

STRATGIES FOR READING, WRITING, AND SPEECH ACHIEVEMENT IN AUTISTIC  
CHILDREN IN THE MIDDLE SCHOOL LEVEL

by  
Merran Arbic

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APPROVED BY:

DATE:

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### **Abstract**

Through the research of twenty studies and books the answer to the question to what extent do strategies involving visual learning contribute to increased reading, writing, and speech achievement in autistic children at the middle school level has become closer to the reach of many. Although the question is not directly answered through the research conducted, readers can see others studies conducted that have helped increase achievement in writing, reading, and speech in all children not just autistic children. Studies indicate that takes two groups of autistic children and teaches numerous visual learning strategies to increase achievement in reading, writing and speech, is referred to in the paper that would help researchers better answer this question.

### **Chapter I - Introduction**

For a very long time some sort of education system has been in place; whether the education system was a little school house holding twenty students, or a school downtown New York holding more than 500 students. The purpose of education has changed, but the main building block of education is to create productive citizens of the USA and to develop capacity for personal achievement as an active person for democracy. Throughout the history of education, different school populations have had the attention of teachers and the media. Autism has become an area of intense research focus in the last ten years as well as how to improve reading, writing and speech achievement in students. Autism is reportedly occurring in as many as 1 in 110 children (Egel, Holman, & Barthold, 2012). Notbohm spoke about autistic people being very visually oriented (Notbohm, 2005). This study will compare and contrast various studies on visual learning can increase reading, writing and speech achievement not only for autistic children at the middle school level but also for all children in middle school level.

### **Statement of the Problem**

This study is worthy and important because the amount of children with autism seems to be rising in our nation. Teachers are always looking for new ways to teach children so the learning will benefit the children. In this study, an investigation of strategies to help autistic children and other children in the middle school level to increase the reading, writing, and speech achievement was completed.

### **Research Question**

The study designed to research answers to the following question: to what extent do strategies involving visual learning contribute to increased reading, writing and speech achievement in autistic children at the middle school level?

### **Definition of Terms**

The following terms are defined using educational research.

- Autism Spectrum Disorder (ASD): “range of complex neurodevelopment disorders, characterized by social impairments, communication difficulties, and restricted, repetitive, and stereotyped patterns of behavior.” (Clearing the Fog about Autism [CFAA], 2011)

## Chapter II – Review of Literature

### Autism

Notbohm's book discussed things that every child with autism would like people to know to help them (2005). The book was written so that the reader could quickly flip through to get most of the information out. As a basis of this study, it is important to understand the children, which the study was based upon. Notbohm explained that primarily the student with autism should be treated like any other child. The students with autism have difficulty with understanding language; they are very visually oriented and tend to have sensory issues. Each chapter of the book discusses one topic that an autistic child would like people to know. In the first chapter, the topic is about how primarily an autistic child is a child and should be treated like a child not just treating the autism. People need to be aware that a child that is diagnosed with autism or any other disorder is still a child and should be treated like one not treated for the disorder. Chapter two talks about the sensory perceptions being disordered in a child with autism. Autistic children have a wide arrange of problems with sensory perceptions. They may have difficulty with loud noises or they may have difficulty with bright lights. Chapter three discusses the difference in won't and can't with a child that has autism. When an autistic child says that they can't do something they mean that they are not able to but when they say they won't do something they mean that they chose not to. The fact that autistic children are concrete thinkers is the topic of chapter four. Children with autism interpret what is being said quite literally. Students have a difficult time with idioms and clichés when they are diagnosed with autism. Chapter five talks about how people that speak with children with autism need to be patient with the child's limited vocabulary. Autistic children generally have echolalia which is where the child repeats speech that they have heard from somewhere else. In chapter six

