything from the environment literacy instruction was taking place in, to all of the literacy practices seen were recorded in the Observation Field Notes form. Again, it was hoped that data would be collected in each of the five areas of reading outlined by the Put Reading First (Armbruster et al., 2001) manual, paralleling the organization of Chapter 2. A total of five days were devoted to observations of 14 classrooms. These observations were comfortably arranged by the administration and teachers based on their schedules within those five days. During the observations, the researcher did not take part in any of the classroom activities to keep from disrupting the lesson or disturbing the students in the rooms. The student’s actions and reactions were not observed, rather only the teacher’s instructional practices.

All of these data were then compiled and organized for coding the instructional practices. From there, the material gathered from the Metalmark school was related, (not compared) to the Literature Research from Chapter 2. A final analysis was then made from the common threads and an explanation of instructional recommendations for teaching students with Autism to read was made in full. The rest of this chapter serves to clarify what specific information had been gathered and how it was to be studied to create the final recommendations.
Data Collection

By an interview, surveys and observations, information had been sought out as to the best practices for teaching students with Autism to read. In this complex inquiry and methodology, there was a specific system for the data that had been collected to make the answers obtainable.

The interview (see Appendix A) that had taken place as the first part of the data collection process was given to the administrator of the school. The information that was obtained served as a basis for understanding the school environment, as well as another opportunity to gain perspective about teaching reading to students with Autism.

The survey contributed to all areas of reading instruction since all of the categories were represented with inquiries to the teachers about strategies for meeting each of those specific goals. The survey, (see Appendix C) was made up of questions that also identified the background of each teacher’s training to help explain where their recommendations may have been coming from. For example, if there was a specific kind of licensure, such as mild to moderate special education degrees, their responses may have been different from someone who was certified in speech pathology instead. Once all of the surveys were collected, trends started to appear and then coding began to take place. This system will be explained in more detail in the following section of this chapter.

Since reading is a complex process, the subject had to be broken down into manageable pieces for determining different ways to help potential readers succeed. The *Put Reading First* (Armbruster et al., 2001) manual helped to provide a breakdown for how the law defines reading instruction. There are five main categories for teaching reading: phonemic awareness, phonics, fluency, vocabulary, and comprehension (Armbruster et al., 2001). In this guide, there are specific means identified for teaching each element of reading instruction. These guidelines are
what served to organized part of Chapter 2 and organized the coded data. When a specific task was observed, for instance sound blending to solve an unknown word, this would relate to phonemic awareness. Data could then be noted on the Observational Field Notes sheet, (see Appendix D). In this manner, literacy practices for each element of reading could be recorded; unless not observed.

The last method for collecting data was through studying the literature research. Within the studies and theories that had been placed on paper before, suggestions for teaching students with Autism were compared and related to the data that were compiled through the visits to the Metalmark School. Taking information from this mixed methodology collection process provided a chance for similarities to be noted and have become the significant instructional suggestions. The manner in which this data were tallied, coded, studied, and ultimately formulated the answers to this research question will be identified in the next section of this study.

Data Analysis

In deciding what recommendations were to be made for teaching reading to students with Autism, a combination of qualitative and quantitative research methods had been put to use. This mixed methodology employed the tools of an interview, surveys, observations and field notes, and a study on previous research on students with Autism. The information that was obtained provided measures of relationships and similarities which are also known as descriptive statistics. A strict plan for analysis was then used to transform the data into results.

First, the survey and observation checklist represented measures of quantitative research. These methods also represented an area of data collection known as descriptive statistics. In descriptive statistics, percentages of responses and frequency counts are how information is
obtained providing measures of relationships within the given information. With the survey, (see Appendix C) some of the data that were presented best by percentages were numbers one through seven. These questions had been seeking more closed responses and used the Likert-type scale of rating. Such responses were able to be gathered for similarities or frequent answers and presented, such as if 90% of all teachers surveyed responded that comprehension was the easiest concept for students with Autism and 85% stated that fluency was the most challenging. Then, in the results and recommendations, more of a focus could have been placed on fluency, though all areas of reading instruction were addressed. The method of this study that required frequency counts was with the Observational Field Notes (see Appendix D). The data that were gathered would be coded, listed and then tallied. These frequency counts helped to identify similarities among different classrooms or teacher’s reading instructional methods.

The second methodology taking place in this study, qualitative measures, was completed by the interview (see Appendix A), and Observation Field Notes (see Appendix D). Most of the data gathered by the interview could not be given numerical value. However, the answers to the questions could be and were coded. The process of coding was done through a system of similar topics being grouped and highlighted by the same code or color upon transcription being completed. Similar trends in the Observational Field Notes utilized the same coding system so the data could be compared and related.

The coding and grouping system emerged as the data were collected and was not decided upon in advance to avoid any preconceived ideas going into the observing and gathering of data. Nonetheless, some codes were likely to be used based on the types of questions that were asked or instructional elements observed. The anticipated codes based on the information that was likely to be obtained were the five main areas of reading and possibly other elements involved in
the teaching of reading, such as materials, technology and the environment. The following, Table 1, outlines the color-coding system that was utilized for identifying each of the nine total areas that were observed.

Table 1 Coding Chart

<table>
<thead>
<tr>
<th>Color</th>
<th>Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pink</td>
<td>environment</td>
</tr>
<tr>
<td>Blue</td>
<td>behavior and social skills</td>
</tr>
<tr>
<td>Gold</td>
<td>communication</td>
</tr>
<tr>
<td>Green</td>
<td>materials and resources</td>
</tr>
<tr>
<td>Orange</td>
<td>phonemic awareness</td>
</tr>
<tr>
<td>Light Green</td>
<td>phonics</td>
</tr>
<tr>
<td>Red</td>
<td>fluency</td>
</tr>
<tr>
<td>Teal</td>
<td>vocabulary</td>
</tr>
<tr>
<td>Yellow</td>
<td>comprehension</td>
</tr>
</tbody>
</table>

The color-coding system helped to identify the various areas of reading instruction and the related areas to reading instruction. Colored pencils were used to underline any of the nine categories that were represented in all of the typed observations. If a particular element could have been under more than one of these nine categories, it was underlined by more than one color.
Through this coding system, a possible limitation of this study was addressed and partially eliminated. Since the researcher was not a participant in the classroom, it was not possible to interact with the instructor and determine exactly what the objectives to each lesson were and thus what category it was sure to fall under. By placing the observed elements under more than one category, the researcher was not deciding what the instruction was, without knowing the teachers plans. An example may be if the student is writing spelling words in an activity. This activity could be a phonics lesson, if word patterns were being studied in the spelling words. This activity may also be a vocabulary lesson if definitions of the words are being discussed or presented at the same time. By identifying such an example under two categories, the researcher could determine more information, and not assume the teacher’s intent for the lesson. The surveys and interview were also color coded. When determining which of the categories this data fit under, the process was found to be easier since the question usually directly related to a specific category of reading or related item. An example question would be number nine of the survey which requests the instructors’ recommendations for each of the five areas of literacy instruction. Those responses were already coded and simply needed to be included in the next portion of the data analysis.

The second half of the data analysis was where all of the coded information was then listed under each of the nine categories expressed. From there, frequency counts, or tally marks were recorded for themes that emerged for each element. Numerical data could then be attached to the observation field notes and part of the surveys. The data that were collected in numerical form were brought into charts and tables and are included in the following chapters of this thesis.
Summary

Through a mixed method study, as much information that could be obtained was passionately sought out from the administration and teachers of students with Autism to determine the best practices for reading instruction. Through an interview, survey, and observations at the Metalmark School, trends were studied, suggestions for instruction were considered, and the data were coded and connected to the information found in studies that had been done before. From four sources and means of data collection, an analysis took place through percentages, frequency counts, coding and grouping the findings. From these means, the final recommendations and best suggestions for teaching students with Autism to read were made.
CHAPTER IV. DATA ANALYSIS AND DISCUSSION OF RESULTS

The purpose of this study was to find the best ways to teach students with Autism to read in an inclusive classroom setting. To find the answer to this question, a study of the current literature began to look for current practices for the areas around reading instruction for students with Autism and reading instructional recommendations. Through thorough examination of a large number of articles and studies, a problem arose. Not all areas of literacy instruction seem to be represented in the literature and oftentimes, the studies only involve one or two participants who have Autism. The problem that this poses is with the likelihood of such a small sample size making recommendations that are applicable and successful with a whole population of learners with Autism. To solve this problem, a school was sought that had a number of students with Autism enrolled and literacy as a core element to their curriculum.

This school was found and the teachers and administration who are experienced in working with this large population of students with Autism were interviewed, surveyed and observed. The data were then studied to find the common practices and answers to the research question at hand. The following chapter outlines the data that were collected and the results that were found.

Discussion of School and Participants

The Metalmark School (pseudonym) is located in the middle of an urban area with approximately 50 students currently enrolled. The students are admitted on the basis of a lottery system and have a range of ability levels. During the interview, the administrator explained that all of their students have been diagnosed with some type of an Autism Spectrum Disorder, except for one or two. These few students have been enrolled based on how well they seem to respond to the instructional system put in place for their peers, according to the administrator.
Nine teachers and a larger number of paraprofessionals made up the educator population at the school with one administrator in charge of curriculum and instruction. These individuals were the participants of the study. The administrator was interviewed, and the teachers were surveyed, with an 89% return rate, and observed. The total number of visits into the nine classrooms was 13, over the course of five days in the school. The observations were scheduled around the teachers’ schedules and plans as well as the researcher’s availability.

Data about the classrooms and the learning environment are discussed further along in this chapter. All of the data were then gathered and studied once research was concluded and created the data analysis portion of the study.

Data Analysis

Once all of the research data had been collected at the Metalmark School, it was studied and analyzed to determine the overall recommendations and suggestions for teaching students with Autism to read. The interview, surveys, and observations were then typed and coded through a system to determine similarities and common elements that appeared in all or most of the classrooms. Once all of the data were typed and printed, a manual coding process started.

The data showed trends similar to the organization of Chapter 2. There were four categories that related to literacy instruction, and five categories that could be found to make up the reading practices. The four categories that seemed to relate to the literacy practices were: environment, behavior and social skills, communication, and materials and resources. The five elements that made up the observed reading practices were: phonemic awareness, phonics, fluency, vocabulary, and comprehension. To determine where these pieces actually emerged in the observations, the data were read and underlined in color codes.
Once all of the data were color coded, similar, related and reoccurring practices were sought by creating a list for each of the nine categories identified. For instance, environment was placed at the top of a page and all of the elements from the observations that were underlined in pink were recorded below it. If an element appeared more than once, tally marks were recorded next to it. Numerical data could then be pulled from the list and placed into charts. These tables are included in the following sections of this chapter. Through this dual method of coding and listing to analyze the data, answers to the research question began to emerge.

**Results Gathered on Related Areas of Reading Instruction**

The data analysis provided detailed information in two main areas, paralleling the literature review in Chapter 2. This first category of observed practices were the four areas around and relating to reading instruction. The environment in which the student is learning, behavior and social skill management and interaction, communication between the teacher and student, and the materials and resources that are brought into the classroom all have a significant impact on the literacy instruction taking place. The following sections report on the trends and similarities that were found in the research site in each of these four areas around reading instruction.

