The Effectiveness of the Program "Handwriting Without Tears"

With Students Having Special

Learning Needs

by

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Abstract

Teaching handwriting skills to students having learning deficits and/or special

educational needs often requires an alternative approach. In order for some students to acquire

handwriting skills, they must be taught in an individualized setting using specialized methods or

strategies. Sand Lake Elementary School has recently purchased and trained several staff

members in the handwriting program "Handwriting without Tears", which is a multi-sensory

curriculum designed to teach handwriting. Five special education teachers within the school are

currently implementing the program with students having significant handwriting needs. Several

others teachers are interested in using the program with students who struggle, but are

inexperienced teaching handwriting using a multi-sensory curriculum. This study evaluates the

teaching guide, scope and sequence, handwriting correction strategies as well as the multi-

sensory activities of "Handwriting without Tears". Methods used to examine the curriculum

components included criterion checklists, a teacher questionnaires/survey, as well as lesson

observations of teachers who are currently trained and implementing the "Handwriting without Tears" curriculum. The results from the data collection procedures will inform the development of conclusions and recommendations on how to most effectively use "Handwriting without Tears" with students having learning deficits or special educational needs.

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Chapter I: Introduction

Handwriting skills are an important component of the early elementary writing curriculum (Marr, Windsor & Cermak, 2001). As handwriting skills become more automatic, students begin to emerge as fluent writers. However, for children having learning deficits or specialized learning or physical needs handwriting can be a daunting task (Graham, 2009). Understanding how handwriting skills and abilities develop as well as how to provide effective handwriting instruction to all types of students is important for preventing handwriting problems.

Although most teachers agree that direct handwriting instruction should be implemented into the school day, studies have indicated that a large percentage of teachers don't feel knowledgeable about aspects that influence children's writing development (Graham, Harris, Mason, Fink, Moran & Saddler, 2008). Teachers often struggle to come up with strategies and/or methods of teaching handwriting in alternative ways. This lack of instructional training and/or teaching practices raises concerns about the quality of handwriting instruction for students in the early elementary grades; especially those who have special educational needs (Graham et. al, 2008).

As more research has become available regarding the various learning styles and educational needs of students having disabilities, many programs have been developed to aid in adequately and efficiently teaching handwriting skills to the challenged learner. Sand Lake Elementary School has recently purchased and provided training to a variety of staff members on the curricular program, "Handwriting without Tears" (HWT). This handwriting curriculum provides a multi-sensory approach to teaching handwriting. Implementing this curriculum successfully with students having special learning needs requires an understanding of the program's purpose, methods and/or strategies, materials as well as intended outcomes. Reviewing the components of the HWT curriculum and providing guidelines to effective

delivery will assist educators in effective implementation of handwriting instruction. As educators become more aware of how to deliver effective handwriting instruction, more students with special instructional needs will progress in achieving handwriting goals.

Statement of the Problem

Many students do not experience success with the traditional teaching methods of handwriting skills in early elementary school. An alternative approach to handwriting instruction is often required when working with students having learning deficits or special educational needs. Successful implementation of a developmentally appropriate, multisensory handwriting program requires careful review and preparation prior to beginning instruction. This study will provide useful information and tips for staff wishing to use the HWT curriculum with students having unique learning needs that require a more individualized, multi-sensory approach to learning handwriting skills.

Purpose of the Study

The purpose of the study is to examine the effectiveness of HWT curriculum for students having learning deficits and/or delays. Using the following four key questions, the program will be evaluated for specific use with students requiring individual or specialized instruction.

Key Questions:

1. To what extent does the teaching guide provide instructional methods, guidelines and tips that are useful for students having learning challenges?

2. To what extent is the scope and sequence appropriate for students requiring an individualized handwriting approach?

3. To what extent are the strategies for identifying and correcting handwriting problems successful with students having learning disabilities or delays?

4. To what extent are the multisensory lessons and materials effective for teaching students having individual instructional needs?

The data collected from this study will be used to inform Sand Lake Elementary special education teachers of recommended methods and/or strategies for successful implementation of HWT with students having significant handwriting needs.