Notbohm wrote about autistic children being very visually oriented. The use of visual items tend to help children with autism more so than verbal items. Teachers and parents need to be familiar with what an autistic child can do and not focus on what the child cannot do this is the topic of chapter seven. Focusing on what a child cannot do will be damaging on the growth of the child but focusing on what a child can do can be very rewarding. Autistic children generally have a difficult time with social interactions because of many reasons, one being that students with autism are generally blunter than typically developing children and this can cause some disagreements with children. In chapter eight of Notbohm's book the topic is helping children with autism in social situations. Children with autism may have some meltdowns in school and out of school, being aware of what might trigger their meltdowns can help to avoid further meltdowns. In chapter nine Notbohm discussed in more detail meltdowns for children with autism. The final chapter in this book was about loving the child with autism unconditionally. As with any other child, children with autism should be loved unconditionally. This knowledge helped in the study by finding strategies that may help students with autism.

Many teaching strategies researched seemed to show success in educating children with autism. In one study, video modeling was compared to in-vivo modeling for teaching students with Autism. Charlop-Christy, Le, and Freeman (2000) selected five participants. Each participant was in the age range of 7 to 11 and was attending a bi-weekly after school behavior therapy program for children with Autism. The participants were selected to show the range in the level of functioning. Charlop-Christy, Le, and Freeman (2000) selected two tasks for each participant based on the specific needs of that child. Then each task was randomly selected to be taught in either the manner of video modeling or in vivo modeling. Once the tasks were selected, one-way mirrors were placed into therapy rooms, watched the reactions to scenario, and recorded

the results using a baseline. The researchers were behind the mirror watching the reactions of the participants. The research found that video modeling led to quicker acquisition of skills than in vivo modeling, children's behavior generalized more quickly with video modeling. Four out of the five children with autism from this study who worked with video modeling led to quicker results. All five students did meet their specific tasks. The strategy of video modeling appeared to work, even though this particular study was not done to teach reading, writing, or speech it could easily be adapted to help in those areas.

A qualitative research study by Smith and Camarata (1999) addressed language intelligibility of children with autism through teacher-implemented instruction. Three children with autism and three general education teachers were selected. Participants with autism generally had a wide arrange of academic performances but they all had difficulties with communication. The teachers trained to give naturalistic responses to whenever the children gave unintelligible utterances. Smith and Camarata placed microphones on the participants and set up video cameras to watch the interactions take place. When a child produced an utterance, the teacher was instructed to do two different things. If the teachers understood the utterance than they were to give the child, feedback and give correct modeling of the utterance. If the teachers did not understand the utterance than they were to ask the child questions to help them understand, what the child was trying to communicate. As the study progressed, Smith and Camarata learned that the children that were given positive feedback and correct modeling seemed to become more social and their unintelligible utterances decreased. Although the study described above does not directly relate to this study, the fact that giving positive feedback and showing the children what to do increases their speech and in turn, their social skills does.

The effects of peer-mediated implementation of visual scripts were tested in the following study. Ganz, Heath, Lund, Camargo, Rispoli, Boles, and Plaisance recruited a middle school aged student with autism spectrum disorder, or ASD, that had speech delays to participate in the study (2012). They also recruited two typically developing peers of the previous student. The typically developing peers began to receive instruction from the ASD student's teacher on how to interact and then they began to attend the ASD student's special education class as an elective. At the beginning of the study, researchers asked the teacher to explain a few activities that the ASD student would enjoy doing with the typically developing peers. The researchers developed scripts to aid in the communication between the typically developing peers and the ASD student. As the interventions with the ASD student continued the result of the scripted interventions were that the ASD student seemed to increase in the ability to ask questions, give praise, and request help. What this means towards this study being composed currently, is autistic children can improve their communication behaviors when prompted with a script by their peers. Information like this can help a visual learner in the middle school level increase their speech performance.