**Environment**

There were nine classroom settings that were seen during the observations at the Metalmark School. Each room varied in a number of ways such as the placement of desks and bookshelves and wall decorations. However, they all had some similarities that were easily noted. On average, there were three paraprofessionals in each classroom and always one licensed teacher. These groups of instructors seemed to act as one unit, using the same language for the tasks that were given to the students and even singing all of the morning songs together in one
room. This team effort established some consistent elements to the environment in which the
students were learning.

Some of the factors that appeared in each of the classrooms were pull-out sessions with a
specialist and lessons that took place in 15 to 20 minute increments. These lessons almost always
seemed to be timed with a timer visible to the students to guide the time slots. All of the teachers
and paraprofessionals adhered to this schedule, which was also posted on a wall in all of the
classrooms. Each day, there was a scheduled silent reading block for one half hour in many of
the classrooms, which may have been the longest activity time of any of the others.

When material was presented to the students, the information was usually very simplified
and specific. If the student appeared to struggle with the lesson, he/she would be led to success
on the last try with the teacher’s guidance and sometimes physical help. All of the teachers
seemed to set up this environment for success. A number of the teachers were observed asking
their students if they needed a break when they appeared to reach a level of difficulty with a task.
One teacher mentioned that homework was regularly assigned in his room, usually two times a
week on Mondays and Wednesdays. No matter what classroom the teachers and
paraprofessionals were in, they all seemed to communicate in the same ways and utilize the same
basic practices. For those few students who changed rooms, which was described in the
interview with the administrator, they would not have as much of a struggle adjusting to the new
environment with how similar they appear to be.

The actual physical spaces appeared to have some similarities as well. The following
figure identifies a sample classroom layout.
Figure 1 Sample Classroom Layout

- Listening Center
- Fine Motor Center
- Student Desks
- Instruction Area
- Reading Program Area
- Chalkboard (Black) and Bookshelves (Gray)
- Computer Center
- Group/Independent Play Area
- 1,2,3 Drawer
- Independent Writing Center
- Silent Reading Center
- Teacher Desk
- Chalkboard and Bench
This sample diagram shows the layout that was similarly represented in all of the nine classrooms with variations to a small degree. The gray boxes represent bookshelves that contained a great number of books and materials for the lessons that were taught throughout the school day. These bookshelves also seemed to serve as room dividers and possibly aided in keeping students from being distracted. The sets of student desks between the shelves were frequently used for one-on-one instruction, including literacy activities. A silent reading center appeared in most of the classrooms in a cozy corner or space with different materials to sit on from bean bags to pillows. In the independent work area, students would usually work on their own completing a handwriting or a spelling activity. Next to this student desk was usually what was called a 1, 2, 3 Drawer. The student would start in number one and could independently complete the activities in each drawer and turn them in to the top of the set of drawers. The administrator described these as having a way of letting the students know that they are not working on an activity forever, but that there is an end in sight and an organization. The activities were usually short and could be completed in a short amount of time.

The rest of the centers involved activities that did not directly relate to reading instruction, except for the larger group area in the middle of the room. Here the teacher could read to the group of students together or have the students gather for small group work. The long black lines were where the chalkboards may have been located, which were frequently used for word walls, charts and schedules of some kind. Under the chalkboard on the right was a bench that was used in one classroom. Above the bench on the wall were student names; for activities or transitions where students needed to line up, they could easily find their name and sit down while the class became ready. This organization technique seemed to be highly effective for gathering the class with ease.
Throughout the observations, there were some environmental factors that frequently appeared in the coding process in the data analysis. The following Table (see Table 2) identifies the percentages for how frequently these items reoccurred during the visits in the classrooms.

Table 2 Environment

In this chart, certain frequent elements in the learning environment are identified. One-on-one instruction was the item that was most often noted during the observations. Almost a quarter of the total elements that fell under the category of the classroom environment were individualized instruction. A highly important note with this chart is that it does not suggest that for 75% of the time, one-on-one instruction was not taking place. Rather, this pie chart shows the percentage of occurrences that each of these elements appeared in the observations.

Another large percentage on this graph is the scheduling for the school day, and how the environment was organized to keep on schedule. Student picture schedules were posted in almost all of the rooms for which the students were usually responsible. For example, on one classroom wall,
pictures of the day’s events were listed under each student’s name. As a student entered a new station or activity area, he/she would take that picture and Velcro it to the matching picture in the center that he/she was going to. This way the students could check into each center or station as they went along through the day. The students always knew what to expect from their day, which was a deliberate plan for these students, according to the administrator. With the students knowing their schedules, there was less stress and anxiety throughout the day.

In keeping with some of the daily routines in the classrooms, repetition was one of the most frequently observed elements throughout each day. Whether a song was sung twice, vocabulary words read four times each, or verbal requests stated again, there were a large number of repetitive occurrences in each classroom. Within the same percentage as repetition, positive remarks and comments to students were also quite frequently observed. Students were often encouraged to keep going or reminded that they could do something that they found difficult. They were told that they were smart and praised for completed tasks. There were no instances of the opposite taking place during the observations. The teachers and paraprofessionals were all very positive and encouraging with what they said and how they acted with the students throughout the day.

Some of the other elements that did not appear frequently enough, or did not fit into tally marks are what is shown by the 19 % with the other category. These items were in descriptions of the physical classroom environment and the aforementioned descriptions of the paraprofessionals and teacher consistency and communication. Group instruction was noticed only a handful of times, shown by the 6%, and was in situations where the teacher was reading to the class or assisting the students with small group activities. In one room, there were also small reading groups, and that added to the number of observed examples of students not working one-on-one with the teachers and paraprofessionals.
Another element that was frequently noted was tactile lessons that seemed to utilize a number of the students’ senses and mobility. Whether it was incorporating sign language with text or spoken words with pictures, it appeared that most, if not all of the lessons offered more than just one approach to instruction. All of these factors helped to establish the environment in which the students’ learning was taking place. The materials and resources section of this chapter identifies more detailed pieces to the students’ surroundings, but first similarities were outlined with behavior and social skills.

**Behavior and Social Skills**

For students with Autism, social skills and elements of behavior can be challenging areas. For many students, they prefer to be solitary or are not interested when others are in the same room. They may not be used to interacting with people around them and all of these factors can be potentially challenging for these students and their teachers. Helping students with Autism understand how to participate with those around them is one category that was frequently identified throughout the observations.

One of the most obvious categories with behavior and social skills would appear to be managing student behavior. However, during the observations, the ways that behavior was modeled by the teachers and paraprofessionals were also noted. How responsibilities were given to students was identified as well as the behaviors that the teachers and staff represented were found as well. Some materials are even included in this section for being directly related to promoting positive behavior and social skills out of the students in the classrooms. The following Table (see Table 3) represents the percentages that certain key elements seemed to appear during the observations.
Any part of the school day that hinted at social interaction between the teacher and student, student and student, and teacher to teacher were recorded and tallied. There were a number of instances of group work, although this was not nearly as common as individual instruction. Groups were usually assembled for stories being read to the class or reading group meetings from one classroom.

Teachers and staff were frequently modeling ways to interact or even demonstrating how to perform various sign language movements. Even if the student struggled to speak all or part of the time, teachers gave them training to communicate without using their voice and many were learning sign language together. Sometimes during these communication lessons, students would be repeatedly called by name until they made eye contact with the person calling them. In this way, it appeared that the instructor was teaching the student to look at the person talking to them, which is a mainstay in everyday social interaction in the western world. In one fascinating instance, a teacher actually avoided eye contact with a student because he would use her facial expressions as guides.
for determining how he would answer a question. If she showed doubt on her face while he presented a picture card to answer her question, he may decide to pick another card, not really comprehending the right or wrong answer.

One commonly practiced part of the school day was having students check their schedules. No matter what room was being observed, students were encouraged to take responsibility for figuring out what center or area of the classroom they were going to next. When this was requested, (and was done so consistently among the staff and teachers from room to room) students would report to their schedules and usually take a picture clue with them to the center. This picture would match the large picture in that area and have Velcro spaces for attaching the student’s picture. In this way, it would appear that the teachers could keep track of what stations had been attended by the end of the day.

Whenever students were able to complete a task like this, or an assignment during instruction, teachers and paraprofessionals were heard praising their accomplishments. This frequent occurrence not only seemed to be pleasing to some of the students, but again modeled positive ways to interact with others. If a student did not seem to be doing what he/she was supposed to be doing, the teacher would be quick to let him/her know to stop in a calm way and would revert to the behavior system they had in place.

One of the most frequently witnessed elements of this category had to do with managing behavior and seemed to create a very effective learning environment. Token boards, which were noticed a number of times, were a system that put the students in charge of earning bingo chips towards a specific reward. They would create sentences at the top of a small hand-held board that expressed what they wanted, such as a type of snack. Then as a task was completed or done well, they would earn a bingo chip that they could attach to their board. Once five chips were earned, a
break would be taken for the students to cash in their bingo chips and claim their reward. One teacher expressed how this system helped to extend the learning time by not always needing to provide a specific reward, but by having the students work up to a reward. Other classroom rewards included stickers for a job well done or extra computer time during their independent work. In one classroom, a movie was shown to students on Fridays for a successful week reward which usually related to what they were doing with the instructor during the days prior.

Sometimes it appeared that a student needed a time out away from the lesson for just a moment. When a teacher noticed this, he or she would occasionally allow the students to take a break and play with a toy of their choice for a moment or two before regrouping back to the lesson. One such toy was similar to a music box that appeared to help the some of the students prepare for the next part of the lesson.

In another classroom, a behavior systems chart was posted for each individual student with his or her name on the top. The charts were created to look like stop lights and if a child was doing something that he or she should not be, the teacher would request that the student move from green to yellow. The progression would then be for the student to move to red, yet it was never identified to the observer what the consequences might be for moving to the final color.

Student behaviors did appear to be addressed individually in each classroom. For example, one student seemed to prefer a certain reading program over another, according to the teacher. That teacher then made sure that even if he was the only student learning from those materials, that if he was successful, she would continue to use them. The teacher explained that this did seem to help the student be more successful. All of these social and behavioral pieces contribute significantly to the learning environment that is less visible to any observer, but could impact literacy instruction, just like the student preferring to read certain materials.
Communication

Communication taking place in the learning environment was one of the most frequently recorded traits of the nine identified in the observations. When the observer entered the room, there always seemed to be someone talking or instructing, or communicating in some way. Whether this took place in the verbal sense or through sign language, messages were being conveyed constantly. Within the witnessed forms of communication or related pieces, there were some that kept showing up during the coding and created the following Table, (see Table 4).