Assumptions of the Study

This study holds several basic assumptions. First, it assumes that the students participating in this study have learning deficits or disabilities which make learning handwriting skills a challenging task. Second, the study assumes that the instructors using the program are capable of delivering developmentally appropriate instruction for the students participating in the study. The study also assumes the experienced users of the HWT curriculum are familiar with the program and qualified to make recommendations for future implementation of the HWT curriculum with students requiring individual and/or specialized instruction.

Definition of Terms

Visuomotor. Control or movement of small muscles in hands and fingers for doing routine skills such as using utensils, buttoning, coloring, etc. It is often referred to as the ability to coordinate vision and movement to produce actions.

Multi-sensory. Involving or incorporating many physiological senses such as sight, hearing, smell, touch and taste. The integration of sensory information is known to aid in learning of students having varying language or learning deficits.

Automaticity. The state or quality of being spontaneous, self-regulating or involuntary. This occurs when one has the ability to do something with an automatic response or pattern of behavior. It is usually the result of repetition, learning and practice.

Transcription. A systematic representation of spoken language in a written form. May refer to copying or transcribing words from a specific source.

Motor Sequence. Physical development is orderly and occurs in a predictable pattern. Physical skills may be related to large muscles (gross motor) or small muscles (fine motor).

Remediation. The act or process of correcting a problem. This refers to treating or developing competence in a skill deficit or faulty habit.

Dysgraphia. A writing disability or disorder that results in a deficiency in handwriting or the process of expressing language in a written form.

Traditional Manuscript. A type of handwriting that children learn when first learning to produce the alphabet. It is often referred to as printing and resembles the text found in books.

Limitations of the Study

Within the scope of this research study, several limitations exist. The study focused primarily on the first grade level of the HWT curriculum, thus limiting the extent of the program analysis. Another limitation of the study was the availability of students and teachers who were able to participate in the study. Due to limited resources and staff familiar with the HWT program, all research took place in one elementary school which limited the validity of the data collected. Furthermore, a diverse population with cultural and socioeconomic differences was not considered in the sample of students and staff participating in the study.

Methodology

The following research study evaluated the effectiveness of the curriculum HWT for teaching handwriting skills to early elementary students having specialized learning needs. In order to determine the extent to which the program is appropriate for meeting the needs of students who have learning deficits that affect their ability to be successful learning handwriting

skills, the following steps were taken. First a thorough review of research surrounding the development and importance of handwriting skills was conducted. The available research focused on the stages of handwriting development, the importance of direct teaching of handwriting skills in the early grades, the challenges that students with learning and/or unique educational needs face in learning handwriting as well as teacher training and perceptions of handwriting instruction.

Next, the components of the program addressed in the key questions were evaluated using criterion checklists which included important writing standards and instructional characteristics needed for program success with special students. After reviewing the results of the checklist analysis, a teacher survey was created to further assess the strengths and weaknesses of the program when used with students with unique learning needs. Following the administration of the survey, experienced HWT teacher participants were observed and critiqued while implementing lessons from the HWT curriculum to students with identified learning deficits.   Upon review and analysis of the data collected, conclusions and recommendations were developed to assist in future use of the program HWT with students requiring individualized handwriting instruction.

. Gathering the data from the final step of the study involved careful observation of the implementation of HWT lessons by the teacher participants with students requiring specialized handwriting instruction at the First Grade Curriculum level. The compilation of all of the above data collection was used to inform the development of recommendations for successful use of the HWT curriculum for students with special learning or educational needs.

Chapter II: Literature Review

Handwriting is a critical aspect of the typical elementary child's school experience (Marr, Windsor, & Cermak, 2001). Current research continues to show that handwriting is the most common tool for measuring whether knowledge being taught is learned and mastered by students. An estimated 30-60% of the elementary school day is spent doing fine-motor or writing activities (Buman & Kavak, 2008). In the classroom and beyond, children need to produce handwriting to express and communicate ideas as well as record information. When a child is unable to perform the mechanical aspects of writing in the early schooling years, he/she develops problems with attending to cognitive content. Inadequate handwriting performance often results in poor academic performance which ultimately leads to problems in self-esteem (Erhardt & Meade, 2005).