Barbara Boroson's book (2011) detailed Autism Spectrum Disorders and children with Autism Spectrum Disorders in the mainstream classroom. In the first chapter, she explains what autism is and how the spectrum works. Boroson described how each student is different and uses an analogy with weather. She described some students are partly sunny with some clouds; some students are partly cloudy with some sun teachers need to be aware of the difference and how to acclimate to both. Also in chapter one she discussed Response-to-Intervention or RtI and how the evaluation process works. The second chapter of the book described how teachers need to remain positive and keep an open mind when working with all students also passing this

information to the students in the classroom as well. Boroson began to get into autism more in depth in chapter three when she discussed how children with Autism Spectrum disorder tend to be more anxious than typically developing peers. She explained ideas on how to help keep the children's anxiety level down and possible triggers for anxiety. In the remaining chapters, Boroson discussed how autistic children have high sensory systems, how to comfort students, attending meetings with family of students with autism, helping children with autism feel secure and have the ability to seek friendships with other students. This book is a wealth of information for students with autism and what to expect.

### **Reading**

A qualitative research case study by Morris and Gaffney (2011) concentrated on one child that had difficulty in reading and writing. The child started to work with researchers during his year when they first started with him during his seventh grade year and at the end of the study, he was starting his eighth grade year. The child was brought to the researchers per the parents' request. During the student's seventh grade year, he went to the researchers two days a week after school. At the beginning, the student was reading near a third to fourth grade reading level struggling with fluency. The student was placed in a four-week summer reading clinic with the researchers where they focused on fluency. Morris and Gaffney started each summer session with checking the student's homework. Each night the student was given a tape recorder with a recording of Gaffney reading a chapter from a book they are reading. The student was to listen to the chapter page by page stopping after each page to read that page either silently or aloud. After they would go over the homework assignment of listening and rereading there was a guided reading section where Gaffney partner read the book. Then they would start the repeated readings trials and end with the tutor, Gaffney, reading aloud. After the summer reading clinic,

researchers did not formally test the student but felt that the reading skill of the student and self-confidence increased. The student then began afterschool sessions two days of the week with a similar set up as during the summer. After both sessions the student's oral reading rate increased by approximately 33%.

In Bishop, Reyes, and Pflaum article they showed how students could show teachers their reading strategies and teachers can use that knowledge to help the students in areas that they do not excel (2006). In the beginning of the article, the researchers introduced approximately 80 seventh grade students to composing drawings to show their responses to difficult text. The students were asked to read some texts that would be challenging for them and draw what they would do when faced with difficulties while reading. The researchers found that the students' drawings could aid the teacher in understanding where the students are lacking. Bishop, Reyes, and Pflaum discovered that the majority of the students were comfortable with support reading, paraphrasing text information, and problem solving reading strategies but they lacked the knowledge of Global Reading. Global Reading was defined as being able to activate prior knowledge, skim a text, predicting, and using text features and context clues. Bishop, Reyes, and Pflaum then investigated what teachers could do to help students' Global Reading abilities. In most cases, the teacher modeling the skills needed appeared to help children in their strategies. Visual learners could use the drawing the pictures to show what they do when facing difficult tasks much easier than verbalizing what they are doing.

Teachers and parents alike looked for ways to improve children's reading capabilities. In a quasi-experimental study, Radcliffe, Caverly, Hand, and Franke (2008) introduced a new strategy for reading called PLAN, which stands for Predict, Locate, Add, and Note. The participants of the study were one science teacher and two of her sixth grade science classes. One

science class was a control group while the other was the treatment group. The first step of the study was to administer reading comprehension tests to the students and the teacher completes a questionnaire so the researchers had something to base their findings. After the prerequisites were finished, the implementation phase then began. In the implementation phase, the teacher taught the PLAN strategy to one of her sixth grade classes. The other sixth grade class the teacher taught using ways he/she used before. As the implementation phase was taking place, the researchers were interviewing the teacher to get feedback. After a year, the researchers interviewed the teacher, provided a questionnaire for the teacher to complete, and retested the reading comprehension levels of both sixth grade classes. They found the difference between the two groups reading comprehension tests and the reading checklists not to be a significant difference. The teacher interview and questionnaire did provide some positive feedback for the PLAN strategy. Overall, the teacher and students gained confidence and enthusiasm by using the PLAN reading strategy.

