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**INCREASING WRITING SKILLS FOR STUDENTS WITH SIGNIFICANT
MULTIPLE DISABILITIES**

by
Heather L. McDermott

A Thesis

Submitted to the
Department of Interdisciplinary and Inclusive Education
College of Education
In partial fulfillment of the requirement
For the degree of
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at
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Thesis Chair: S. Jay Kuder, Ed.D

Dedications

I would like to dedicate this work to all of the people who have helped me in all of my educational endeavors. Firstly, my parents who have always pushed me to excel and reach as high as I can. They have supported me in every crazy idea I have ever had and I am forever grateful. To my sister and brother, I strive every day to be your inspiration and to show you the sky is the limit. To my fiancée, you are my rock, my proofreading genius and I could not have completed this work without you.

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I would like to acknowledge the hard work of so many who have helped to make this paper possible. Firstly, to the students and staff of Room 204, who push me every day. The students in my classroom have made this journey to help students a reality. I strive every day to be a better teacher for them as well as all children with severe disabilities. I would also like to acknowledge the hard work of Dr. Kuder who has taught me so much over this thesis process and has encouraged me to continue and not give up, even when I really wanted to.

Abstract

Heather McDermott
INCREASING WRITING SKILLS FOR STUDENTS WITH SIGNIFICANT
MULTIPLE DISABILITIES

2017-2018

S. Jay Kuder, Ed.D
Master of Arts in Special Education

Students with severe disabilities struggle greatly in the area of writing. The purpose of this study is to discover how implementing a writing program created for students with disabilities can increase students letter writing ability. The study used a single subject, repeated measures crossover design using two kindergarten-aged students during a public school extended school year program. Students were given the *Sensible Pencil* Pretest, three weeks of writing instruction and the same *Sensible Pencil* test after instruction. This five-week model showed that students grew in their writing ability at different rates. It was concluded that the writing program was positive in that the common language and repetition helped students with disabilities to increase their writing skills.

Table of Contents

Abstract.....	v
List of Figures	vii
List of Tables	viii
Chapter 1: Introduction.....	1
Research Problem	4
Key Terms.....	4
Summary.....	6
Chapter 2: Literature Review.....	7
Chapter 3: Research Design.....	16
Setting and Subjects.....	16
Procedure	21
Chapter 4: Results.....	24
Chapter 5: Discussion	28
Limitations	31
Implications for Practice.....	32
Conclusion	32
References.....	34

List of Figures

Figure	Page
Figure 1. Results for Student A.....	26
Figure 2. Results for Student B.....	27

List of Tables

Table	Page
Table 1. Sensible Pencil Guidelines	24

Chapter 1

Introduction

When students with severe multiple disabilities enter school, whether at age 3 or not until kindergarten at age 5, they are faced with many large developmental gaps in knowledge. There can be great uncertainty about where to begin instruction once in school because these students need so much help in many different areas. As teachers and specialists begin instruction, it is easy to see why handwriting and writing skills in general may be put on the back burner. Why teach how to hold a pencil when the student struggles to simply sit in their chair for more than five seconds? Why worry about proper line formation when the child will immediately put the pencil in their mouth and chew the wood? These are the real life internal conversations teachers, such as the author, may have daily.

Today, most students in public education classrooms are required to follow a modified version of the Common Core Content Curriculum Standards (Common Core State Standards Initiative, 2017). Following along this vein, many school districts require all students' Individualized Education Plan (IEP) goals and objectives to be aligned with grade level standards in language arts and mathematics. The Individuals with Disabilities Education Act (IDEA) mandates that students with disabilities be placed, when possible, into general education settings as the least restrictive environment (LRE).

Today many schools, including the one used in this study, work with diligence to make sure that students with severe disabilities are exposed to classrooms and environments with students without disabilities. This model has shown to be positive on

both sides of the aisle. Students with disabilities are provided positive role models and their typical peers see another type of student and learn acceptance. However, this model can also place much stress on special education teachers who must make sure that their students, who have made great growth to be able to be in an inclusion setting, will also have the non-academic skills to be able to stay in the setting. It also places stress on the general education teachers who find themselves with a much different learner than they may be accustomed to teaching. Finally, the stress is placed on a child, our students who have made tremendous strides in a self-contained classroom but now must keep up with a rigorous general education classroom, curriculum and instructional delivery.

The purpose of this study is to evaluate how implementing a writing program created for students with disabilities can increase students letter writing ability.

This study will follow two students both in the author's elementary self-contained classroom. The students range in age from 5-6 years old with cognitive functioning ranging from low to high. One student has autism the other is diagnosed with Down Syndrome. To begin the study, each student will be given a baseline assessment to determine their present level of functioning in the area of writing. Each day, during a designated writing time, students will follow the program in one-to-one teaching with the teacher. Data will be taken and analyzed by the teacher through observations during the session.

Student writing has been an ongoing problem in this classroom. The teacher noticed that even after teaching students in the same classroom for there would be a deficit in students' ability to write. They had strengths in identifying letters, numbers,

sight words and even an ability to read on grade level but they were unable to complete a worksheet where they needed to put their name on a certain line and write the number of objects counted or write the sight words to form sentences. When speaking with fellow special educators and looking at special education blogs, it became apparent that for many students the race to pick up reading skills to get them to grade level meant sacrificing some of their writing skills.

Another goal of this research is to show how programs specifically written for students with learning disabilities or specifically Autism can translate and be adapted for students whose disabilities are much more severe and even physical in nature.