Many researchers have attempted to discover the underlying factors that lead to handwriting acquisition. These studies have examined the developmental and foundational skills that must be present in order for students to have success in handwriting (Marr, Windsor & Cermak, 2001). Providing adequate handwriting instruction involves an understanding of the integral aspects of handwriting development for children both with and without handwriting problems. Teachers need to have experience and training using handwriting programs and resources that not only teach the handwriting skills, but also provide interventions for those who struggle or lack handwriting readiness skills (Marr, Windsor & Cermak, 2001). Often teachers feel as though they don't have the time and/or training to directly teach handwriting skills. Research has shown that handwriting is a complex skill that requires many sensory systems to work together (Keller, 2001). Body perception, coordination of two sides of the body, tactile

senses, motor planning, attention span, memory, auditory and visual perception are among the many important processes that are necessary for handwriting (Keller, 2001).

For students with special learning needs, learning to write often involves a more creative and unique approach. The incorporation of multi-sensory activities that allow children to experience letter making through the senses before beginning formal instruction is helpful. Students with special education needs are especially at risk for handwriting challenges (Marr, Windsor & Cermak, 2001). Children who have handwriting difficulties are often referred for occupational therapy (Erhardt & Meade, 2005). Developing methods and strategies for helping these students develop handwriting skills requires teachers and therapists to have knowledge about the prerequisite skills needed for students to produce legible handwriting. Finding effective programs, interventions and solutions to handwriting problems is an important step to achieving handwriting success (Erhardt & Meade, 2005).

The following literature review will discuss research surrounding the benefits of handwriting instruction, handwriting readiness skills and development, the complex nature of handwriting, researched instructional practices, causes of handwriting problems, teacher preparation in teaching/remediating handwriting, as well as the implications of this research for handwriting success.

Benefits of Handwriting Instruction

Although we have moved into an age of technology, handwriting continues to be the main tool for communicating and assessing knowledge in the classroom (Handwriting Standards, 2010). Technological advances in word-processing programs and assistive technology are providing valuable supports for children with writing problems. However, they do not replace the necessity of explicit teaching of handwriting skills in the early grades (Spear-Swirling, 2006).

Handwriting instruction went through a long period of neglect as educators began to find it trivial compared to the curricular demands of more critical subject matter. Currently, new research is finding that direct teaching of handwriting skills prepares children for the higher-level mental processes of writing. Once handwriting skills are mastered and automatic, students are able to begin focusing on the organizational and contextual aspects of writing (Spear-Swerling, 2006).

There have been several studies indicating the importance of handwriting instruction in the early grades. A study done by Marr, Cermak, Cohn & Henderson (2003) showed that kindergarten children are now spending at least 42 % of their fine motor time on pencil and paper activities (Handwriting Standards, 2010). This study made an important connection between visuomotor-skills and handwriting ability as well as provided educators with a better understanding of handwriting development in the early years (Marr, Cermak, Cohn & Henderson, 2003). Handwriting skills in the early grades have also been linked to basic spelling and reading achievement; for example, when children are able to manually produce the letter *m*, they can also be internalizing its sound (Spear-Swirling, 2006). Another study found that explicit handwriting instruction can aid in word recognition as well as text generation in written compositions (Berninger, Vaughan, Abbot, Abbot, Rogan, Brooks, Reed & Graham, 1997). In addition, several studies have indicated that carefully planned, direct handwriting instruction benefits all children—especially those who struggle. Practice with handwriting skills has also been shown to lead to improved sentence length and quality of student writing (Graham, 2009).

Scientific evidence spanning over 100 years has proven that explicit handwriting practice enhances both speed and legibility of student writing (Graham, 2009). Recent studies have also shown that in kindergarten through grade 3, short handwriting sessions (10-15 minutes) totaling

50-100 minutes per week are sufficient for handwriting mastery. Yet, for a small percentage of students, mastery of handwriting skills is much more challenging for a variety of reasons ranging from physical impairments to learning disabilities (Graham, 2009). Understanding how handwriting skills and abilities develop is an aspect that may lead to better handwriting instruction to those who are at risk for handwriting problems.

Handwriting Readiness and Early Development

There are often concerns among educators regarding the readiness of young students for handwriting instruction (Marr, Windsor & Cermak, 2001). Previous research studies on handwriting development have found that children become interested in writing around the age of two or three, when they begin to use writing utensils to make marks on paper, walls, books or other surfaces (Hagin, 1983). Before beginning to write vertical lines, children begin to make circles and other whirling movements. Geometric shapes and simple designs are also important developmental stages before children are ready to learn letter writing (Hagin, 1983).