Woolley investigated the importance of visual and verbal cognitive processes for developing reading comprehension became apparent (2010). The article focused on helping children with good decoding skills but poor listening comprehension. Woolley began by discussing the construction of the mental model. "A mental model is a cohesive representation of the meaning of the text content" (Woolley, 109). A mental model could be difficult for a child that was either visual learner or verbal learner because it may not be clear to them what to do. When a person pulled visual and verbal processes into the mental model, it became clearer. The author explained various items that can help weak listening comprehension skills such as having illustrations in the reading, having the readers draw and support with dialogue, and allowing

readers to use manipulations to show characters and their actions. The main point of the article is that students that comprehend can construct mental models using prior knowledge.

A main concern for schools is increasing reading comprehension levels in students. With increased reading comprehension come increased test scores because of the students understanding of the material being read. Spörer, Brunstein, and Kieschke (2008) conducted a quantitative study that showed how strategy instruction and reciprocal teaching, RT, could improve 210 third to sixth grade students' reading comprehension. The students came from middle-class German families. The main language spoken was German and the students were predominately Caucasian. The researchers were not allowed to collect information on the parent's income or education level. The students were randomly selected to the different groups. Forty-two students were in the traditional reciprocal teaching (RT) group where they received instruction from a teacher how the reading strategies (summarizing, questioning, clarifying, and predicting) were applied to reading. Sixty students were placed in reciprocal teaching in pairs (RTP) group, which they received how to apply the same reading strategies as the RT group, but they were then shown how to work in pairs to complete the strategies. Another forty-two students were placed in an instructor-guided reading (IG) group as before the instructor modeled the strategies then the instructor would lead the group and not assign a leader from the students like the previous groups. Finally sixty-six students were assigned to be the control group, which they were instructed reading comprehension from their regular educators, which consisted of the strategies of activating background knowledge, clarifying, and predicting. Before any instruction took place, the students were given a pre-test on their comprehension levels. At the end of fourteen lessons with the groups, the students were then tested again as a post-test. After twelve weeks from teaching, the students were tested for a final time as a follow-up test. The results

showed students who participated in one of the three intervention groups had higher reading comprehension scores and having a lasting effect of strategy acquisition. Only students who were in the RTP group continued to show even higher comprehension scores after the follow-up test. The study showed that using reciprocal teaching and the strategies of summarizing, questioning, clarifying, and predicting helped students increase their comprehension levels especially when working in groups.

In a similar article, Stricklin (2011) investigated how hands-on reciprocal teaching works. Hands-on reciprocal teaching is a researched-based technique for students to become engaged in reading and increase their comprehension levels. Reciprocal teaching uses four strategies, predicting, clarifying, questioning, and summarizing, Stricklin called them the Fab Four. Each step of the Fab Four was done in different parts of reading. Predicting is completed before reading, clarifying and questioning are completed during reading, and summarizing is completed after reading. Stricklin said that teachers should model the Fab Four for the students but not to use the strategies directly (Stricklin, 620). The author explained a technique on how to introduce the Fab Four to the students in a visual sense. While starting to read a book with the class, Stricklin suggested to create characters for each strategy. For example for predicting, the character was Paula the Predictor. Stricklin went on to explain props to be used and what to say as each character. The students find this interaction to be memorable and entertaining. Once finished introducing each strategy as a character then students divided into groups would go through each character strategy in their own books. Students soon remember the steps and do not necessarily need the characters anymore; they may recall them in their mind but may not need the props to help. Stricklin moved on to discuss tools that would help in reciprocal teaching. Reciprocal teaching benefits include students reading levels increasing by at least one to two

grade levels only in the first few months of initiation. The hands-on learning helped and will help many visual learners.