The program to be explored in this study is called *Sensible Pencil* (Becht 2017). This program consists of a binder of 200 worksheets that encompasses all of the basic writing progressions needed to be able to write fluidly. The worksheets progress from a basic horizontal line and ends with letter writing in upper and lower-case forms. The program also uses the practice of common language where students are given a stated direction (SD) that is the same throughout the program such as each, horizontal line is made when the direction “down and stop” is given. Finally, the program follows many principals of discrete trial training (DTT) (Lovaas 1987) because it requires students to master a task before progressing to the next task. Also, once students master a task they must generalize the task by using it again to build upon it for example a horizontal line down is needed to progress to a vertical line across, those two lines must both be used to make a cross, which is needed to make the letter “t”.

Research Problem

There are two research questions that were addressed in this study:

1. Does the *Sensible Pencil* writing program increase the writing ability of elementary students with severe disabilities?
2. By the end of the research will students be able to draw the basic lines (vertical, horizontal, diagonal, plus sign, cross sign and curved line) independently with minimal prompting?

It was hypothesized that the results would show many trends when answering these questions through research and data collection. First, students will take some time to initially show any growth but through repetition and common language the students will increase writing skills in an upward trend. Secondly, the students will show rates of growth at different speeds depending on level of cognitive functioning.

Key terms. Severe Disabilities: This term will describe the extent to which a disability has presented itself. In numerical terms the students are at least 2-3 years below in many developmental milestones.

Sensible Pencil: A handwriting program used by parents and professionals. Children learn to print upper and lower-case letters and numbers using eleven basic lines. The Program includes 200 worksheets, progress chart and a manual. Worksheets can be copied so children can master the tasks at their own speed. Notebook format, 1985 by Linda C. Becht, illustrated by John Exley (Becht, L. C)

Autism: IDEA 2004 Definition: A developmental disability significantly affecting verbal and nonverbal communication and social interaction, generally evident before age 3, 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 daily routines, and unusual responses to sensory experiences. The term does not apply if a child's educational performance is adversely affected primarily because the child has a serious emotional disturbance as defined below. (idea.ed.gov)

Intellectual Disability: IDEA 2004 Definition: Significantly sub average general intellectual functioning existing concurrently with deficits in adaptive behavior. And manifested during the developmental period that adversely affects a child's educational performance. (idea.ed.gov)

Multiple disabilities: IDEA 2004 Definition: A combination of impairments (such as mental retardation-blindness, or mental retardation-physical disabilities) that causes such severe educational problems that the child cannot be accommodated in a special education program solely for one of the impairments. The term does not include deaf-blindness. (idea.ed.gov)

Individualized Education Plan (IEP): IDEA 2004 Definition: Individualized education program or IEP means a written statement for a child with a disability that is developed, reviewed, and revised in accordance with §§300.320 through 300.324. (idea.gov)

Summary

The purpose of this study was to examine the use of writing interventions for students with severe disabilities and their effect on students' fine motor, writing and letter identification. The study was completed using two students with different disabilities (Autism and Down's Syndrome) who are at different cognitive functioning levels (high and low). It was hypothesized that students will increase their writing skills at an independent pace, based on a program that uses common language and daily repetition.

Chapter 2

Literature Review

Pennington (2016) reviewed research on the use of assistive technology and systematic instruction with students with moderate to severe disabilities, including students with autism spectrum disorder. Pennington reviewed 15 studies. Many of the students included in these studies were similar to the students used in the current study. Pennington's findings were that several studies showed that, when using techniques such as time delay or the system of least prompts, many of the students could develop predictable writing routines.

Pennington (2016) wrote that it is often hard for instructors to teach writing to students with multiple disabilities because there is little research and very little evidence to support practices that are used. This differs from general education students in that there is so much existing research already conducted with evidence to back up the established practices. He then explained that students with multiple disabilities may have communication delays. These delays may correspond with their level of functional communication and the subsequent writing skills they will be able to develop at any given time. Therefore, Pennington writes that, using a student's assistive technology or communication device to write a sentence should take precedence over any worry about character development when, in fact, the student is not ready for such steps in the developmental process. This conclusion relates closely to this project, because regardless of a student's age, the students will progress developmentally through line formation and word formation to achieve success. Older students will not be asked to write words or sentences just because of their age but instead based on their communication and

developmental level. Pennington found that there was little research to show a concrete way to teach this unique and small population of students.

Where Pennington looked at writing from the perspective of students with moderate to severe disabilities, Joseph and Konrad (2008) looked at writing from the perspective of students with intellectual or developmental disabilities. Their literature review, like that of Pennington (2016), revealed that there are few studies that could even meet their criteria to be part of their review. Joseph and Konrad also expressed concern that writing is not a general education focus for teachers of students with disabilities because teachers are not accountable in the field of writing for students to meet adequate yearly growth. So, the main concentration within the classroom will be changed from writing development to reading and comprehension skills. This is something that the author of this study believes to be true and can be blamed as one of the reasons this study was chosen as a research project within her classroom. Writing instruction is often a “backburner problem” and reading levels are where instruction is concentrated. This can cause developmental issues with writing ability later on in their education by continuing to place emphasis only on reading levels and comprehension.