In order for a child to have success with handwriting, there must be a foundation of readiness skills evident prior to beginning formal instruction (Marr, Windsor & Cermak, 2001). Prerequisite handwriting skills have been researched and identified by several studies over the years. Lamme (1979, as according to Marr et. al, 2001) suggested the following prerequisite skills for handwriting: small muscle development, utensil/tool manipulation, eye-hand coordination, basic stroke formation, alphabet recognition, and a familiarity of written language. Children who are unable to grip a pencil or lack in the coordination to make lines or strokes on paper will not be ready to learn handwriting skills. Small muscles must be developed before handwriting instruction can occur. Benbow, Hanft, and Marsh (1992, as according to Marr et.al, 2001) listed four other prerequisite areas: use of dominant hand, midline crossing with dominant

hand, proper pencil grip and posture, and an ability to copy the first nine shapes of the

Developmental Test of Visual-Motor Integration. Children who are not showing the use of a

dominant hand (right or left) or are unable to copy simple shapes using a writing utensil are most

likely going to struggle with handwriting skills. Other research has focused on how the

cognitive/language ability of children affects their ability to have success with handwriting

(Marr, Windsor & Cermak, 2001).

Studies have shown that typically developing children have the visuomotor-skills that are

necessary to begin formal handwriting by the second half of kindergarten (Marr, Windsor &

Cermak, 2001). As long as the curriculum is motivational and developmentally appropriate,

kindergarten teachers should be implementing handwriting instruction. When handwriting

instruction is implemented early, this also helps identify students who are at risk for handwriting

problems. Providing early interventions and monitoring may prevent future handwriting

challenges (Marr, Windsor & Cermak, 2001). It is important that teachers recognize that just as

young readers need to become fluent in order to focus on comprehension skills, young writers

must also develop fluent and legible writing before they can focus on generating and organizing

ideas in their writing (Graham, 2009).

Complex Nature of Handwriting Struggles

Learning to write involves an acquisition of a great amount of knowledge and skill

(Graham, 2009). Handwriting is one skill that places heavy constraints on the early development

of student writing. When children are unable to form letters and produce them with speed and

legibility, the ability to translate language in their minds into written text becomes greatly

hindered. As a result, students who struggle with the handwriting tasks begin to dislike writing at

a young age and avoid writing altogether. This causes children to fall further behind their peers in all areas of written language (Graham, 2009).

Research has shown that the act of writing is a demanding task when children are not yet automatic at forming each letter. Even in grades 4 to 6, handwriting fluency and legibility is still developing (Graham, 2009). The process of writing differs greatly from the beginning and later stages. With continued practice and success, gradually the writing process becomes an automatic motor skill that doesn't need external teaching cues (Hagin, 1983). The motions of handwriting must be automatic before expressive writing and effective note-taking can occur. Elementary students' writing speed and accuracy is often a predictor of their writing success in the middle school grades (Peverly, 2006). A child who can write quickly and legibly is demonstrating automaticity in handwriting and is more likely to have the cognitive processing ability for the higher level thinking involved in written language tasks (Stainthorp, 2006).

Graham, Harris, Mason, Fink, Moran & Sadler (2008) researched the effects handwriting constraints have on beginning writers. Their research discovered at least four ways that handwriting difficulties can influence writing development. First, they found that children's text would be less accessible when it lacks in legibility because people would not be able to read and understand the writer's illegible thoughts or ideas.   Secondly, what is written may not be valued as much as legible writing since poor handwriting can influence opinions and evaluations of the content. Teachers tend to give higher marks to writing that is more legible since it appears more appealing. A third effect of poor handwriting is a student's inability to develop new writing skills because the handwriting task itself requires so much focus and attention. Lastly, the student may lose ideas and content during the transcription process since it isn't an automatic skill (Graham, et. al, 2008). Children who need to spend too much time attending to the

mechanical aspects of writing often have difficulty with the higher level thinking that is required for writing development of expressive writing, organizational elements of writing, and spelling skills (Kavak & Bumin, 2008). Eventually children begin to believe that they cannot write and as a result avoid writing tasks whenever possible (Graham et. al, 2008).