Ganske, Monroe, and Strickland completed a study where the authors sent out questionnaires to practicing teachers (2003). The questionnaires were not a list of questions but space for the respondents to ask questions they had about reading and writing. When the authors received the questionnaires, they eliminated any that were from administrators, teaching assistants, and pre-service teachers. The surveys the authors looked at varied in grade level questions from kindergarten to middle school. The authors sorted the questions asked into categories and began to answer the questions teachers had. The remaining article went through each question and identified an answer and strategy to help teachers solve their problems. Some strategies suggested were literature circles, writing workshop, small group instruction, involving the family members, and use rubrics.

To end the section on reading, an article by Bronwyn Williams (2004) discussed who a reader really was. Williams addressed the use of the term reader when speaking about a child. Many of the times, teachers said, He/She is not a reader not really knowing what a reader really is. Williams started by giving meaning to the word reading. The term reading has different meaning to different people. Generally, people do not look at reading as an everyday thing but as something that requires focus, intensity, questioning, and a detached analytical position (Williams, 688). The author explained how younger children enjoy reading and find it pleasurable but once reaching middle school the idea of reading changes into work and assessment of knowledge rather than enjoyment. If the students were made more aware of the qualities of readers and the nature of reading in older grades students may find reading more enjoyable and continue to be a “reader.”

## Writing

Integration of technology in the classroom has increased drastically throughout the years. In a quantitative study, completed by Carlin-Menter and Shuell (2003) the use of multimedia programs to aid in the writing process and help students become writers that are more proficient was examined. The participants of the study included eighty-six students in eighth grade. The students attended a school in an urban setting. The majority of the student population was from a mixed-ethnic background and was on public assistance. There were seven lessons total taught to the eighth grade classes on multimedia authorship. The first lesson was an introduction to multimedia documents and how they differ from regular text documents. The students were asked to take a pre-test and complete a Venn diagram activity showing the similarities and differences of a web site and a text article/essay. After the pretests were completed the students were introduced to the program they would be using called *HyperStudio™*. At the end of the first lesson, the students received an article on teen smoking. They were asked to read and think about separating the article into categories. The next five lessons were held in the computer lab, which consisted of 25 iMac computers. The students were instructed on how to navigate through *HyperStudio™* and were then told to create their *HyperStudio™* projects on the article on teen smoking. After the six lessons, students took a post-test and the researchers looked at the results of the Venn diagram, tests, and projects. The results showed that there was an increase in organizational quality by students who originally scored low on their initial essays (Carlin-Menter, 330). The students were motivated more to use the technology rather than hand writing because of the interest in technology. Overall, the study showed an increase in motivation and enthusiasm for students.

In a similar study, Vincent (2001) investigated the use of a program called *MicroWorlds* by *Logowriter* and the effectiveness in writing skills. Vincent found five children with preferred visual learning style and one with very strongly preferred verbal learning style. These students were selected from grade five classes in an Australian independent suburban primary school. Vincent explained that "...Various techniques were used to select the children: a comparison of scores from an Australian Council for Educational Research verbal test, and the Ravens Standard Progressive Matrices; two spatial subtests from Wechsler Intelligence Scale for Children III; the Olson Erdluite visualization test; interviews with the children and some parents; and a log of informal classroom observations" (Vincent, 244). After the selection of students was completed, Vincent started a five-week normal language lessons, with a writing workshop routine. Three writing activities were introduced. The first writing activity for the students was to write without visual input. The students reviewed the writing and completed their final drafts of this activity on a word processor. The second writing activity required the students to write with a drama stimulus. During this activity, students participated in drama lessons and introduced to *MicroWorlds*. The students were encouraged to investigate the program but they could either turn in their paper on paper or on *MicroWorlds*. The third and final activity was for the students to create a myth both visually and writing using *MicroWorlds*. All students completed the tasks within the five weeks. In the first task, all students except for the verbal learner were judged low on the Learning Assessment Project criteria scale. In the second task, which was a narrative, four of the students chose to write their stories in a word processor rather than *MicroWorlds*. Three out of the four students showed some increase, however Vincent explained that was expected since the students had help from the imagery through drama. In the final task, all students were expected to use *MicroWorlds*. The five visual learners showed improvements

whereas the verbal learner showed a decline. The researcher found that the computer program helped students in writing complexities.