Joseph and Konrad (2008) identified studies that used subjects that met the criteria for children with intellectual disabilities (IQ under 75). Any students with autism with an IQ under 75 also fit in to their criteria. The students chosen for the study used for the current study had a reported IQ under 75 and had a diagnosis of an intellectual disability. Joseph and Konrad reviewed research that examined writing instruction and defined writing instruction as teaching students to write ideas in a written form. This assisted Joseph and Conrad to narrow down studies, because they excluded anything that

focused solely on handwriting or spelling. Finally, the authors looked at studies that were truly experimental, quasi-experimental or single-subject experimental in design, in which, there was an independent variable.

Results gathered from the studies showed that 9 studies met their criteria to be included. Those 9 studies had 31 participants, all with intellectual or developmental disabilities. The gender make-up was highly one sided; 29 participants were male, and only 2 were females. This closely resembles the same make up as the classroom used in this study. The ages, however, used for their literature review are much higher than the students in this study. Joseph and Konrad looked at students with ages ranging from 6 to 18 with a mean of 11.3 years. The students in this study range in ages from 5 to 6 with a mean range of 5.5 years; considerably lower than the review. Six of the nine studies reviewed took place in a school setting, like the one in this study, and used a single subject design.

Joseph and Konrad concluded that students with IQ's lower than 75 benefitted from writing instruction. This conclusion was reached as a result of their literature review that stated the following needs of writing skills in today's world: there is a link between communication within today's social mainstream society and the need for writing skills to send messages through sending e-mails and social media postings, the ability to obtain writing skills later in life becomes more difficult if the basic ideas and practices are not implemented to students at an earlier age, and that students with disabilities tend to communicate earlier and more fluidly through written word than through normal speech.

Even if there is little research to back up the instruction, teachers of these students should be teaching writing in a research-to-practice perspective. There are many different tools that can be used to help teach children with disabilities develop needed writing skills. There should be no reason that writing education should have to be treated as an overly complex and frustrating exercise since these types of tools exist and the benefits for being able to write are important for students with intellectual and other disabilities. Most of the studies that were reviewed by Joseph and Konrad reported an increase in writing quality and accuracy, while others reported an increase in the amount that students wrote. The authors were, however, were hesitant to deliver conclusive findings since the research is so limited and the studies had such a limited sample size.

Harris, Graham & Mason (2006) looked at 2nd grade students without disabilities as the focus group for their study. In their study, the authors aimed to discover whether using a peer support model would increase the writing ability of children who had been identified as struggling writers. Harris, Graham & Mason (2006) determined students to be struggling writers by teacher recommendations as well as including children who scored within the lowest third on state standardized testing as struggling writers. All students for this study were in second grade and attended one of four urban schools considered to be in a high percentage student body of low-income families.

The main program used to instruct the students in writing was the *Lucy Calkin's* series *Writers Workshop*. Once chosen as a struggling writer, the 66 children were split up into three groups: the first group was a control with regular instruction, the second group received SRSD (Self-Regulated Strategy Development) instruction only, and the final group was given SRSD instruction with peer support. The authors believed that the

SRSD instruction would greatly improve the students writing and wanted to see if there was any effect when using peer support in unison with the SRSD instruction. The study lasted 7 months and was delivered by 6 graduate students who were not aware of what curriculum was being studied. Instruction was delivered 3 times a week for 20 minutes.

The results of the study were very positive. It showed that students who had any form of SRSD instruction had a “statistically significant increase” in planning time when writing. There was relatively no difference when comparing if peer support was utilized or not, and this carried throughout the results. When considering the length of writing between the three groups, the same results were found. Students who received SRSD instruction in any form wrote longer stories when they were post tested immediately after instruction. The tests showed that peer support had no significant difference in post test scores. When students were tested for maintenances sometime later, students who received SRSD instruction in any form still wrote longer than their peers, but the length of their own stories was reduced from when they were post tested. The final aspect that Harris, Graham & Mason tested was the students’ intrinsic motivation and their effort given to the writing process. This is where their hypothesis was proven incorrect. The reason was that unlike planning and length, the students showed no difference in their intrinsic motivation or effort based on their programming. Students stayed the same or grew at individual rates between the pre-test and post-test periods by small margins, with there being no correlation to the instruction being given and the scores on intrinsic motivation and effort. If you take the Harris, Graham & Masons findings into consideration and how it applies to this study, then the documented information will show that a specific conclusion. That conclusion was a program that is used to

specifically target certain deficiencies that students' face with strategies that are needed to help develop these skills will ensure growth for these struggling writers.

One of the studies reviewed by Pennington (2016) was that of Schlosser and Blischak (2004) in which the authors looked at the correlation between students with autism and their writing as it related to augmentative and assistive communication (AAC). In their study, the authors used the word spelling to mean the formation of words through sequential letters. This could be done through a touch screen device or a pencil to paper writing. This study relates to the study used in this thesis in that many students in the classroom studied use AAC devices and this method of spelling or writing has not been explored as an option.

Four boys, all with a diagnosis of autism, were used in this study and ranged in age from 8-12 years old. When defining procedures and participants the authors used their previous study in 1998 of the same subject as their guide. This meant that participants needed to be relatively new with a word processor (3 months or less), no vision or hearing loss, an ability to type, diagnosis of autism, non-functional speech, between 8 and 12, poor spelling and phonetic skills and the ability to follow simple directions. Many of the characteristics of the students studied by Schlosser and Blischak are similar to the students studied for this thesis, with the exception of age. The students studied for this thesis were between the ages of 5-6 where the students studied by Schlosser and Blischak were between the ages of 8 and 12.