Instructional Practices, Script and Letter Formation

Graham et. al (2008) conducted a study that surveyed primary grade teachers on their instructional practices in handwriting. Using a random sample method, the study found that nine out of ten teachers implemented handwriting instruction an average of 70 minutes per week. The survey also indicated that only 12% of the teachers sampled had received formal coursework or training on teaching handwriting (Graham et. al 2008). Most teachers used recommended instructional practices to varying degrees, but indicated they didn't feel prepared or especially knowledgeable on children's writing development. This raises concerns about the quality of handwriting instruction in primary classrooms (Graham et. al, 2008).

Effective handwriting instruction involves several components, one of which includes learning a type of script. (Graham, 2009). Children in the United States are generally taught manuscript in kindergarten and first grade followed by cursive writing in second and third grade. One of the issues in early writing instruction involves determining the type of script that is taught. For example, a slanted manuscript (D'Nealian alphabet) more closely resembles the cursive alphabet and has been a popular choice for easing the transition from manuscript to cursive writing (Graham, 2009). It is generally agreed upon that children need to be taught both manuscript and cursive writing, but some educators argue that only manuscript needs to be taught. Other educators believe that cursive should be taught from the start to avoid the difficult transition from one type of script to the other (Graham, 2009). Most importantly, children

should learn to produce at least one form of handwriting legibly and fluently. Writing instruction should focus on the type of writing that appears to lead to the best outcome, especially with students having handwriting problems and or special learning needs (Spear-Swerling, 2006).

There have been few research studies on the effectiveness of using a particular script for teaching handwriting. However, Graham (2009) recommends that handwriting instruction begin with traditional manuscript (as opposed to specialized/slanted script) for the following four reasons. First, most children enter school with some exposure to manuscript writing through home experiences or pre-school instruction. Second, there is some evidence from past studies that indicates that learning traditional manuscript is easier than cursive writing. Third, Graham (2009) suggests that once manuscript is learned well, it can be written as fast as cursive and possibly even more legibly. Graham's (2009) fourth reason is that learning manuscript may help facilitate reading since the letters children are learning to write are the same as those that are printed in books. Hagin's (1983) handwriting research also pointed out that manuscript should be the model practiced since it is often required throughout life on applications and documents. Manuscript also promotes the independence of letters within words when teaching spelling (Hagin, 1983). Whether or not teachers choose to teach manuscript or follow a different approach, it's important that children are allowed to develop their own unique style of writing which may vary from the way it was originally taught. Supporting individual handwriting style is something teachers should be cognizant of as students become more fluent and efficient in their writing (Graham, 2009).

Another important aspect of handwriting instruction is teaching the formation of letters. Spear-Swirling (2006) suggest that when children are learning to form letters, it's helpful to start with large letters in the air using their entire arms. This emphasizes the importance of the motor

pattern of the letter rather than producing the perfect size and legibility of the letter. It's also recommended that letters with similar strokes or formation be taught together. For example, the manuscript letters *c, a,* and *d* all begin with the same curve/loop and should be taught in the same group (Spear-Swirling, 2006). Another recommendation in handwriting instruction is to teach letters that appear more frequently in children's writing before those that appear less frequently (Graham, 2009). Furthermore, Graham's (2009) research found that it is also helpful to teach letters that are easier to produce before the more difficult letters. For example the letters *i, t,* and *l* should be introduced early on since they are easy for young children to produce. Easily confused letters or those that are reversible should be taught in separate units as well (Graham, 2009).

The goal of handwriting instruction should be to help students develop legible letters that can be produced with automaticity and fluency (Graham, 2009). Research has shown that teaching students an efficient pattern for forming individual letters helps in achieving this goal. Models which include the letters marked with numbered arrows indicating direction of the component strokes has shown to be very effective in a study of first-grade students at-risk for handwriting problems (Graham, 2009). After students learn a new letter, teacher directed practice should be done in short, frequent sessions that focus on identifying the best formed letter. Continued wrote practice over long periods of time until mastery has not been found to be effective (Graham, 2009).