In a quantitative study performed by Monroe and Troia (2006), discovered teaching certain writing strategies to students with Learning Disabilities (LD) increased the students writing capabilities. In the study, twelve students selected from an urban middle school in the Pacific Northwest. The majority of students were of a different nationality and sixty-four percent received free or reduced lunch. Less than half of the student seventh grade population met or exceeded the standards on a statewide writing test. Out of the twelve students selected, six students selected randomly from the general education classes and six students received written consent to be in the study from two different special education classes. The six students from the special education classes separated into their classes. Three of the special education students were in the treatment group and the other three students were in the controlled special education group. The six students randomly selected from the general education setting were a control group as well. The general education students completed some writing samples to show the social validity control group. The students in the treatment group met with the researchers for 14 different sessions each lasting approximately 45 minutes. During the first session, the instructor/researcher told the students to write five essays and one narrative in order to have as a baseline. The instructor also introduced and modeled the prompts to help them. The prompts included DARE (Develop a position statement, Add supporting arguments, Report and refute counterarguments, and End with a strong conclusion), a prompt for persuasive papers, SPACE (Setting elements, Problems, Actions, Consequences, Emotions), a prompt to plan narrative stories, CDO (Compare, Diagnose, Operate), a prompt to help in revision, and SEARCH (Set goals, Examine paper to see if it makes sense, Ask if you said what you meant, Reveal picky

errors, Copy over neatly, and Have a last look for errors), a prompt for revising and editing. During the instructional phase, the treatment group was asked to write, revise, and evaluate essays that were not used for data analysis. The final phase for the treatment group included the students writing three essays and one narrative story. They could spend as much time as needed. After the treatment group turned in the final phase, analysis of the papers began. In the special education control group the students completed the first phase of the study but only received instruction on the first two sessions from then on they excused until the final phase were they wrote another essay and story. The general education social validity control group only wrote one opinion essay at the final phase time. The results showed the treatment group succeeded in raising their content, organization, sentence fluency, word choice and conventions scores by quite a bit. The largest gain was organization with an 86% increase. The students in the treatment group showed many more gains than the special education control group. The researchers explained that teaching students how to plan, self-regulate, and revise would make improvements in the students writing capabilities.

In all subjects, writing is important whether it be writing an essay, writing a research paper, or just a quick write. In a study performed by Mason, Kubina, and Taft (2011) investigated strategies that did improve quick writing capabilities in middle school students. A quick write is generally related to a question or specific topic and takes the students about 10 minutes to write a response. Quick writes can help students' learning by encouraging them to make connections through the writing process (Mason, Kubina, Taft, 2006). Mason, Kubina, and Taft conducted two studies that showed the effects of SRSD (self-regulated strategy development) instruction. One trial was completed with six middle school students with disabilities and the other was with 10 middle school students with disabilities. The study (Study

1) with six students was instructed in a small group setting in the learning center room in the school library with one of the researchers during their regularly scheduled language arts time. The ten students in the other study (Study 2) were taught in the learning support room during the students' regularly scheduled language arts time. The researcher taught students from study 1 in a pairs, whereas special education teachers taught students from study 2 in small groups. At the beginning of both studies, baseline performance was established by collected quick write persuasive responses of prompts. The students from both groups were then taught strategies to use for quick writes such as SRSD and POW+TREE (POW: Pick my ideas, Organize my notes, Write and say more; TREE: Topic sentence, reasons- three or more, Examine, and Ending). After five to six, 45-minute lessons were taught students were evaluated by examining persuasive responses to prompts in a 10-minute quick write. The results showed improvement in a ten-minute quick write.