Once the study began, students met with a graduate assistant in a quiet corner of their classroom to complete teachings. This was done to be sure that the student was familiar and comfortable with the setting so the outcome would not be biased. Different

AAC devices and materials were used in this study including a speech-generating device (SGD) and line drawings by the PECs company. Schlosser and Blischak teachers and parents sit down and review a list of one hundred 3-4 syllable words to decide which words students needed to learn to spell. The job of the parents and teachers was to choose words the students could not yet spell but were in their reading level capabilities. If the teacher and parent agreed then the word made the “target list”.

Once the words were selected the study of the students began. The authors used an adapted alternating treatment design involving two or more instructional sets. This was chosen due to the success in the first study using the same design. Once the study began students were observed over seven areas: social validation; pre-assessment; baseline probes; acquisition probes; instruction; maintenance probes; and generalization probes.

The results of the Schlosser and Blichak study were positive. Each result was given individually for each student. Student 1 grew to maintain 100% of words taught; Student 2 grew to maintain 75%-100% of words taught; Student 3 grew to maintain 100% of words taught. However, Student 4 began trails at 0% and failed to make any progress in writing and trails were terminated after 26 sessions of 0%. The authors believed that the study was a success due to the fact that it replicated their results from the 1998 study. They concluded that spelling instruction with AAC devices in positive regardless of whether participants receive auditory feedback. They then concluded that this studied proved that children with Autism, regardless of functional speech, should be taught to read, write and spell using assistive technology. The authors did agree as well that their study lacked in the number of participants and large sample size in children.

However, this was a replication of a study with only 1 participant so their replication was larger than their original study.

One study reviewed by Joseph and Konrad pertained to the ability of students with intellectual disabilities to write using a computer versus handwriting. The Vacc study is older in nature and was published in 1987, however it did have information pertinent to this study. The study looked at four 8th grade boys diagnosed with intellectual disabilities (called in the study mildly mentally handicapped). The subjects used in this study are much older than the subjects used in the authors study, however, the disability studied is the same disability being studied in the authors study. To be considered for the study, participants needed to: be in a special education program for at least 2 years; had 1 semester of a typing course; used an Apple computer for at least 1 year and ranged in age from 14-15 years old.

The design method of the study was a single subject, repeated measures, crossover design. Two treatments were used during the study, students were given a letter to write and then given a computer or pencil and paper. Data was then collected for 6 sessions then the student switched methods for 6 sessions, then returned to the first method for 6 sessions then finished with the second method for 6 sessions. This was conveyed to the reader as CHCH (computer, handwriting, computer, handwriting) or HCHC (handwriting, computer, handwriting, computer). The data point was created as the number of minutes the student spent on task writing their assigned letter. By the end of the study students had written 24 letters total; 12 letters computer generated and 12 written letters.

Results from the study were positive and clear. There was a large difference in the ability of students to produce a letter using the computer, however the quality of the letters did not differ between the two methods used to complete the task. When looking at the results, the four students stayed around the same levels throughout the study. During the handwriting phases students averaged 10-15 words per minute, but when using the computer, the same students averaged 15-25 words per minute. When looking at the data from all 4 students individually and as a whole, computer-generated writing created a longer time on task than handwriting a letter. The authors of the study, while stating their hypothesis was correct, also stated that the sample size was too small to make definitive scientific conclusions.

Chapter 3

Research Design

Setting and Subjects

This study was conducted in a kindergarten to fourth grade elementary school, during the 2016-2017 Extended School Year (ESY) Program. The school had 681 students; 147 kindergarteners, 156 first graders, 131 second graders, 131 third graders, 111 fourth graders. The total enrollment also includes 5 “ungraded” students. All of the children in the classroom used in this study are considered ungraded because their IEP uses nontraditional grading methods or they have been retained in a grade level due to cognitive abilities.

In the classroom used for the study there was one third grader, five second graders, two first graders and three kindergarteners. There was a difference between the school community and the classroom being studied in the gender of the students. The school was 48% female and 52% male; whereas the classroom being studied was 40% female and 60% male. Enrollment by ethnicity was one demographic that was very close between the settings. The school at large had a population of 58% Hispanic, 32% Black, 7% White, 2% Asian and 1% other. The classroom being studied had students who are 30% Hispanic, 30% Black, 20% White, 10% Asian and 10% Indonesian.

The school being studied was a Title 1 school with 57% of its student body considered economically disadvantaged. The school also had a school-wide free breakfast program where the student majority qualifies for free or reduced lunch. Following the same trend, 10.7% of students were considered chronically absent with 12% of students being absent more than 15 days a school year. Since many students in

the study are medically fragile, they had a high rate of absence due to being sick, attending doctors' appointments and attending outside therapies and medical tests that require them to be out of school. These cases cause disruption in the consistency of instruction.

The "ungraded" classroom used in the study included 10 students but only 2 students were given permission to participate in the study. The classroom had many adult staff members to support instruction. There was a classroom teacher, a classroom instructional assistant, four personal care assistants, and four LPN nurses in the classroom who serviced 3 students with individual medical needs. Both students participating in the study were primarily educated by the classroom teacher, a general education inclusion teacher and the classroom instructional assistant.

Student A was a 5-year 3-month old girl diagnosed with Autism. During the school day, Student A had the assistance of a classroom instructional assistant who accompanied her to homeroom, breakfast, lunch, recess and specials (media, art, gym, computers, music and Spanish). Student A had Occupational Therapy one time per week for 30 minutes and Speech Therapy one time per week for 40 minutes in a whole group setting. Student A did not qualify for Physical Therapy based on her proficient mobile abilities.