Table 4 Communication

<table>
<thead>
<tr>
<th>Type</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Teachers</td>
<td>4%</td>
</tr>
<tr>
<td>Repetition</td>
<td>4%</td>
</tr>
<tr>
<td>Reading Modeled</td>
<td>18%</td>
</tr>
<tr>
<td>Pointing/Matching</td>
<td>5%</td>
</tr>
<tr>
<td>Language/Communication Modeled</td>
<td>17%</td>
</tr>
<tr>
<td>Student Progress Measured</td>
<td>10%</td>
</tr>
<tr>
<td>Simple Commands</td>
<td>13%</td>
</tr>
<tr>
<td>Positive Encouragement</td>
<td>17%</td>
</tr>
<tr>
<td>Other</td>
<td>12%</td>
</tr>
</tbody>
</table>

Similar to the behavior and social skills section of this chapter, teachers were frequently observed modeling various types of communication. In some cases, teachers were reading aloud to students or groups, demonstrating what reading sounds like and modeling language. In other examples,
teachers were showing students how to sign words or phrases while saying them to and with the student. Positive and encouraging remarks given to students were also modeling language and communication, as well as seeming to encourage students’ verbal or signing participation. Nearly every time a student completed a task or did something well, a teacher was heard praising his or her successes. These were the most frequently observed samples of communication.

One fascinating dynamic to all of the classrooms was the use of very basic commands being given to the students for directions of a lesson. Not only were these simple, direct, and not easy to confuse, but they were the same commands used in every room. In some of the rooms where students were not regularly communicating, and with communication being a naturally difficult area for all of these children, teachers would be heard saying, “read”, “put on”, “make match”, and so on. These directions never seemed to be stated harshly or short, but rather specific and to the point. Usually if a student was working on a matching activity, the teacher would say “make match” to indicate that the student needed to match the cards or words or pictures. “Put on” usually stood for lining up the Velcro backs to cards to answer a question, such as pictures being arranged on a Velcro board to model what a sentence said. All of the staff and teachers seemed to put into practice these same words and phrases.

At this school, according to the administration interview, the teachers usually stay with the students for a number of years progressing with them in one classroom. On occasion though, a student moves into a different room. Consistency among all of the rooms is likely to cause that student less stress in the transition. Seven examples or 4% of the observations were of teachers all practicing the same routine. This was noted in a variety of situations, also seeming to assist with building a more consistent environment. In rooms where group activities were taking place, such as the morning songs during calendar time, all of the teachers and staff participated together. They
were not only modeling the language and music, but also helping to encourage the students to participate with them.

Another example of a procedure that carried over from room to room was progress monitoring. This constant and immediate recording of student successes and areas for further instruction were what followed any kind of lesson. Each student, in every classroom had a binder with his or her name, and sometimes picture on it with logs of various types of activities and the progress that the student was making. Almost immediately after a student read the last line of a text, matched the last set of cards, or as the timer went off for the end of a lesson time, the teachers and staff were observed recording how the students performed in their individual binder. In most of the classrooms, the teacher kept the binders in one central location. There was, however, one room where the students were given individual responsibility for bringing their binder with them to the different stations and centers as they went through the day.

This recurrent and often hourly progress monitoring was just one way that repetition was noted in the day’s events and activities. Many times, the teacher’s directives were repeated and reviewed for a student. If reading was being modeled with vocabulary words, they were usually read to the student a number of times. Matching with pictures and words, pictures and pictures, or words to words were usually done more than once. For students to have mastered a skill in one example, they had to demonstrate it without mistake four times in a row, according to one teacher referring to progress monitoring. Thus, routines were seemingly practiced a number of times to ensure understanding and student success.

Other forms of communication that were noted, in the other category on Table 4 were simply the calendar meeting times, when students would discuss the weather, the date, and attendance through singing. One resource used during calendar time was an emotions chart that
expressed the words and pictures of ‘happy’ and ‘sad’. As a student signed in for the day, he/she would point to one of the two emotions, telling the teachers, staff and peers how he/she felt that morning. This appeared to come in very handy to the teachers who sometimes were not sure how their students were doing because they would not verbally communicate.

Pointing and matching and signing were all forms of communication that helped students express ideas, answer questions, and gather understanding without struggling with language if this was difficult for them. During the interview, the administrator described that some of the students were not very verbal, but that communication was encouraged in any way it could be created. The emotions charts are one such example, along a list of other materials and resources to be discussed in the next section of this chapter.

Behavior systems and rewards charts were other forms of non-verbal communication that were placed around the room. Token boards helped students to communicate something that they wanted while the teacher could communicate a job well done by giving them a bingo chip to Velcro to the Token Board. Even the students’ snack binders, where they were encouraged to Velcro words together to make sentences about what they would like for a snack that day involved communication. All of these elements fall under the category of other ways communication was taking place, including communication for teachers in the form of charts in the centers for sequencing lessons and teaching strategies. Communication was occurring between all of the individuals in the classrooms to some degree all of the time.

**Materials and Resources**

The environment, behavior and social skills, communication and literacy lessons in general were all greatly impacted by the materials and resources that were within each classroom. One of the longest lists with the most data recorded during the observations was the materials and resources
category. So many tools, teacher-made, student-made, and purchased items made lessons take shape and learning come alive. With the variety of elements that were presented, the most useful tool for this section was not a chart, but rather a list of the items utilized. Figure 2 below, identifies as many resources as were recorded during the observation times. More resources were likely to be used in the classroom, yet these were the majority that were witnessed and recorded.

Figure 2 Materials and Resources

<table>
<thead>
<tr>
<th>Literacy Tools:</th>
<th>Behavior and Social Skills:</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Pictures</td>
<td>• Token Boards</td>
</tr>
<tr>
<td>• Word walls</td>
<td>• Squish balls</td>
</tr>
<tr>
<td>• Bulletin boards</td>
<td>• Behavior charts</td>
</tr>
<tr>
<td>• Sight words/sight word rings</td>
<td>• Musical tools/toys</td>
</tr>
<tr>
<td>• Dry Erase boards</td>
<td>• Movies</td>
</tr>
<tr>
<td>• Printed letters</td>
<td>• Stickers</td>
</tr>
<tr>
<td>• Edmark program</td>
<td></td>
</tr>
<tr>
<td>• Reading Milestones program</td>
<td></td>
</tr>
<tr>
<td>• Puzzles for matching letters/objects/words/pictures</td>
<td></td>
</tr>
<tr>
<td>• Objects for sorting and sequencing</td>
<td></td>
</tr>
<tr>
<td>• Raised letter tiles/colored letter tiles</td>
<td></td>
</tr>
<tr>
<td>• Concept circles and maps</td>
<td></td>
</tr>
<tr>
<td>• Phonics games</td>
<td></td>
</tr>
<tr>
<td>• Sentence cards</td>
<td></td>
</tr>
<tr>
<td>• Books and reading materials</td>
<td></td>
</tr>
<tr>
<td>• Alphabet poster</td>
<td></td>
</tr>
<tr>
<td>• Songs and music</td>
<td></td>
</tr>
<tr>
<td>• Worksheets</td>
<td></td>
</tr>
<tr>
<td>• Reading games</td>
<td></td>
</tr>
<tr>
<td>• Writing tablets/handwriting paper</td>
<td></td>
</tr>
<tr>
<td>• Flashcards</td>
<td></td>
</tr>
<tr>
<td>Communication:</td>
<td>Resources:</td>
</tr>
<tr>
<td>• Sign language materials</td>
<td>• Paraprofessionals, parents &amp; volunteers</td>
</tr>
<tr>
<td>• Emotion charts</td>
<td>• Teacher instruction charts</td>
</tr>
<tr>
<td>• Student job chart</td>
<td>• Teacher training opportunities</td>
</tr>
<tr>
<td>• Restroom and drink chart</td>
<td>• Dictionaries</td>
</tr>
<tr>
<td>• Attendance chart/system</td>
<td>• IEPs</td>
</tr>
<tr>
<td>• Tools to model speech</td>
<td></td>
</tr>
</tbody>
</table>

Materials:
• Binders for student records
• File folders
• Velcro
• Calendar
• Snacks
• Student pictures
• Center pictures
• Timers
• Ziploc bags
• Headphones
• Student name labels
• Self-correcting activities
• Tactile materials
• Globe/maps
• Clipboards
All of the materials and resources listed above fell under five main categories. First were the literacy materials, then communication tools, behavior and social skills supplies, and general resources and materials. The items that have been left from the list are those that have already been described in the Environment section of this chapter.

The most represented area of materials in the classrooms seemed to be the literacy tools. Some of these supplies are fairly common in classrooms and simply are listed because they were observed in practice. Handwriting paper and plenty of books and reading materials are staples in just about any classroom. Yet, the use of pictures was placed under literacy because they were frequently matched up with words and helped students learn vocabulary, or they may have been brought together for a student to demonstrate that he/she understood what a sentence was describing. Letters, words, and sentences in a variety of formats were often used to teach phonics lessons, vocabulary lessons and comprehension lessons, which will be more clearly identified in the later portions of this chapter.

Some of the literacy materials that appeared on the walls of the classrooms were word walls, bulletin boards and alphabet posters. Although these items are also fairly common parts to a learning environment, specific reading programs usually vary from school to school and district to district. At the Metalmark School, there are three adopted, or adopted and modified, structured literacy programs. The three programs are the Edmark Reading Program, Reading Milestones, and the Wilson Reading Program (which was not observed, but referred to in the interview and surveys). The state, in which this study was completed, is a Local Control state. What this means for literacy instruction materials and resources is that the adopted programs are chosen by the individual districts based on the student population within the district. The standards that must be met for the adopted program are that each of the five areas of reading are covered, as represented
by the *Put Reading First* publication (Armbruster, Lehr, & Osborn, 2001), which was created in response to the No Child Left Behind Act’s (2002) Reading First Initiative. These programs address all of those areas through a variety of means. Through the use of printed materials, sign language manuals, and pictures with printed word and sentence activities, the Edmark Reading Program and the Reading Milestones Program cover literacy learning mainly for students who are non-verbal or developing language skills. The following figure (see Figure 3) provides a very simple sample of what a page from the Edmark Reading Program might look like. Over the page, teachers used visor like pages that only displayed one line at a time. Students would then listen to the teacher read the first sentence, learning the new word, ‘read’ for example. They would have to find the word among the non-words by pointing, twice. Next, the student would read the following sentence on his or her own, followed by pointing to the new word among real words. This series of steps is only one part of the Edmark program, but represents how the tool is used to teach literacy skills.

![Figure 3 Sample Edmark Reading Program Page](image)

Some of the other literacy materials that were presented during the observations were games and songs that practiced language and sound, sentence, word and letter learning. The
games were often in the format of flashcards or file folder activities that were mainly teacher-created materials.

Communication tools that had been utilized were various charts and signing supplies. The emotion chart that was previously described helped students communicate their feelings by pointing to a picture. Other charts that the students could interact with were attendance charts, restroom and drink charts, and finally, student job charts. These resources that were posted on the walls of the classrooms allowed for students to independently communicate messages from whether they needed to take a restroom break or if they were in the classroom for that day.

Many opportunities allowed the use for sign language, even for students who were verbally communicating. The Edmark Reading Program incorporated sign language into the literacy learning and there were flashcards, books, and signs that modeled sign language in the rooms.