In a meta-analysis, Dexter and Hughes (2011) investigated how graphic organizers help students with learning disabilities learn. The researchers looked at many studies that discussed the impact of certain graphic organizers (GO) on learning disabled children. The graphic organizers that researcher looked at included cognitive mapping, semantic mapping, semantic feature analysis, syntactic/semantic feature analysis, and visual display. Cognitive mapping helps take major ideas and relationships explicit by using lines, arrows, and spatial arrangements. Semantic mapping (SM) enables students to find relevant information from either a lecture or text. Semantic feature analysis is similar to semantic mapping however; it is in a matrix form. From semantic feature analysis, you can get syntactic/semantic feature analysis, which is similar to semantic feature analysis only now there are sentences on the matrix as well. Visual displays show the relationships between concepts and are displayed in an apparent and clear way. The

researchers looked through many articles and found students who use graphic organizers seemed to comprehend more of the information presented, increased their vocabulary, and their written recall improved. For a visual learner graphic organizers can be very helpful in all subjects.

In this last article, Shapiro, Hurry, Masterson, Wydell, and Doctor (2008) examined the implications of recent research on Literacy Development from predicting it to assessing it. To begin the article researchers investigated how to predict when children will have literacy development issues, specifically dealing with middle ear infections or otitis media (OM). The participants of this study were children from ages 9 to 10 with OM history and twenty typically developing children with no history of OM. Parent questionnaire, parent and participant consent was completed prior to the study. The students with positive OM history were divided into two separate groups, one with early onset from the ages of 0-24 months of OM and the other 25 months and older onset of OM. All students, including OM negative students, were tested on reading level and reading-related assessments. The people who tested the students were unaware of which students had a history of OM and which did not. Results showed that the early OM group had a worse performance on the tests than the later OM group and the OM negative group. The OM negative group and the later OM group showed no differences in their scores. These results show that children with an early onset of OM tend to have literacy development problems. This information is important to know when working with any students but to understand this with a child with autism can be even more important. In the next study the researchers completed they measured the speed of processing, reading and phoneme skills, accuracy of processing, rhyme skills, IQ and memory, motor skills, and speech and auditory skills in children that just began their first year of schooling (Shapiro et al.). After testing students the researchers found that early auditory and speech skills affect the literacy rate at the

end of the first year of schooling, however none of the other factors played a role. This means that teachers should test students using these skills to make predictions. With visual learning autistic students, auditory skills and speech skills will help the students communicate with others. The third study Shapiro, Hurry, Masterson, Wydell, and Doctor, looked at dyslexia and the phonological deficits. In this study, 158 children from the ages of 14-15 participated in classroom tests. Out of the 158 students tested sixteen children who scored low on five of the classroom tests were identified as poor phonological recoder (PPR) readers. Ten out of the sixteen PPR-readers were randomly chosen to take further tests along with sixteen normal readers. The PPR-readers reading was worse than the controls on non-words and words. Overall, their studies showed an importance of speech and auditory skills in early-literacy development. With early-literacy development and being aware of the history of the students, teachers can greatly increase their understanding of the students.

### **Chapter III – Results and Analysis Relative to Problem**

Many researchers have study Autism Spectrum Disorders and strategies to help the students that have these disorders. It is important to understand what exactly Autism is and some strategies to help the students in a mainstream classroom. In the books by Boroson (2011) and Notbohm(2005) the authors explain what a child with Autism thinks and feels and strategies for teachers to use in the mainstream classroom. Although these two authors do not discuss strategies that increase reading, writing, and speech achievement, they do answer questions about the autistic child in the middle school level and strategies to use in a mainstream classroom in order to help in other subjects like reading, writing, and speech. In the study conducted by Ganz, et al. the effects of visual scripts by peers for to autistic students in the middle school were that communication behaviors in autistic children could change. This means that through written

scripts and peer-mediation the speech of visual learners can be improved. The study conducted by Smith and Camarata also discussed speech in Autistic children and with positive feedback and modeling it can be improved. Finally the study completed by Charlop-Christy, Le, and Freeman also focused on the visual learning capabilities of Autistic children with the comparison of video modeling and in vivo modeling. The study found that students responded more to video modeling what this means for the question of this study is if the usage of video modeling increased in subjects such as writing, reading, and speech the achievement levels would increase for the students as well.