Student A lived in a single-family detached home with her biological mother and father as well as her biological older brother who was an 8-year-old boy diagnosed with Autism. In the home, Student A's mother spoke Mandarin Chinese and English while her father spoke Gaelic as well as English. Both of her parents immigrated to America from China and Ireland respectively. Student A's parents report that she is a 'happy child who

enjoys interacting with her family but will often play alone and frequently fights with her brother.’

Her mother reported “It is hard when they fight because neither of them can understand why the other does something. If they both want a toy, they roll around fighting over it. We must teach sharing to two autistic children, which can be impossible.” When asked what the hardest part of Student A’s home life was, her father reported, “For me, there are two things that break my heart to watch. That is when she becomes locked into a routine, at first, she is doing great and we find success. Then the plan changes ever so slightly and she simply melts and you see your child trapped while nothing you do can help in that moment. Also, for me, I struggle to watch her have no ability to communicate except to copy my words. I want to know what she needs, is thinking about or is afraid of so that I can help her.”

At school, Student A was a happy child with a pleasant disposition, that is, if control was on her terms. When told “no” or redirected, she would flop to the floor to scream and cry. This made it hard for same aged neurotypical peers to socialize with her, and these peers have told adults, “she just gets so sad but I don’t want her to kick me”. She struggles with verbal communication and was very echoic. This can be frustrating for young kindergarteners who do not understand why she cannot answer them in conversation or believe her to be “copying me”.

Her strengths are her play skills and the ability to create obstacle courses. During free choice time the children enjoy making courses with her, and in many cases, they struggle to keep up with her. Student A also has a willingness to make friends and social

connections. She enjoys the company of other children and often wants to join in these play groups, she then will make the effort needed to gain friendships, when in the correct frame of mind.

Student B was a 5-year 1-month old kindergarten boy who was referred to the district from Early Intervention and began the preschool program when he turned 3 years old. Student B had been classified as having Down's Syndrome and was receiving in home services since birth. Student B attended a medical day program from the ages of 1-3 as well. Student B's mother gave a social history to the social worker of the district and explained that Student B hit most developmental milestones about 1-2 years late. She explained as well that Student B had always been a happy child and in line he was the third of four children in his family, including being the only boy out of the four. She explained that in their family culture, the girls take care of boys. So, his sisters were always doing things for their brother instead of making him do things himself. This learned helplessness had been observed in the classroom with many academic gaps being shown because of his refusal to try things on his own.

Once in preschool, Student B was placed in an inclusion preschool setting and thrived in the environment. He was well liked by peers and enjoyed the Creative Curriculum used by the district. Play was an essential focus of this program and playing had been a highly-preferred activity for Student B. Throughout his time at the preschool, Student B stayed non-verbal and only emitted grunts, laughs and other noises to convey his needs. Upon entering kindergarten, the Picture Exchange Communication System (PECS) was introduced to Student B. The teacher and classroom assistant used the

program with him along with a once a week 20-minute individual speech session with the school's speech therapist.

At the time of this study, Student B was making great progress in the classroom. Using a picture schedule, Student B had been potty trained and could independently go to the bathroom with the exception of a verbal reminder from a timer set at each hour. He was taught to wash his hands using a picture schedule and chaining as well. Student B was an auditory learner who loves the routine of songs being sung each day at calendar time and would imitate the teacher's hand motions as well as some speech. Songs tend to evoke language and Student B could be heard talking in more recognizable speech after singing these songs that had become part of the classroom routine. Student B had found great success in the Foundations Phonics Program. The letter cards, daily repetition and rewards for emitting sounds had shown growth over the time of using this program.

Student B continued to have issues with stubbornness and unwillingness to try things on his own even though he had shown growth in many other areas. Much of these issues stem from the cultural differences experienced between his home life and the time spent at school, which had been shown through the actions he displayed in the classroom. When Student B would come into class each morning, he had taken his coat off and thrown it on the floor routinely. The classroom teacher and classroom assistant had tried to use a picture schedule to have student B hang up his belongings within his cubby each morning since it had worked previously with his potty training. Student B constantly fought back or cried when hand over hand prompting began would be another prime example of the students' stubbornness. One more example of his unwillingness to participate would be that Student B had frequently refused to try to write and would then

begin to throw his pencils when prompted by the classroom teacher to attempt a writing assignment. When mom was consulted about these issues, she explained, “Oh he does that at home but my girls just pick it up for him”. These traits had been seen in many other areas of Student B’s time spent in the classroom.

Procedure

A separate single subject design was used to complete the study. Baseline data, which was information gathered on the students’ ability to complete the task given to them, was taken and the children were observed on their writing ability. The data being gathered for this study was the students’ ability to draw lines and write letters.

The *Sensible Pencil* pretest was given to obtain baseline data, which the teacher needed in order to decide the beginning instructional level of the students. The test was given one-to-one with a teacher and student. The teacher used a script of exactly how to instruct the student on each page. For example, “Put your pencil on the dot and draw a line down.” Once the student had completed the page there was the scoring criteria on if it is mastered. If the student mastered the page then they would go to the next page which is increasingly harder as the pages’ progress until they reached a page they cannot master. The section in which they are unable to master is where the instruction began.

Following the pre-testing, the students were given *Sensible Pencil* instruction. Instruction was given in a small group format, with each student working on the writing skill they needed to approve upon. At the table a student worked on “down and stop” another worked on “cross”. The direction was given to the student in a clear specific direction and that was the only direction. The student was given the chance to follow through independently if they did not the teacher would give them a physical prompt.