In one of the classrooms, there were two learning tools that modeled speech for students in an independent setting. One teacher presented what he referred to as a modified palm pilot with pictures and words in categories like emotions, greetings, and more. All of these words and phrases could be clicked on and said aloud through the speakers attached to the sides of the palm pilot. Students could build sentences and communicate through the words that they chose to use, but did not have to actually say if they were not able or were struggling with language. This tool was also capable of helping a student’s listening, speaking, and sight vocabulary as well, yet these topics will be covered more in the next sections of this chapter. The second communication tool that modeled language was a plastic board with a picture and a means for recording a short message. The teacher had recorded a phrase, such as, “I want toys” into the board and was able to be played back by the touch of a button on the front of the board. The picture on the front of
the board matched a toy that a student seemed to like to play with. This tool was utilized to model communication for this student who did not seem to be very verbal. The teacher would have the child play with the toy and then replace it with the picture board and show him how to press the button to model the language exchange needed for the toy to be returned. Then the toy would be given back to the student. This occurred a few times until the student pressed the button independently and then was able to take the toy to another space in the classroom. This tool seemed to simplify language for the student and provide a means for communication to take place between him and the teacher.

As previously mentioned, there were a number of behavioral and socially supporting materials found in the classrooms. Token boards, behavior charts (the stoplights), and movie and sticker rewards were all already identified in the aforementioned sections in this chapter. Other than these items, musical toys and tools were in a few of the classes for student breaks during lessons. When a teacher noticed that a student seemed to need a moment away from the material, these toys and student chosen materials were able to be enjoyed for a few minutes and then they were brought back to the lesson being studied. An additional behavior tool that had not yet been described were “squish balls” that one teacher provided for her students while she read to them in a group. According to this teacher, having something in the students’ hands helped them to focus better during the readings and they were better able to respond to questions that were asked about the text along the way. Having a manipulative and tactile material in their hands seemed to stimulate their senses so that they could apply themselves more easily to the story being read.

Some of the resources that appeared in many of the classrooms were first the staff and paraprofessionals and parents in the classrooms. According to the interview, parents were involved in the learning process through regular PTO meetings and a newsletter. There were
even scheduled activities and events for parents and families to attend at the school to bring them into the school in a variety of ways. The assistant instructors averaged about three per class and were found helping students in a great variety of ways. Having extra hands and eyes in the rooms seemed to allow for more individualized instructional periods for the students in the rooms.

Another resource was found in the teaching centers in the form of charts that explained instructional practices. Figure 4 below shows a chart that appeared in a few of the literacy centers in the building.

Figure 4 Discrete Trial Training Method (DTT)

- Give instructions clearly one time
- Use language protocol to give the direction
- Provide reinforcement within three seconds of child response
- If the child does not respond correctly after two attempts, then prompt the correct response

Another chart that was a quick reference listed the order in which pictures and words were used together to teach new vocabulary. Frequently taking place with teacher-made file folder activities, students would be taught to match pictures to pictures with a theme, such as animals. Next, they would have to match pictures to words, such as the picture of an animal to the animal’s name. Finally, words were matched to words, such as the name of the adult animal to the name of the baby animal. This system of scaffolding was practiced a number of times with a variety of visuals and words and even phrases. For those words that were unknown to students,
dictionaries were also utilized to guide students through the process of finding definitions to new words.

Staff members and teachers were also encouraged to attend training sessions provided by the local resource centers and even those organized on site at the Metalmark school. The administrator described in the interview that some of the foci for previous training sessions have had to do with Discrete Trial Training (shown in Figure 4), behavior management strategies, the TEACCH method (described in Chapter 2) and even how to utilize visual cues for learning. Even during the times observations occurred, new staff members were going through what seemed to be extensive training provided by the school, most likely in these and other areas.

The last listed resources were the IEPs or Individualized Education Plans that guided the instruction for every student in the building. These plans for student curriculum were what had teachers tracking student progress after each lesson. For students with Autism, this is an element that has to be incorporated into the daily instruction, but helps to outline what is taking place for the teachers and paraprofessionals.

The list of materials in Figure 2 would likely to be much longer if the classrooms were observed all year round. These items were all brought into the learning environment at some point during the observations and utilized to accomplish the instructional goals each day. Binders were used to track students’ performance in each of the centers that they attended each day. File folders, Velcro, and Ziploc bags were the most commonly used materials for the teacher-made resources and games at the literacy centers. Timers helped to keep the teachers and students on schedule for lesson periods. Headphones were provided for students who needed to block out some of the ambient noise, which appeared to help concentration take place with more ease. Pictures and labels seemed to help teachers, staff and students identify materials more efficiently,
such as general objects around the room and student binders. A variety of tactile materials were brought into the classroom, such as the “squish balls” in one room, and others. Snacks took place in every room at one part of the morning or afternoon for students and created an opportunity for students to produce language to indicate what kind of snack they wanted by building sentences on Velcro binders. Self-correcting materials, or those that could be corrected by students independently, were also found to be helpful such as puzzles that could only go together one way, and could be completed by students on their own in a center while another student worked one-on-one with a teacher or staff member.

These were just some of the resources and materials that were brought into the learning environment, but most definitely do not represent a complete list since only a few days of the school year were observed. The list in Figure 2 does however denote an extensive amount of materials for adding to the classroom and the experiences of that the students had there.

Results Gathered on Areas of Reading Instruction

The materials and resources that were found in each of the classrooms seemed to add significantly to the kinds of literacy practices that were put in place throughout each observation. These supplies were used for instructing students in a variety of ways that were often consistent from room to room, such as the use of file folder activities. The kinds of lessons that they helped to create fall into five main categories for literacy instruction. Phonemic awareness, phonics, fluency, vocabulary and comprehension were the five areas of literacy instruction that were recorded upon the completion of the observations.

According to the teacher surveys, literacy instruction took place on average for 27.14 minutes each day. One hundred percent of the surveys stated that literacy was at least somewhat to very important to each school day.
The following sections of this portion of Chapter 4 explain how each of the five main areas of literacy was taught, using the aforementioned materials and resources, including the percentages for how many times various elements under these five categories appeared.

**Phonemic Awareness**

There may have been a couple of factors that caused phonemic awareness to be the most difficult area for obtaining information. Observing students and teachers working with sounds seemed to be an element that was not seen very often, which was likely to be purposeful and planned. According to the surveys that were presented to the teachers, 29% stated that this was the most difficult area of reading for their students, which was the second highest challenging area under comprehension. During the interview, the administrator described how many students with Autism struggle to read phonetically. For those that do not struggle with phonemic awareness, they are likely to be hyperlexic, or able to decode the sounds in words with great ease. For this reason, the reading programs that had been adopted in this school focused on whole words and developing sight word vocabulary. According to the administrator, the students seemed to have much more success with looking at whole words. A similar comment was made by a teacher who explained that she did not always study letters within words because this concept was too abstract, so again, whole words were studied so the students could be successful.

Since there were only a few examples of phonemic awareness activities, a chart is not included in this section. In the Put Reading First publication (Armbruster et al., 2001) phonemic awareness is different from the following section, phonics, because only sounds are involved. No written text need be included in phonemic awareness activities. A few of the times text was involved in the sounding out of words; it was recorded under the phonemic awareness category.
because it did involve sound manipulation. However, according to the guiding text, it would not count here, but rather in the next section of this chapter.

In the teacher surveys, it was recommended a number of times that for teaching phonemic awareness songs that played with rhyming be taught to the students and that frequent exposure to isolated sounds occurs. Also suggested was daily reading where students could follow along with the text and work with letters (which could both be considered phonics with text being presented). Teachers stated too, that it was important to start practicing this area of literacy instruction as early as possible.

During one lesson, a teacher was reading poetry to the student, which was very similar to the music recommendations from the surveys. After the teacher had read the poem once, which, for the student was an opportunity to listen to the rhyming of sounds, they were encouraged to mimic some of the sounds they heard while the poem was read again. There was another example of pure phonemic awareness being learned where a student had been reading and came to a word with which he/she was not familiar. Looking away from the text and at the teacher, the word was sounded out slowly by the teacher as the student simply listened and then blended the sounds together by listening and said the new word. The rest of the instances where the sounds of letters were studied, manipulated, blended or segmented were all involving text and fit best into the next category.

**Phonics**

Throughout the teacher surveys, phonics instruction was identified as the third most difficult area for these instructors’ students. They recommended repeated exposure to sounds as blends or whole words and not as individual pieces. Further into the surveys, they stated that for students with a natural difficulty with verbal ability, that if the pieces were broken down too
small, that the students cannot seem to be able to put them back together. This is likely to be related to the small amount of data that could be collected with phonemic awareness. Despite the lack of a chart in the last section, data were collected in this literacy category and created into the following Table (see Table 5).

Table 5 Phonics

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Letters</td>
<td>33%</td>
</tr>
<tr>
<td>Sounds</td>
<td>13%</td>
</tr>
<tr>
<td>Other</td>
<td>9%</td>
</tr>
<tr>
<td>Whole Words</td>
<td>23%</td>
</tr>
<tr>
<td>Spelling</td>
<td>20%</td>
</tr>
<tr>
<td>Words</td>
<td>20%</td>
</tr>
<tr>
<td>Whole Words</td>
<td>23%</td>
</tr>
<tr>
<td>Sentences</td>
<td>2%</td>
</tr>
</tbody>
</table>

The way that the phonics data emerged was in identifying what ways phonics lessons took shape in the classrooms observed. The above table identifies the percentages of times a certain element of phonics instruction was being taught. Through a variety of file folder activities, picture resources, reading program materials, and games, phonics lessons were taking place. Spelling and whole word activities, which were frequently recommended as the smallest piece that is taught to students with Autism in the surveys and in the interview, made up the largest percentage (43%). Letters were studied 33% of the time and sounds were only 13% of the time. Whole sentences were constructed in writing and studied for a smaller percentage of time, but
this may have been because of the focus on vocabulary and learning words first and then how to put them together.

What were represented by the other category were games that were either seen around the classrooms or were put to use for phonics learning. Such tools as cards that practiced initial, medial or ending sounds were noticed, as well as matching puzzles for rhyming words and even activities for determining the parts of speech.

Two elements that make up an effective phonics instruction program are identified as systematic and explicit, according to the Put Reading First manual (Armbruster et al., 2001). Systematic instruction for phonics has to do with a logical and purposeful progression of study (Armbruster et al., 2001). Within a structured reading program, such as the Edmark Reading Program, explicit instruction appears to be taking place where a teacher is provided with exact guidelines for teaching the logical progression of phonics lessons (Armbruster et al.). The classrooms that were observed appeared to match both of these criteria with the help of their adopted reading programs and materials, as well as the constant progress monitoring and planning likely to accompany the students’ Individualized Education Plans (IEPs).

**Fluency**

The third element of reading instruction that was observed was fluency practice in the classrooms. The majority of examples of fluency instruction came from repeated readings, silent reading, and either the teacher or student reading aloud. The chart shown below in Table 6 shows the percentages that these and other instances represented literacy instruction for fluency in the classrooms observed.
From this pie chart, it is clearly represented that for half of the time, students or teachers were reading some literacy material aloud, and for an equal amount of time. This shows that the modeling did not solely fall to the teacher without much demonstration from the student. In the 18 % of reading together, this number indicates when both, the instructor and student were voicing the text at the same time. In this way, the students could be hearing the text as they were reading and saying it themselves.