Many of the reading studies conducted and looked at spoke about increasing the reading comprehension levels by different strategies. One in particular really focuses on the visual aspect of learning the article written by Stricklin (2011) discussed hands-on reciprocal teaching and how to integrate this strategy into the classroom. Another study explained the benefits of reciprocal teaching, which was completed by Spörer, Brunstein, and Kieschke. These two studies really show the great extent of visual learning strategies increasing achievement in reading for all children including autistic children in the middle school level. The remaining articles and studies in the reading section showed how to increase reading comprehension in a visual and verbal process, and explained what a reader is. The remaining studies help answer the research questions by providing strategies that can engage students at middle school level and increase reading comprehension.

Two studies in the writing categories discussed the use of technology to help engage children in the writing process. Carlin-Menter and Shuell (2003) found that the computer program they used helped students become more proficient in writing. The computer program used in this study engaged students that had a more visual way of learning because of the

interactive aspect. The other study completed by Vincent (2001) used a different program on the computer but found similar results as Carlin-Menter and Shuell. For an autistic student in the middle school level writing could become easier when using software on the computer where you can animate your story. Dexter and Hughes found that the use of graphic organizers drastically helped students understanding not only reading of texts but also how to organize their writings. Visual learners could benefit from the use of graphic organizers for both reading and writing skills. The study completed by Monroe (2006) showed how the use of teaching students strategies using acronyms helped the students in the writing process. The acronyms of the strategies could easily be made into posters or other visual images for the visual learning autistic children to refer to as they write. The study completed by Mason, Kubina, and Taft (2009) showed how teaching students in smaller groups the quick writing skills and strategies could increase the students writing skills. Again the strategies taught can easily be put on posters, or use the video modeling technique from earlier.

#### **Chapter IV - Recommendations and Conclusion**

##### **Recommendation**

Through the studies and articles, the answer to the question, to what extent do strategies involving visual learning contribute to increased reading, writing, and speech achievement in autistic children at the middle school level, is not exactly answered. However, video-modeling, showing acronyms, peer-mediation, the integration of technology has increased reading, writing and speech achievement in students. Perhaps adding video-modeling, showing acronyms, peer-mediation, integrating technology with autistic middle school students researchers can determine how these strategies help the children.

### **Areas for Further Research**

A study that could be completed in order to better answer the research question would be to conduct tests in reading, writing, and speech on students with autism in the middle school level. The participants would be students with autism in grades six, seven, or eight. The participants' parents could be notified of the study and asked if their child/children could participate. At the beginning of the study, the children from both groups should take a baseline assessment on reading levels, reading comprehension, writing skills, and speech skills. The children with autism should be divided into two different groups; one will be the experimental group while the other would be the control group. The control group will continue to learn in a normal fashion. The experimental group should be taught numerous different visual strategies in reading, writing, and speech. After about six weeks or so of teaching, a new set of tests should be given to the students. The test scores can then be compared not only to the baseline tests taken before the study but also the two groups tests can be compared to determine if the strategies taught to the experimental group made any difference.

### **Summary and Conclusion**

Throughout this study, the question of what extent do visual learning strategies increase reading, writing, and speech achievement in autistic children at the middle school level was addressed. The collaboration of studies analyzed helped create a better sense of what strategies can increase achievement in all students. With further research and a study similar to the one described in the further research section the answer to the question may become even closer.

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