The student then turned the page over and try again. The teacher wrote the prompt level onto the page once the task was finished. Once the formal page was finished, the students then practiced using white board markers, paint, shaving cream or any other sensory based medium. Instruction lasted 5 minutes in total about 15-20 minutes daily.

The study began on the first day of extended school year, or ESY, and continued for the three weeks that the ESY lasted. The first day the teacher gave the students time to draw a picture and “write about themselves”. The rest of Week 1 the teacher gave the students the *Sensible Pencil* pretest to determine the students’ baseline before instruction was given. This test was kept as an observation along with physical evidence.

Once the beginning level of instruction for the *Sensible Pencil* program was obtained from the students’ baseline test results, daily instruction focused on the student mastering the skill they stopped at. The students would come to the table and get their paper and pencil when writing time began each day. We then followed the Sensible Pencil guidelines and students completed the writing activity. This activity stayed the same until the student had mastered that step. Once completed, they could finish out the remaining time left for instruction with a center of their choice (white boards, chalk, painting etc.). This continued from Week 2 Day 1 until Week 4 Day 5. On Week 5 Days 1 - 5, the *Sensible Pencil* pretest was given again to show the progress of the students.

Observational data was taken on the growth or lack thereof in the students’ ability to draw lines and write letters. Observational factors included: Was the student holding the pencil correctly? Did the student stay inside the lines? Did the student start and stop at the correct place? Finally, the *Sensible Pencil* pretest was again given on the last week of the study to evaluate changes in the students’ writing performance.

Several methods were used to ensure the fidelity of the study. First, the entire class was given the same writing instruction and given the pretests at the same time to create a normality in the instruction. Only the teacher knew that Student A and Student B were being studied to prevent attempts from others in the classroom from giving the students extra writing help. This was put in place to make sure the students would not show an increase in growth based off the help of others and would make the observational growth properly represent the work of the individual student. Neither of the two students were given any special rewards for doing good work or being a part of the study. The teacher made copies of all the students' samples so that Student A and Student B had the same work to take home or hang in the hallway as not to draw attention to their part in the study. Finally, there were no instruction changes to benefit the results of the study nor a change to the hypothesis of the study. Instruction continued for the length of the study and the teacher re-evaluated if changes needed to be made after the study had been completed.

Chapter 4

Results

This study was conducted over a five-week span during an extended school year (ESY) program. Week 1 was devoted to baseline data, weeks 2-5 were devoted to treatment and week 5 was devoted to a return to baseline. During the baseline assessment students were given the *Sensible Pencil Pre-Test* (Becht 2017). The test examined students' writing ability, with each pre-writing skill being given a level. The students were given a direction, asked to perform the task and the teacher observed writing behavior. The teacher then marked the paper as mastered or not mastered based on pencil grip, staying on the line and overall product. If the level was mastered, the student moved to the next level until a level was not mastered. The chart below explains the levels and their corresponding skill.

Table 1

Sensible Pencil Guidelines

Level 1	Vertical Line: Trace
Level 2	Horizontal Line: Trace
Level 3	Vertical Line: Copy
Level 4	Horizontal Line: Copy
Level 5	Cross Trace
Level 6	Cross Copy
Level 7	Square Trace
Level 8	Square: Copy

Table 1 (continued)

Level 9	Circle: Trace
Level 10	Circle: Copy
Level 11	Diagonal: Trace
Level 12	Diagonal Copy
Level 13	X: Trace
Level 14	X: Copy

Once the baseline assessment was completed each student was given a total score. Daily instruction then began during weeks 2-4. Each day students had writing instruction for 20 minutes. Students began with their level of the day. A pre-created worksheet and pencil was given to the child. The direction was then given (ex. “Down and Stop” “Cross and Stop”) and the child then completed the action. The observer judged the quality of work the same as the baseline test. If the child mastered the skill then the next day they would be moved up a level. If they did not master that skill they stayed on that level. Once completed with the worksheet students were given a variety of mediums to increase writing skills such as: Play dough, shaving cream, letter blocks and Wiki Sticks for the rest of the 20 minutes.

Each day data was taken on a what level the children had reached. During week 5 the students completed the same *Sensible Pencil Pre-Test*. The test was given the exact same way and results were recorded. All data was then entered into a spreadsheet to be analyzed. The following figures show the results of the study for each student.

Looking at Student A first (Figure 1), a baseline test was given and she received a score of 4. This means that she could draw a vertical and horizontal line independently but could not put the lines together to make a cross. This was where instruction began for Student A. Once instruction began, Student A was stationary in her levels for 3 days then began a pattern of having a level introduced one day and mastering it by the next day. This trend continued for 5 levels until she then mastered 3 levels in 3 consecutive days. Student A scored a 13 Once a return to baseline assessment was given meaning that she could complete all tasks given in the pre-writing program except for drawing a circle without a tracing line. Overall, there was an upward and positive trend in the data with the student, gaining 9 levels from the baseline to the return to baseline assessment.