In many of the rooms observed, silent reading was being practiced or a time had been identified for when it would take place on a class schedule. The amount of time that silent reading was planned for taking place or observed was anywhere from 15 to 30 minutes each day. Students were often seen reading in a literacy center, (see the example silent reading area in Figure 1). In these silent reading centers, there were usually pillows or chairs in a corner or center of the room which included books on tape for listening while a text was being read.
Many of the recommendations from the teacher surveys were the same as what was seen during the observations. The instructors suggested that books on tape or CD be included regularly in the classroom. They also stated that the teacher should read to and with the students as much as possible. Much like one of the recommendations in the phonemic awareness category, a teacher suggested that fluency instruction begin when the students are very young.

The rest of the pieces that made up the observed practices for fluency in Table 6 were repeated readings of poetry and tools that modeled fluent language. Much like the CD and tape players that were brought into the silent reading areas, there were other tools, such as the plastic board that would replay sentences that were previously recorded to model speech for a student and the previously described palm pilot.

For some of the students who did not communicate verbally, there were sign language-based lessons that allowed for fluency to be demonstrated. By definition, fluency is “the ability to read a text accurately and quickly” (Armbruster et al., 2001, p. 31). This does not state that the reading has to be oral to be considered fluent. When students were recognizing vocabulary or whole sentences fluently in lessons that involved the practice of sign language this was included in the other category. Just because a student did not say a word, did not mean that he/she did not know what it was or what it meant. Understanding what words mean leads into the next section of this chapter and category of literacy instruction, vocabulary.

**Vocabulary**

There are two main areas of vocabulary instruction and learning, oral and reading. Oral reading refers to the words we hear, or our listening vocabulary and the words that we use in our language or speaking vocabulary (Armbruster et al., 2001). The second half of this literacy category is reading vocabulary, or the words we read and put in print (Armbruster et al.). The
following Table (see Table 7) shows how much time was focused on each of these four parts to vocabulary instruction, as well as how vocabulary was demonstrated or studied in other ways.

<table>
<thead>
<tr>
<th></th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reading</td>
<td>32%</td>
</tr>
<tr>
<td>Speaking</td>
<td>8%</td>
</tr>
<tr>
<td>Listening</td>
<td>11%</td>
</tr>
<tr>
<td>Writing</td>
<td>9%</td>
</tr>
<tr>
<td>Signing</td>
<td>5%</td>
</tr>
<tr>
<td>Other</td>
<td>8%</td>
</tr>
<tr>
<td>Touch/Pointing</td>
<td>6%</td>
</tr>
<tr>
<td>Pictures</td>
<td>21%</td>
</tr>
</tbody>
</table>

The greatest percentage of vocabulary study was through reading words or identifying them in text. Meaning was associated to each of these observed elements since learning vocabulary is more than simply word identification or use, but actual understanding of words. Through activities that involved students listening vocabulary at 11%, writing vocabulary at 9%, and speaking vocabulary at 8%, students were demonstrating or practicing meaning associated to words.

For examples where students were not speaking, they were still able to demonstrate an understanding through the use of pictures, touching or pointing to materials, or signing words or definitions of words. Although pictures were used with verbal students’ vocabulary lessons too, they allowed for matches to take place between words and pictures or sentences and pictures that
allowed a student to show word meaning comprehension. If picture cues were shown with word cards, students could point to sets of them and still demonstrate that they knew the words and in the same way, they could sign what a picture meant and reveal vocabulary understanding.

Frequent use of dictionaries, the adopted reading programs, matching games and concept circles for writing definitions were the materials that fell into the observed other category in Table 7. Structured sight word based reading programs were the most frequently suggested reading material in the teacher surveys. Other suggestions that they included were using direct teaching with pictures such as saying that “this (picture) is a ______.” Labeling items around the classroom and identifying basic everyday words such as grocery store items and vocational terms that the students may need to recognize later on in life was also frequently suggested and practiced in the classrooms. This was the third piece, like fluency and phonemic awareness where a teacher stressed that this area of literacy be started with students when they are young. They further suggested that vocabulary be matched to the students’ interests so that they are more likely to be motivated to study those words and build from what they are familiar with. Modeling with gestures, a variety of pictures (preferably real pictures) and short verbal remarks were the final recommendations that the teachers provided in the surveys.

This area seemed to be given the most number of suggestions and recommendations. Another piece of data gathered from the surveys about vocabulary instruction was that 75% of the teachers reported that this category of literacy instruction was the easiest for the students they taught out of the other four areas. Some teachers stated that vocabulary instruction was still a challenge for their students, but not as much so as the other literacy categories.
Comprehension

Comprehension was the most difficult area, according to the teacher surveys, to instruct. One teacher stated during an observation that comprehension was her main focus for literacy instruction. The teachers’ suggestions and recommendations for facing this seemingly difficult area of literacy learning were extensive and so, have been included in the following figure (see Figure 5) below.

Figure 5 Comprehension Recommendations

- Real objects or those that are visually accurate
- Real world situations
- Simple procedures
- Step-by-step procedures
- Lots of picture-word combinations
- Give short verbal remarks and gestures
- Hand-over-hand
- Concept circles
- Build on what is known
- Build on interests

Most of these suggestions are materials for teaching students to comprehend were utilized in the classroom observations for obtaining literal, or text explicit (Armbruster et al., 2001) types of comprehension. Such short requests with pictures as, “show me the…” and “point to the…” were requesting literal levels of comprehension from the students. Hand-over-hand is a physical modeling strategy where the teacher or paraprofessional uses their hands to guide the student’s
hands to respond or perform a specific activity. These suggestions could also be utilized for more implicit levels of comprehension, although, not nearly as many examples of this were witnessed as they were the literal comprehension examples. This data were gathered in the following Table (see Table 8) along with other key comprehension elements observed.

Table 8 Comprehension

<table>
<thead>
<tr>
<th>Comprehension Type</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Text Explicit</td>
<td>63%</td>
</tr>
<tr>
<td>Text Implicit</td>
<td>15%</td>
</tr>
<tr>
<td>Scriptal</td>
<td>4%</td>
</tr>
<tr>
<td>Listening</td>
<td>7%</td>
</tr>
<tr>
<td>Strategies</td>
<td>11%</td>
</tr>
</tbody>
</table>

Text explicit was the most frequently observed type of comprehension at 63%. These data do not mean to show that the other types of comprehension were not taking place, but during the observations it was the most frequent.

In some cases students were read to, usually as a whole class, and asked questions as the teacher kept reading. The one time scriptal comprehension was witnessed was when a student was writing about a main idea and had to continue to draw upon previous experiences and prior knowledge to write the paragraphs.
Some comprehension strategies were modeled throughout the observations as well. Concepts circles and learning to navigate the dictionary were both practices that the students were guided through using. These strategies added to the literal comprehension examples that were observed in the classrooms. With comprehension being a difficult area of literacy instruction, it would appear that the more challenging levels of comprehension may be too hard to pursue, which would explain the percentages that were observed and shown in the previous table.

Summary

The question guiding this research study was how to teach students with Autism to read. To gain information and answers, three methods were employed to gain qualitative and quantitative data. Through the administration interview, teacher surveys, and classroom observations, a great number of data were gleaned and recorded in charts and tables.

For each area of the elements that are around literacy, graphic representations helped to organize the data and present the significant findings of the study. For the classroom environment a sample layout (see Figure 1) was included along with the most commonly occurring environmental factors in a pie chart (see Table 2). Behavioral and social skill data allowed for percentages of modeling, or behavior management strategies, or materials to be presented and identified. In studying the communication within the classrooms observed, modeling was the most frequently occurring element (see Table 4). Created into a pie chart, other data that were included were instances of positive encouragement, sign language and materials that were used to exhibit language, along with descriptions for how communication was taking place (see Table 4). Finally, in the materials and resources section of this chapter, data were collected in the form of a list of tools that were most frequently employed in the classrooms (see
Four main categories of items were listed from literacy supplies to the people who could serve as resources in the classroom.

The data that were collected for most frequently occurring elements of the literacy instruction presented neat numbers and suggestions for all but one of the categories, which was phonemic awareness. During instances where sounds were being studied, almost every time involved text and thus was considered a part of phonics instruction. Despite this factor, information was described from the teacher surveys and the administration interview. In the phonics section, a chart was presented for the percentages that it focused on words, sounds, sentences, and other contributing factors and materials (see Table 5). Fluency was described in the ways in which reading was modeled and by who was doing the reading (see Table 6).

Teachers and students seemed to be reading aloud the same percentages of time in the classroom and even voicing text together quite frequently. Vocabulary was identified as the easiest area of teaching literacy instruction by the teacher surveys. Table 7 shows the percentages to which each area of vocabulary was being studied and expanded. The final element discussed in this chapter was identified as the most challenging area for literacy instruction, according to the teacher surveys. To address this area of concern, many of the teachers described suggestions that were then incorporated into a master list for how to help students with comprehension studies (see Figure 5). The most frequently referenced level of comprehension was around literal question and answering as clearly shown in Table 8.

Overall, a great amount of information was gathered from the research site, from valuable suggestions to detailed observation accounts. Once all of these data were carefully studied and analyzed trends and common factors emerged and created the tables, and figures that are integrated throughout this chapter.
CHAPTER V. SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Learning to read is a dynamic and oftentimes challenging process for anyone just beginning. For students with Autism, literacy learning can be especially difficult due to the communication and language barriers that accompany their diagnosis. With the drastic recent prevalence increases of about one in 150 students being diagnosed with Autism, all educators need to become aware for how this may contribute to the diversity in their classroom. For classroom teachers who may not have a special education degree, or training in working with students who have Autism, the notion of inclusion might become overwhelming. These teachers will likely wonder how to meet the instructional needs of their students with Autism, especially in teaching them to read. This study has been in search of that answer: How is it that we teach students with Autism to read? Much of what was found indicated that widely accepted educational practices seem to be successful. In other words, good teaching is good teaching. There are still a number of recommendations and suggested practices that emerged from the research, which are outlined in this chapter.

Overview

On February 8th, 2007, the Centers for Disease Control stated that one in every 150 children is diagnosed with Autism or a related disorder. When this study began, the numbers were one in 166 and increased to one in 150 from the last reporting in 2007. No matter what the debated cause of this significant increase, it has become widely understood that Autism is on the rise. Thus, the likelihood of teaching a student with Autism in a general education setting is also on an increase. So, how then, might a teacher instruct a student with Autism to give him/her the necessary literacy skills he/she will need for life? For educators to seek out this answer on their
own, they are likely to turn to the body of literature research related to teaching students with Autism to read.