Studies have shown that some letters are more difficult for children to produce in the early stages of handwriting. In a study involving 300 first through third graders, six letters were found to consistently cause the most challenges in handwriting instruction. The letters *q, j, z, u, n* and *k* were found to cause 48% of the illegible attempts, miscues, and omissions when writing

the lower-case letters of the alphabet (Graham, 2009). Problematic upper case letters were *K, Y, Z, W, R, M, F,* and *D.* Diagonal strokes and/or infrequent use of letters are possible reasons for difficulties in letter formation. Of all the letters identified, these eight letters made up for 51% of the errors. A moderate correlation between the problematic upper and lower case letters was found (Graham et.al, 2008).

Causes of Handwriting Problems

Handwriting is a complex task and changes in character during the developmental stages of instructional training and practice (Hagin, 1983). The beginning stages of writing require many external supports before it becomes an automatic motor skill. Initially, handwriting success depends on memorizing the graphic form of every letter, but over time it is a skill that is acquired through repetition of a series of motor patterns that are eventually automatic (Hagin, 1983). For many young writers, handwriting is not "mechanical" and requires great focus and attention every time a new letter is constructed (Berninger et. al, 1997). Berninger et. al (1997) did a study that compared handwriting ability to compositional fluency and quality. Their study involved rating the typed writing of 600 first through sixth grade students for quality and number of words. The raters did not have access to the students' actual handwriting, but instead looked at the typed form of the writing and compared the ratings with data of students who also struggled with the transcription process of handwriting. A correlation between those who struggled with handwriting transcription as well as compositional fluency and quality was determined. This research provided evidence of the importance of early intervention for those at risk of handwriting difficulties. Providing handwriting remediation early on would increase the probability that poor handwriting skills would not prevent the normal development of text generation and quality composition skills (Berninger et. al, 1997).

Students with learning disabilities in the area of writing often require remediation or specialized instruction in handwriting. Dysgraphia is one type of writing disability that leads to a deficit in both the motor planning and information processing skills needed to develop handwriting (National Center for Learning Disabilities, 2010). Signs of dysgraphia in early writers include: a tight and awkward pencil grip or body position, an avoidance of drawing or writing activities, difficulties forming letter shapes, trouble with spacing between words and/or letters, struggles with distinguishing between upper and lower case letters, and tiring quickly during writing tasks. Since learning to write is a developmental process, there are many strategies and techniques that can aid in the acquisition of handwriting skills when students appear to have problems. As students get older and writing instruction becomes more formal, illegible writing and difficulty processing words during transcription are signs that a writing disability is present (NCLD, 2010).

There are several researched strategies and interventions that are recommended for students having handwriting problems. The combined use of visual cues and memory treatment are thought to be the best methods of intervention initially, but if that isn't effective there are several other recommended treatment strategies (Berninger et. al, 1997). During the very early stages of handwriting instruction, it's critical that teachers are positive, patient and encourage practice (NCLD, 2010). Using paper with a raised line as a sensory guide to stay within the space provided is one resource used to aid early instruction of struggling writers. Other strategies include trying different types of writing tools, teaching correct pencil grip, using finger or arm movements to practice letters, and encouraging correct posture and paper positioning (NCLD, 2010). Also, teaching writing through multi-sensory activities such as speaking through

motor sequences (big line down, little curve to the middle, etc.) helps some children develop handwriting skills more quickly.

Teacher Preparation in Handwriting Instruction

Graham et. al (2008) conducted a national survey studying teacher's instructional practices in handwriting. The study looked at the methods and materials used for teaching handwriting, teacher preparation for handwriting instruction, as well as the general perceptions teachers held regarding the importance of direct teaching of handwriting. An interesting finding in the survey was that only 12% of teachers indicated that they had adequate training or preparation to formally teach handwriting skills (Graham et. al, 2008). A lack of handwriting instructional knowledge or developmental awareness of handwriting could impact the quality of instruction teachers are able to provide. Although teachers felt they lacked in formal instruction, they overwhelmingly felt that direct teaching of handwriting was critical to handwriting development and that handwriting should be taught as a separate subject in the early grades. The survey also indicated that 80% of the teachers from private or public schools were required by their school districts to teach handwriting and 90% of those teachers spent 70 minutes or more per week teaching handwriting skills (Graham et. al, 2008). In addition to providing handwriting instruction, it is equally important that educators implement appropriate handwriting instructional methods and materials as well as receive professional development for using commercial materials that are designed to aid in effective handwriting practices (Graham et. al, 2008).