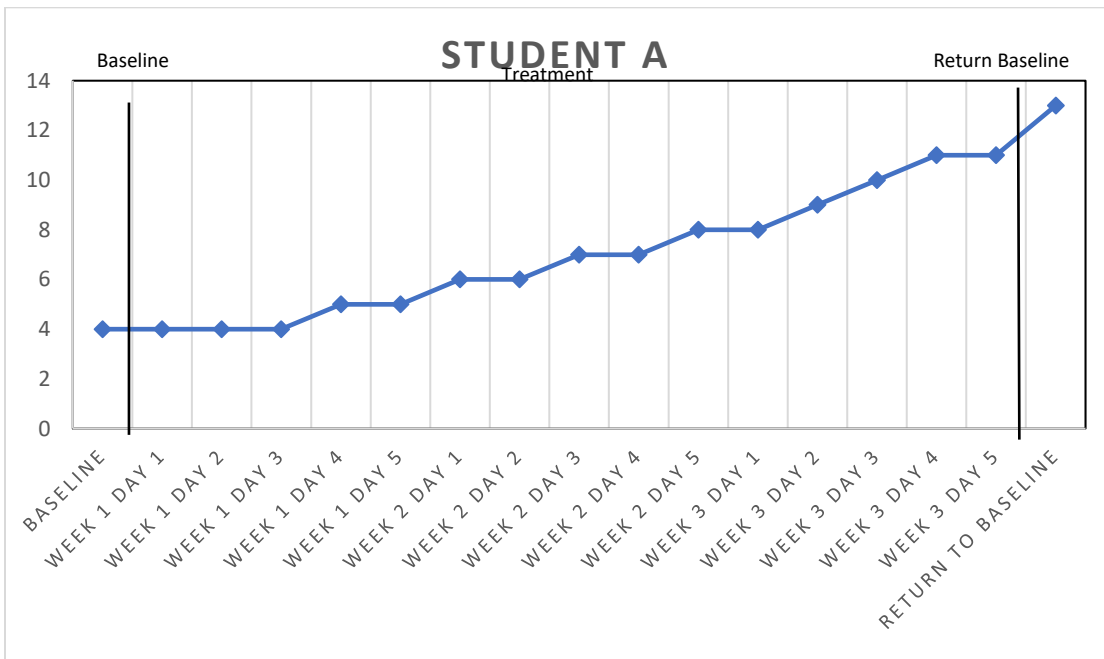


Figure 1. Results for Student A

The data tells a much different story when looking at Student B. Student B was given the baseline assessment and received a score of 0 meaning that his writing ability was at a basic scribbling level and he could not trace on the line. As treatment began, Student B progressed in a positive pattern with a general stagnation of 2-5 days on a level. Student B scored a 6 when the return to baseline assessment was given meaning that he could draw a line vertically, horizontally and could cross the 2 lines.

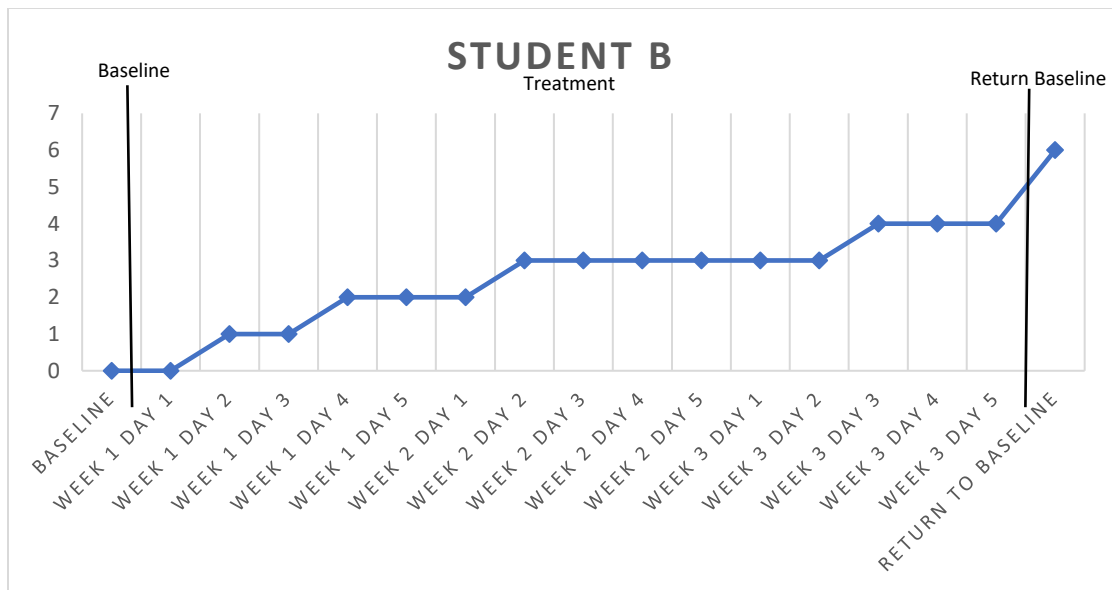


Figure 2. Results for Student B

Looking at both subjects together, there are some positive results. As previously hypothesized, both students made progress in their pre-writing skills ability. Both subjects completed the levels at different speeds and while they had positive progress they began and ended on different levels.

Chapter 5

Discussion

The purpose of this study was to investigate whether implementing a writing program created for students with disabilities can increase students letter writing ability. The study followed two kindergarten-aged students during their 20-minute writing time during an extended school year program. During the study, two research questions were explored. One, does the *Sensible Pencil* writing program increase the ability of elementary students with severe disabilities? Two, by the end of the research will students be able to draw the basic lines (vertical, horizontal, diagonal, plus sign, cross sign and curved line) independently with minimal prompting? The author hypothesized that the results would show students' initial growth to be slow but through repetition and the use of common language the students would increase their writing skills.