In the literature research that was completed through this study, what was discovered about Autism was that the research was greatly lacking. Often, the studies from which literacy recommendations were derived were based on only one or two students with Autism. In the world of education, it has come to be understood that not all students are alike in the ways that they learn and even learn to read. To apply suggestions to an entire population of learners, such as students with Autism, based on findings from one or two observed participants is much more likely to be unsuccessful. This is compared to suggestions that involve a larger group with which research was done with and recommendations were drawn. The literature research also seemed to frequently leave out necessary parts to teaching reading, such as teaching phonemic awareness and fluency. Researchers seemed to focus mainly on instructing comprehension and vocabulary skills, and usually only one at a time. If research did address other areas of reading, the studies were usually far from current research and had not been replicated by anyone since.

To address these needs that were found in this field, a detailed and diversified study was created. Through a mixed methodology of qualitative and quantitative measures, with an interview, surveys and observations, not only was one area of literacy instruction studied, but all areas. Based on the *Put Reading First* publication of 2001 (Armbruster, Lehr, & Osborn), five categories that make up literacy instruction were studied for best practices and suggestions: phonemic awareness, phonics, fluency, vocabulary and comprehension. In a classroom setting, there are other key elements that can significantly impact literacy learning, and these categories were also studied for best practices and recommendations; environment, behavior and social
skills, communication, and materials and resources. These nine areas of focus outlined the key topics throughout the study and into the research.

The location for where the research took place was a school that specifically admitted students with Autism. With upwards of 50 students enrolled, there was a greater population of individuals from which to gather data. However, the students at this school did not make up the participant group for this study, but rather the teachers and administration who worked with these students each day. These nine teachers and administrator could identify their successful practices and recommendations for each area of literacy and the related elements. Through interviewing the administration, surveying the teachers and even observing teaching practices in the classroom, data on each of the nine literacy areas were gathered and analyzed. Frequent practices were coded and listed in a manual color-coding process. Tables, graphs and charts were created for suggestions and observed occurrences around every element of literacy found. All of this information helped to contribute to answering the research question, and finding more questions to inquire about within this field of study.

Conclusion

The question that this study sought to answer was what the best practices are for teaching students with Autism to read in an inclusive classroom setting. To determine what the recommendations were, the research gathered from the interview, survey, and observations had to be coded and listed. From these data, the most frequently observed practices and most commonly stated recommendations were tallied and charted. The figures, tables, and charts in Chapter 4 outline how these data were presented. Upon gathering these findings, major educational recommendations emerged and answered the research question in three categories: the classroom setting, social interaction, and instructional practices for reading.
Classroom Setting

The classroom environment, based on the research collected, should be student centered and teacher led. Many of the styles of instruction were direct and one-on-one where the teacher and student were working collaboratively to lead and demonstrate understanding. The classroom environment should create spaces where this one-on-one or small group collaboration can take place without distraction, such as the stations established in Figure 1.

Previous research stated that there should be opportunities for, “learning developmental, academic, creative, and functional skills; work play and leisure; and instruction and practice in both natural simulated settings” (Jazen, 2003, p. 128). In other words, the learning environment must consider ways to meet the needs of the whole child. These opportunities were observed at the research site, and described throughout Chapter 4 in the diverse ways instruction was presented, the range of goals that were being met, and by the materials that were used.

The physical space that the student is learning in must be appropriate to his/her needs and the learning objectives. The Ohio Developmental Disabilities Council and Autism Task Force (n.d.) recommend a space that includes “visual barriers, reduced visual and sound distractions, temperature adjustments, preferential seating, and visual organization of materials (p. 124). Student choice was one element that appeared frequently during the observations, such as letting a student use a reading program that he preferred and was successful with. This again relates to having the environment the students are learning in being centered on them.

A third and essential recommendation for the classroom setting is for it to be positive and highly encouraging. Wendy Lawson described how important it was for her to learn to have a high self-esteem and personal sense of achievement and for others to do the same for her (2001). As someone with Autism herself, Lawson would likely agree with the positive reinforcement and
helpful guidance and encouragement that the students in the research site received on a constant basis. Thus, this should be taking place in any learning environment frequently as well.

Social Interaction

The second main category for outlining the best practices in teaching students with Autism to read had to do with social interaction. One of the most frequently occurring patterns was the use of individualized or small group instruction. Nearly 100% of the observations included one-on-one attention between the student and teacher. The administrator, when interviewed, discussed how individualized instruction was one of the main goals for each student daily. With small groupings, social areas of difficulty can be less overwhelming and possibly overcome.

While the learner is trying to decide what is most important from a teacher’s lesson, he or she can quickly become lost in between the teacher’s gestures and language (Farrell, 2004; Stanton, 2000). To avoid this, small groups and individual instruction can help the child focus and not be as distracted. Through literal and direct commands and comments, as seen during the observations, students with Autism are less likely to struggle with gathering meaning. By repeating directions or readings, students can be given more opportunities to comprehend what is taking place.

Just as Lawson (2001) had suggested, Wing (2001) identified the importance for being positive, especially in social situations that could be awkward or difficult so that students’ can maintain healthy images of themselves. People working with students who have Autism need to be respectful and aware of the communication barriers that can arise and help to comfortably alleviate the situation. One way to assess this is to ask the student to, in some way, demonstrate his/her understanding back to the teacher (Ohio Developmental Disabilities Council and Autism
Task Force, n.d.). Teachers at the Metalmark School would ask simple questions to the students to determine if they were understanding by saying, “point to…”, “show me…”, and by asking the student to perform a small task at a time.

One specific resource for student with Autism is practicing sign language. Communication barriers seem to be broken down for those children who struggle to produce language. This was one of the most frequently observed practices in the classroom observed and matches with the literature research explaining the need students with Autism have for visual representation of words and phrases and expression so that they become more literal (Grandin, 1995). Sign language for communication and visual representation is a vital element to instructional and social success.

**Instructional Practices**

The third area of recommendations for teaching students with Autism to read focused on instructional practices. All curricula should draw out the students’ strengths and build on them to continue maintaining a positive learning environment. It is also suggested that literacy learning involve whole word instruction and the use of authentic and realistic texts. The literature research described that tasks should be broken down into small pieces so that students can experience amounts of success along the way without becoming overwhelmed. Many of the materials and resources, such as the 1, 2, 3 drawers and the variety of file folder games, demonstrated how tasks could be broken down. However, when it comes to learning words, they should not be broken down much further. Janzen (2003) explained in her text how it is very difficult for students to break sounds and letters in words apart and understand how to put them back together and apply decoding skills when they need to. This is not to say that students with Autism are not capable of decoding or sounding out words, but that they appear to be more
successful when they do not have to, and work with learning words at sight. The use of word walls, sight word cards, and labels to almost every element around the classrooms demonstrated ways to practice this at the research site and recommended by Calhoon (2001) and Walberg and Magliano (2004).

Texts should involve visual representation, such as using picture books. Authentic text that includes pictures will aid comprehension and possibly help the students draw on their own prior knowledge. Material that involves students’ interests is also much more likely to be successful for students by drawing on their own meaning and accomplishment as a reader (Broun, 2004). A wide variety of materials that focus on the students’ visual strengths will likely be highly successful aids in instruction as seen in the classrooms at the Metalmark School.

These suggestions and recommendations most likely parallel and reference those recommendations and suggestions that are given to the educators that are in the inclusive classroom settings for their general education students. Exceptional teaching practices that meet the needs of all children are just as beneficial for those children who happen to have Autism. What this proves is that these practices are completely feasible in a classroom that includes learners with Autism. They come to the environment with different strengths and weaknesses just like every other student. Yet, knowing what those strengths are and how to draw them out, as described, will create a positive and successful learning environment for the teacher and students.

Call for Further Research

Once the research was gathered from the Metalmark school, an analysis of the data was completed. When this information was triangulated to the literature research of this study, some
interesting trends began to emerge. Instead of creating understanding in the study, some of the literature seemed to create more questions and indicated areas for future research.

The first areas of inquiry appeared in the literacy category of phonemic awareness. After perusing a great amount of research, very little data, as far as recommendations and suggestions for teaching students with Autism appeared in the way of studying sounds. The data found in one text by Janzen (2003), seemed to indicate that teaching students with Autism about phonemic awareness is a near impossible task. Breaking concepts down into smaller pieces appeared to make instruction easier for students with Autism, especially stated during the administration interview. However, this does not seem to be the case when it comes to this area of reading because it is too much of a challenge to figure out how to build the sounds back into words.

The question that emerged from these findings were whether or not the issue is with the students’ inability to perform these skills, or how instructors have been informed to teach phonemic awareness skills. The body of research does not appear to lead an educator in any direction as far as phonemic awareness is concerned. The most significant question that came from the research with regards to phonemic awareness was why there was such a lack of literature about teaching this area. If this literacy skill is indeed too difficult for students with Autism to perform, where are the findings that identify this? What practices and materials were tried along the way to determine those findings? What was identified by the administration was a term called hyperlexia, where some students with Autism have a strong ability for using sounds in words and being able to read. This means that phonemic awareness learning is not completely impossible for students with Autism.

A second area where questions emerged in literacy instruction from this study had to do with comprehension. This category of reading is made up of three separate types of
comprehension, text explicit, text implicit or scriptal, (Armbruster, Lehr & Osborn, 2001). Text explicit comprehension is usually gathered directly from text, and right within one sentence. Implicit refers to a more difficult process, where to make meaning, information from more than one place needs to be gathered, but the answers are still there within the text. Scriptal, which appears to be the most difficult area of comprehension, involves thinking about one’s background experiences or prior knowledge. Yet, students with Autism tend to struggle applying their background knowledge (O’Connor & Klein, 2004) and are very literal thinkers. The kinds of comprehension that was observed in the classrooms seemed to follow this trend, where by far, literal comprehension was witnessed most often.

Much like the questions that arose with the findings with phonemic awareness, it could be asked; are these students actually capable of activating and developing the more complex levels of comprehension? Is there a means that could grow these skills in the classrooms that research has yet to identify? More research is needed to make this clear, or demonstrate cases of where this level of comprehension in not possible. In an inclusive classroom setting, comprehension will not likely stop at just literal thinking and knowing how to address the areas of difficulty a student with Autism may have would be highly necessary. These findings still need to be determined.

Recommendations

The understanding that has been reached as to what Autism is has substantially progressed since the beginning reports from Kanner’s study in 1943. Educational practices have improved and headed down the road to the most appropriate literacy practices possible for students with Autism. Along the way, a need for more information has come to the surface.
Studies of comprehension beyond literal understanding and strategies for teaching phonemic awareness need to be created for more information in the field of Autism and reading.

This study was created with the hope that it might be duplicated and recreated in other settings to gather research in the nine areas identified. If studies like this are created and matched to one another, trends that emerge are likely to be even more significant. From there, suggestions and recommendations that are gleaned from the classroom setting could become highly advised practice.

One of the strongest recommendations that can be made from this study is to match practice with an evaluation of student achievement. If certain practices are observed with a high achievement rate among students involved, then the most important measure of success would have been met. Studies that build upon the observed practices and suggestions from the research provided in this study and find what helps students most successfully meet their Individualized Education Plan goals are becoming more and more vital. Between inclusive classrooms and increasing rates in diagnoses, there is a definite call for more research to discover the best ways for meeting literacy needs in students with Autism.

Summary

For any child, literacy skills build a learning foundation that can be built up for the rest of their lives. Strong phonemic awareness, phonics, fluency, vocabulary and comprehension skills represent the cornerstones of that figurative foundation. This study sought out the best practices for building a strong literacy foundation for students with Autism in an inclusive setting. What was discovered through a number of observations, surveys, and even an interview led to suggestions and recommendations for practices with a great amount of potential success.
With the data collected, teachers can learn what has been put into practice currently in a building that specializes in the literacy learning for students with Autism. With a larger number of students in the school from which the research had been drawn, the success a teacher may have in utilizing the described tools and instructional ideas is likely to be high. The teachers at this specialized school, who instruct students with Autism on a daily basis, were best suited for gathering recommendations for literacy learning based on their long-term and detailed experience. When common elements were found across all of the research, represented by high percentages of data in the charts and graphs, the suggested practices emerged and were presented.

Amidst a lack of current research, what also came to the surface in this study was a great need for more data to be gathered. One of the ways this study could be utilized is to replicate these methods and seek out findings to compare to this study. Creating studies that focus on phonemic awareness and comprehension are almost completely necessary to fill some of the gaps in the current research. Studies that focus on the areas of reading instruction all-inclusively could also greatly assist classroom teachers and the students with Autism that come to their classroom.

It is hoped that through this study, educators and teachers in inclusive classroom settings, and even those that are not, can take information away from this study to build a strong reading foundation in students with Autism, leading them to lifelong learning and literacy success.
REFERENCES


APPENDIX A.

INTERVIEW QUESTIONS FOR THE ADMINISTRATION
Interview Questions for the Administration

1. Briefly describe your position at the Metalmark School?
   What are the responsibilities of your job?
   How long have you served in this role?
   What was your education and training leading up to this position?

2. At the Metalmark School, how many students are enrolled and what are the levels of their Pervasive Developmental Disorders or Autism Spectrum Disorders (ASDs)?
   What criteria do your students have to meet to be enrolled?
   Where on the spectrum do they fall?
   How many have another impairment that is common with an ASD, such as depression, attention deficit, etc.?

3. Where does the curriculum for your students come from?
   Is instruction based on benchmarks from the Ohio State Academic Content Standards?
   Do all of the students have IEPs, (Individualized Education Plans)?
   What about curriculum for teaching reading, specifically?

4. What is the student-teacher ratio for your students?
   What is the rationale behind those numbers, are they mandated by the state?
   How many instructors do you have in the Metalmark School and what do they teach?
   How much individual attention is given to each student, if at all?
   Are the classrooms divided by grade level, ability level, or...?

5. How are your teachers and staff members trained?
   Are your instructors given special training to work with students who have Autism?
Is their licensure mild to moderate special education, moderate to intensive special education, or a mix of both?

Does the licensure impact the level of functioning of the child with Autism that the teacher can work with?

6. What is the percentage of your students who have an ASD that are able to communicate, read, and/or write?

At what ages do these abilities start to appear?

Does there seem to be a critical period of development like is believed by some in general education settings?

7. How is progress measured at your school?

In other words, how do students advance to the next grade/level?

How do students graduate and is this based mainly on their age?

8. From the National Institute of Mental Health, it is suggested that instruction: build on children’s interests, offer a predictable schedule, teach tasks as a series of simple steps, actively engage the child’s attention in highly structured activities, and provide plenty of parental involvement. What of these and other strategies do you employ here?

9. What suggestions would you give to a teacher in a mainstream classroom who is teaching students with Autism?

10. What specifically would you advise these teachers of when teaching children with Autism to read?
APPENDIX B.

SURVEY EXPLANATION LETTER
Survey Explanation Letter

Dear Literacy Instructor,

Thank you for participating in this study. The purpose of the questions that are being asked is to discover what practices are most common for teaching students with autism to read. These very special students need the most efficient and effective practices for instruction in schools like yours, as well as those general education classrooms that they may be included in. Your responses will help to determine what strategies and methods can be carried over to those inclusive settings for teachers to provide to their students with an Autistic Spectrum Disorder.

Upon completion of the survey, please enclose it in the provided business envelope, seal it, and write the date you took it across the sealed front flap. Return the envelope to the large brown envelope located in your administrator’s office. They will be collected in two weeks, on February 2, 2007 so please be sure to turn them in. Results for this study will become available to your school for your convenience.

If for any reason, you have questions or concerns, please do not hesitate to email me at hbrenen@bgsu.edu. Thank you again for your time and cooperation.

Sincerely,

Heidi A. Brenenstuhl
Graduate Student/Assistant
Bowling Green State University

*Pseudonym to maintain anonymity.
APPENDIX C.

LITERACY INSTRUCTOR SURVEY
Literacy Instructor Survey

1. How many years have you been instructing students with autism? ________

2. How many years have you been involved in teaching students with autism to read? ________

3. How important would you say literacy instruction is in your daily instructional routines? (Circle one of the following.)
   Very Important  Somewhat Important  Not Very Important

4. Do you use any adopted programs for teaching reading or do you choose your own materials to use? (Circle one of the following.)
   I Choose My Own Materials  We Have an Adopted Program
   What programs/materials do you use?
   ___________________________________________________________________
   ___________________________________________________________________

5. How much time daily is spent on literacy instruction in your classroom? (Circle one of the following in minutes.)
   > 5  5-15  15-30  30-45  45-60  60<

6. Which of the following areas of reading instruction tend to be the most difficult for the students that you teach? (Circle one of the following.)
   Phonemic Awareness  Phonics  Fluency  Vocabulary  Comprehension

7. Which of the following areas of reading instruction tend to be the least difficult for the students that you teach? (Circle one of the following.)
   Phonemic Awareness  Phonics  Fluency  Vocabulary  Comprehension

8. What main strategies do you utilize to help your students succeed with their most difficult area from number six?
   ___________________________________________________________________
   ___________________________________________________________________
9. What suggestions, from your experiences, would you give for teaching students with autism in the other four areas? (Please list.)

Phonemic awareness-

__________________________________________________________________
__________________________________________________________________

Phonics-

__________________________________________________________________

Fluency-

__________________________________________________________________

Vocabulary-

__________________________________________________________________
__________________________________________________________________

Comprehension-

__________________________________________________________________
__________________________________________________________________

10. Are there any other instructional recommendations or considerations you would like to include for other teachers to keep in mind when teaching students with an Autistic Spectrum Disorder? (Please list.)

__________________________________________________________________
__________________________________________________________________
__________________________________________________________________
__________________________________________________________________
APPENDIX D.

OBSERVATION FIELD NOTES
8:50-9:10 - binders with one word showing “touch car” repeated. Teacher asked to read intermittently. This is the Edmark Program. Verbal prompting for non-verbal students. Sounds are listened for—may not be exact when reading. Constant verbal reinforcement from teacher, very positive. Skill practiced until they were successful. Only some words are shown at a time. Student is touching and saying lists of words-acknowledge first, say next. Multi-sensory this way. One-on-one instruction. Very repetitive. Lots of eye contact from the teacher, again, positive feedback. Words missed are immediately recorded in a individual student binder with their name on it. File folder matching activity is next. The words of various animals are on one side and Velcro pictures of animals are matched to the word and then read aloud. Teacher modeled activity first. The teacher then gave very specific and direct commands, “say it”, “read”, and “match”. These directions do not seem to be unkind, just direct and often repeated. All materials appear to be within reach of the teacher in shelves around them. The student is facing the teacher and away from the other students. A new folder is presented with letters of the alphabet. Some of the letters are missing and the student fills them in with a Velcro letter. Tactile and appears to let the teacher know if the student understands this concept, even if they cannot say it. A reminder is given to the students to check their schedules in the room.

9:10-9:30 note taking - The last set of lessons were presented in about fifteen minutes. Students are responsible for what center they go to next with their schedules. All teachers in the room remind the students again to check their schedules. Lessons appear to be taught in centers. Frequent use of teacher-made file folder activities. Basic skills are in each lesson, such as name matching, letters of the alphabet, or basic sight words (whole). Instruction appears to have been all direct teaching.

9:30-9:50 - A student is given shapes in a file folder and is asked to point to a specific word. The words are read to them, and they point to the one that it is. Again, once the lesson is done, data is recorded in a binder. Days are then matched to a Velcro list. This is another teacher-made activity. More positive reinforcements. Twenty minute segments. Poem was read to student that has movements involved. The teacher helps the student to make the movements. The poem is repeated and the student is asked to make some of the sounds. There seems to be a great number of folders that have been created in advance. Only a small amount of information is given at a time, such as only half of a folder shown at a time. A new folder is given with adult and baby animals. Pictures with words are matched to pictures. The teacher is sitting directly next to the student during this lesson. No other students are visible to the child at this time. Repetitive commands are given to the student in a calm voice. When the lesson is completed, the teacher awaits the student checking their schedule to go to the next center/station. All of the teachers do the same thing together with the schedule checking.

9:50-10:10 - here there is the use of token boards if a task is completed. This is a board with their name on it and Velcro spaces for objects to be added. There is also a line of Velcro that shows a picture of what the student wants when they get all of the tokens.
(which are like bingo chips) for completing various activities. There seems to be five
tokens that need to be earned for each student. Timer used for keeping track of a fifteen
minute period for the reading lesson. This is made visible to the student. Their schedules
have pictures of each center around the room along with the words that tell the name of
the center. Letters of the alphabet are read and the student is told what the letters they will
be learning next time. They are then given a workbook page and are asked to look for
pictures that are the same. Lots of practice with this skill and others. More positive
reinforcement. Repetitive commands, using the student’s name given. Stickers given for
completed task. Lots of materials right near by. Number flashcards were brought out and
the student was asked to use bingo chips to show the number on the card. The student’s
ability to complete the task was recorded immediately in the binder on a record sheet.
Picture flashcards were placed in front of the student and they were asked to “show me
the big, green ball”. The student points to one of the two cards to identify what the
teacher just said. Appears to be for listening skills and listening vocabulary. All lessons
appear to be tactile to some degree. Student is now given writing paper and asked to trace
words on the page. Simple commands again, guiding student’s hands, more positive
reinforcements. Again, logs activity for individual student.

10:10-10:25- student and teacher already working together. Teacher asks student if they
need a break. Student stops and pauses, again, simple commands and questions. “Let’s
work” and “put down”. Listening center with books in one area of the room with lots of
books are noticed. Flashcards presented with letters on them to student. Directive: “point
to A”. There is one independent center where a student is working on writing. There is a
series of numbered drawers; 1, 2, 3. Students can get assignments out, fill them in, and
then turn them in. More repetitive commands, the student and teacher are working on
pointing to the letter A for a long time. Music box/toy appears to be a short break for the
student. Tasks are practiced one at a time. File folder activity after break with the music.
This activity is matching balloons. Simple commands are again given to the child, “look
down” and “put on” which seemed to mean, look at the folder and put the Velcro piece
on the folder. Positive encouragement. Student is moved closer in to task and is now
sitting directly next to the teacher. One-on-one for all reading instruction, so far.