Once the procedures and baseline data were taken, students were given instruction for 3 weeks and then a return to baseline test was given during week 5. Results were extremely positive and the teachers in the classroom were astounded with the progress made in such a short period of time. The students grew at different rates of speed in accordance with their cognitive levels as hypothesized. Student A began progress slow, but once a routine was established she was able to complete levels day after day, 13 levels in total. By completing levels in this upward trend, she showed the promise to be able to continue writing practices and begin writing letters and words. Student B however, took a little bit longer in his progressions. While student B gained 6 levels in the course of 3 weeks, he also took much longer and was stuck on the same level for

many days. This shows us that while the program is efficient in teaching writing skills to students with disabilities, there are students that will need extra time devoted to mastering the skills at a slower pace.

Much like Pennington (2016) found, one successful teaching style for children with multiple disabilities was to break down the process of learning to write into many more simplified steps. Overall, this process may take more time to be able to master the ability to write but the students will have a greater chance at mastering these skills by memorizing and completing each step of the process. The pre-testing score and the post testing score are a good example of this fact. The pre-test for student A was a four and the pre-test for student B was a zero. The post-test score for student A was a thirteen and the post-test for Student B was a six. Both students were able to master the abilities taught to them since it happened gradually over time, with student A specifically mastered a majority of the steps for letter formation. Soon student A will be able to form the letters of the alphabet based on the step by step instruction given.

As stated in Joseph & Konrad's (2008) study, written language may be easier to learn at a younger age for the child with multiple disabilities since some take a very long time to develop speech and some are not capable of speech. To find a teaching method for writing should become a main focus for these children at a younger age. This is the main goal behind the work of this thesis to develop a method to help these children master these skills at a faster and more effective rate. The method used in this study certainly appears very effective based on the positive results, but what about the rate of which these children develop these skills? The differential between the two students in

mastering each task gives a clearer image of the reason behind the time gap of development between student A and student B.

The first point for the differential that existed between the growth of student A and student B is that the time it took to master each step for Student A was much shorter than the time it took for student B. There are several factors that may contributed to the extended time it took student B's to master each step. First, student B has a different diagnosed disability Down's Syndrome, then that of Student A, who was identified as autistic. Second, student B may have developed learned helplessness due to the way he has been instructed. This means that it is more difficult to teach the student a new skill because they may believe that things will be done for the student instead of the student completing any of the assigned tasks. A positive note is that even with these issues, student B still showed growth and development in the *Sensible Pencil* program over time. This indicates that the method of teaching may not be the issue but may instead be the difference in diagnosis as well as the learned helplessness. More testing should be done to get a more concrete grasp of the exact reason for the differential between these two students and the teaching style that was used.

The issue that exists then in reference to this differential is that other skills still need to be developed, so time must be budgeted very carefully. If this program ends up taking more time out of each day so it may be most effective, then what other skills being developed will have to be budgeted at less time each day in order to fulfill the time requirement to learn writing? There is the possibility that each skill needing to be developed may take a longer and more extensive period of time to master. The hours in

the day spent teaching the student these various skills at a slower pace would then lead to a child not gaining all of the necessary skills that is required by the school district by the time frame these skills need to be developed. One way to combat this issue would be to have the parents meet with the teacher and show them how they may assist the student at working to develop the skills at home for their homework assignment of the night. The teacher would be responsible in fully educating the parent about each step of the process so practice can be successful at home to create less of a time gap in developing these skills. Another way to combat this would be to have several small increments of time throughout the day to reinforce the skill at multiple times of the day. This may create a more frequent memorization pattern that would be easier for the student to master each step.

Limitations

There was a lot of effort put into controlling extraneous variables during the treatment phase of the program. Students were present for all days of the program, but the instructor was out for three different days (two sick and one meeting). During these days treatment continued with the help of the classroom instructional assistant who was unaware of the study and believed this was just the daily classroom routine. Behavior was also an extraneous behavior that could not be controlled in the classroom. While the two subjects for the study have no behaviors issues, they are in a classroom of students with severe behaviors. The classroom was disrupted often during treatment times with students needing the attention of the classroom teacher. During this time, the classroom

instructional assistant took over for the teacher and was briefed on exactly how to carry out the instruction to be consistent with the teacher.

While the results of this study are extremely positive and have supported the hypothesis correct, they are not to be seen as scientifically sound. It was far too small for result to be statistically analyzed with a single subject design and only 2 subjects as the sample size. The research will need to be done with a larger group and in a more controlled environment for this study to be more scientifically sound.

Implications for Practice

The results of this study suggest several different possibilities about teaching students with multiple severe disabilities. First is that the Sensible Pencil Handwriting Program was very effective in teaching students with severe disabilities how to write basic lines in a short period of time. Secondly, the study showed that when implementing the program, attention must be paid to the students' cognitive level as a guide for pace and subsequent re-teaching.

Conclusion

Despite the small sample size of the study group for this thesis, the *Sensible Pencil* and similar instructional methods may be useful tools to teach writing to students with multiple disabilities. There should be more studies done on this topic with a larger study group to create a much great collection of data. Study groups should also have specific groups of children with the same disabilities to get a more accurate assessment of which disability has a greater success rate with this style of teaching and which group has a limited success rate. This research must be repeated many times in order to get a fully

accurate report of whom may benefit the most from this style of teaching. Once the limitations of the rate at which skills can be mastered based on the students' disability, a program can be put into effect to make adjustments to this style of teaching writing skills with alterations being made to decrease the limitations of growth. After instituting this program, it may be reviewed in applications to teach other skills such as mathematics and increasing reading ability.

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