10:25-10:35- file folder activity. Name matching with letters in the whole name being
matched with Velcro letters in a different case. Student logs with tasks planned in them in
advance. Now they are doing an activity where they recognize their name in print. Two
names are given on a card and one has the student’s name on it. Next, two letters are
given to the student, the first two letters of their name. “Show me N”, “Show me A”, all
letters are asked five times. The correct number of times a letter is identified is recorded
in their student binder. Positive reinforcements, and consistent commands given in all
classrooms. “Make match” heard in all of the rooms so far, to suggest that the student
match the Velcro items in the file folders. Practicing hand-over-hand also being done in
each room, where the student’s hand is gently, physically guided by the teacher to
demonstrate what to do as the teacher gives the direction.

10:35-10:45- simple corrections given to a student, “No”. Teacher is describing to another
teacher how IEP goals are kept for one year. She states that the goals can be changed if
an IEP meeting is called. The teacher hands puzzle pieces to the student, it seems to lead
them. The puzzle “teaches them to match picture to picture first. Letters are more
abstract” according to the teacher. Continues to practice hand-over-hand with the student. Tracking charts. Gestures used to help lead the student to success on the last try. Once correct responses are tracked on chart with chart activity, they are recorded. For instance, three trials out or five or 3/5 were correct. If five out of five is reached four times, then the student is said to have mastered the skill. Much of this data is written based on the continued conversation between the paraprofessional and the teacher. The teacher asks if the student, who appears to not be speaking much if they want a drink of water. They simply say, “water?” The student is then physically guided to make the signing of the word with three fingers being drawn to their lips with their index finger touching their lips twice. This must be the sign for water. Then the teacher led the student into the hall to get a drink of water while they continued to say the word. When they returned, another Match Folder was brought out matching pictures to pictures.

10:45-10:55-one student, who does not appear to speak at all, is being worked with. The teacher brings a toy to them and another small learning tool. This tool is a board with one large button to press under a picture with a sentence. The picture is of the toy that was brought over to the student with a sentence written below the picture. When the button is pressed, a recorded voice says, “I want toys.” The teacher hands the student the toy and the student looks at it and begins to play. Next, the teacher takes the toy and replaces it with the board with the recorded sentence and leads the student’s hand to push the button. The sentence is played and the teacher repeats the sentence while handing the toy back to the student. He plays for a while longer, then the process is repeated, only this time the student takes the initiative to push the button. The toy seems to be helping to direct language in the student. The commands are again very basic. The student then takes the toy to the next center and the teacher states, “good job!” More positive reinforcement. The teacher mentions that the one student learning the sign for water will continue to practice that skill until he masters it. Everyday they go and get a drink of water together.

12:00-12:10- student is matching words to pictures. The words are written on notecards and kept on a ring. For this activity, pictures are laid out in front of the child on the desk. The teacher asks the students to match the pictures to words that she shows him. She says that sometimes she has to look away from the student because he tends to read her facial expressions to decide if his response is correct. Constant verbal acknowledgement of the student’s responses. The pictures are always brought back to the table after matches are made to avoid the student using the process of elimination. The student is reading the word on the card, even through it is not verbally and indicating that he knows what the word means. The teacher has the student clean up the cards when they finish. At this time the teacher is recording the correct responses that the student made in his binder. Next, they begin a letter recognition file folder. Lowercase letters are matched to sets of upper and lower case letters listed in the full alphabet on the folder. (Such as r matched to Rr.) All of the pieces are kept in a Ziploc bag on the back of the file folder.

12:10-12:20- a new student starts to work with the teacher one-on-one. They are using the Edmark program. They are blending sight words into reading full sentences. The teacher reads a full sentence and then asks, “Point to, he”. The student points to the word. Simple commands are given, “Read, please”. Sometimes the teacher interjects a short break by asking, “…touch your nose, point to your eye, raise your hands…” and then continues with the reading. “Read.” Flash cards are then read while the student draws his
finger across the word. The student is given instant feedback, with lots of eye contact.
The student is sitting directly across from the student. This is the first time the student is facing in a direction where they could see other students in the room, yet there is no one else in the room right now but the other teacher from time to time. They are working one-on-one. There is a chart in the room that I noticed. It is recreated below.

<table>
<thead>
<tr>
<th>Chart found taped on a wall near the literacy learning center:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. match picture/word to picture/word</td>
</tr>
<tr>
<td>2. match word to picture/word</td>
</tr>
<tr>
<td>3. match word to picture</td>
</tr>
</tbody>
</table>
APPENDIX E.

INFORMED CONSENT FORM FOR ADMINISTRATION
Informed Consent Form: Administration

Principal Investigator (PI): Heidi A. Brenenstuhl
Phone: [redacted]
Project Title: Meeting the Needs of All Students: Best Practices for Teaching Children with Autism to Read in an Inclusive Setting.

You are invited to participate with no obligation in a research study which has as its main purpose the development and validation of the best practices for teaching students with Autism to read. Through survey and observation techniques, common threads for instruction will be sought out and related to the literary research of today to make instructional recommendations for those teaching children with Autism in an inclusive classroom setting.

If you choose to participate in this research study, you will be interviewed as a means for determining some foundational information about your school and its special design. The interview consists of ten questions and some minor sub-questions and will be tape recorded for transcription purposes later. The interview will be an opportunity for you to ask questions of me as well. After the transcription, I will then practice member checking, where you decide the content to be included in the study. At this time I will also give you the original recorded tape for you to do with as you please, assuring that no copies have been made and that it will be kept in a secure locked location when not being referred to. All of these precautions are for keeping you and your school anonymous for confidentiality of the study. At no point would your identity be revealed and your school’s name will only be stated by the use of the pseudonym, The Metalmark School.

At any time you may withdraw from the study without penalty and the PI may choose to cancel your participation at any time.

Do you have any questions? (Circle one)  NO YES

If you have circled yes, please contact the PI, Heidi A. Brenenstuhl, at the above phone number or by email at [redacted] before signing this form. If you have questions or concerns regarding your rights as a research participant, you may also contact the Chair of the Human Subjects Review Board at BGSU at [redacted], or at [redacted]. Do not sign this form until these questions have been answered to your satisfaction.

YOU ARE MAKING A DECISION WHETHER OR NOT TO ALLOW THE PRINCIPAL INVESTIGATOR TO INTERVIEW WHILE RECORDING THE DATA FOR TRANSCRIPTION FOR RESEARCH AND PRESENTATION PURPOSES ONLY.

I AGREE    DO NOT AGREE  (circle one) to participate in this research study.

Participant’s Name (please print): __________________________ Date: _____________
Participant’s Signature: _________________________________

Form developed by Mertler in *Action Research* (2006).
APPENDIX F.

INFORMED CONSENT FORM FOR TEACHERS
Informed Consent Form: Teachers

Principal Investigator (PI): Heidi A. Brenenstuhl
Phone: [redacted]

Project Title: Meeting the Needs of All Students: Best Practices for Teaching Children with Autism to Read in an Inclusive Setting.

You are invited to participate with no obligation in a research study which has as its main purpose the development and validation of the best practices for teaching students with Autism to read. Through survey and observation techniques, common threads for instruction will be sought out and related to the literary research of today to make instructional recommendations for those teaching children with Autism in an inclusive classroom setting.

If you choose to participate in this research study, (participation is voluntary) I will simply survey and observe you as a means for determining instructional practices for teaching literacy for students with Autism. The survey consists of ten questions. All materials will be submitted anonymously by a self-addressed stamp envelope that you will receive with a letter explaining the process in more detail. Observations will take place so to not disrupt your classroom and the PI will not be involved with the students at all. A checklist will list events observed along with field notes but will not be videotaped or recorded. The observations will take place over the course of three to four weeks in different classes between January 10th and February 5th. At no point will your identity be revealed and your school’s name will only be stated by the use of the pseudonym, The Metalmark School. All of these precautions are for keeping you and your school anonymous for confidentiality of the study.

At any time you may withdraw from the study without penalty and the PI may choose to cancel your participation at any time.

Do you have any questions? (Circle one) NO YES

If you have circled yes, please contact the PI, Heidi A. Brenenstuhl, at the above phone number or by email at [redacted] before signing this form. If you have questions or concerns regarding your rights as a research participant, you may also contact the Chair of the Human Subjects Review Board at BGSU at [redacted], or at [redacted]. Do not sign this form until these questions have been answered to your satisfaction.

YOU ARE MAKING A DECISION WHETHER OR NOT TO ALLOW THE PRINCIPAL INVESTIGATOR TO GIVE YOU A SURVEY AND OBSERVE YOUR LITERACY INSTRUCTIONAL PRACTICES FOR RESEARCH AND PRESENTATION PURPOSES ONLY.

I AGREE DO NOT AGREE (circle one) to participate in this research study.

Participant’s Name (please print): __________________________ Date: _____________

Participant’s Signature: _________________________________

Form developed by Mertler in *Action Research* (2006).
APPENDIX H.

TIMELINE
## Monthly Timeline for Study: January

| Event:                                                                 | M | 2 | 3 | 4 | 5 | 6 | 7 | M | 9 | 10 | 11 | 12 | 13 | 14 | M | 16 | 17 | 18 | 19 | 20 | 21 | M | 23 | 24 | 25 | 26 | 27 | 28 | M | 30 | 31 |
| Tentative Approval                                                    | X |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Literature Research                                                  | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Initial Contact                                                      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Parent Letter                                                        | ← |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Permission                                                           |   |   |   |   |   |   |   |   |   |   |   |   |   |   | X |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Letter-Admin                                                          |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Permission                                                           |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Letter-Teacher                                                       |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Interview                                                            |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Transcribe                                                           |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Interview                                                            | ← |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Member                                                               |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Checking                                                             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Return Tape                                                          |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Recording                                                            |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Distribute                                                           |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Surveys                                                              |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Survey Return                                                        |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Reminder (1)                                                         |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Survey Return                                                        |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Reminder (2)                                                         |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Reminder (3)                                                         |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Collect All Surveys                                                  |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Class                                                                |   | X |   |   | X | X | X | X | X | X |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Class Field Notes                                                    |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Code All Data Collected                                              |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Merge Data                                                           |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Into Study                                                           |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Final Revisions                                                      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Planned Final Defense                                                |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Defense                                                              |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
Monthly Timeline for Study: February

| Event                      | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 |
|----------------------------|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| Tentative Approval         |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| Literature Research       |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| Initial Contact           |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| Parent Letter             |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| Permission Letter-Admin   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| Permission Letter-Teacher |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| Interview                 |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| Administrator             |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| Transcribe                |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| Member                    |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| Checking                  |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| Return Tape               |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| Recording                 |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| Distribute                |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| Surveys                   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| Survey Return             |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| Reminder (1)              |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| Survey Return             |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| Reminder (2)              |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| Survey Return             |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| Reminder (3)              |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| Collect All Surveys       |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| Class Observations        |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| Class Field Notes         |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| Code All Data Collected   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| Merge Data                |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| Final Revisions           |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| Planned Final Defense     |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |

X: Tentative Approval