Graham et. al (2008) also surveyed teachers' perceptions on handwriting challenges. Common reasons teachers cited as causing handwriting difficulties included motor problems and visual perceptual problems. Additional reasons for handwriting problems included poorly

designed handwriting instruction, lack of developmental readiness of children as well as incorrect teaching of handwriting at home. Two out of every five teachers reported that poor handwriting effected spelling, note-taking and self-esteem (Graham et. al, 2008). More than half of the teachers surveyed believed that handwriting challenges lead to difficulties completing assignments, had a negative impact on the quality and quantity of students' writing and resulted in lower grades. Some teachers believed that problems with handwriting caused poor attitudes toward school or reading development (Graham et. al, 2008).

Stainthorp (2006) did a survey on the handwriting policies and practices in schools today as technology instruction continues to create less time for direct teaching of handwriting skills. Her findings indicated that schools still value direct handwriting instruction as an aspect of literacy instruction. Instruction in letter formation, legibility and speed were all areas that school surveys showed were important in handwriting development (Stainthorp, 2006). Also noted in her survey results was the importance of providing strategies for left -handed children as well as specialized instruction to students with handwriting problems or special educational needs. The National Handwriting Association still works to promote improvement of handwriting standards as well as adequate information for handwriting training for those teachers who felt they weren't sufficiently trained in handwriting best practices (Stainthrop, 2006).

Implications of Handwriting Research

Handwriting is one of the basic building blocks of student learning and plays a critical role in writing development (Graham, 2009). Recent research is indicating that somewhere between 10-30% of children have problems learning to produce fluent, legible handwriting. Difficulties with handwriting are often linked to problems with visual-motor skills and/or attention deficit as well as other learning disabilities (Trusted MD Network, 2008). Children

who experience difficulties with handwriting also tend to avoid writing tasks, fall behind in writing development and develop low self-concepts (Graham, 2008).

Some educators argue that handwriting is becoming an obsolete skill (Stainthorp, 2006). As we enter an age of increasing computer literacy and writing is more often being done on electronic paper, many find that teaching children to form letters on paper is a waste of time. This may be especially true for students having learning deficits or physical impairments since software programs make it possible to produce writing accurately through voice output devices (Stainthorp, 2006). Others believe that the pressure to prepare for the rigorous amount of state standardized testing is pushing out the time that was once given to classic penmanship. There is more of an emphasis on the process and content of writing than the art of penmanship (USA Today, 2009). Progress in technological advances is causing many to believe the computer will replace the pen and pencil in the not-too-distant future (Stainthorp, 2006). Teachers feel a tremendous amount of pressure to make sure that students are technologically literate as technology continues to dominate our society (USA Today, 2009). These arguments raise the question of whether handwriting is a skill that will continue to have a focus in schools.

Conclusion

Research studies have shown that handwriting is a complex task that requires direct instruction in the early grades. Although most primary teachers teach handwriting, there is little evidence to show that teachers have the knowledge, training and resources necessary for effective handwriting instruction in the early elementary years (Graham, 2008). A program that supports consistent handwriting instruction, provides logical order of letter formation, uses multi-sensory approaches and allows for short, but frequent practice sessions is important for

handwriting mastery for all types of learning styles (Graham (2008) as cited by Trusted MD Network, 2008).

Handwriting standards are being added to many state standardized assessments and a handwritten essay was added to the College Board SAT in 2005 (Handwriting Standards, 2010). These are indicators of the continued importance for educational guidelines in the instruction of handwriting in schools. Current studies suggest that discovering curricular programs that are in line with best practices in handwriting instruction as well as provide remediation for students who struggle with handwriting development is a needed step toward preventing the negative effects that follow handwriting difficulties. Furthermore, increasing the professional awareness of the most effective programs, strategies and methods of handwriting instruction and remediation is also critical to student success (Handwriting Standards, 2010).

Several handwriting programs are out there, but not all have been developed with a multi-sensory approach that meets the developmental needs of students at varying ability levels. "Handwriting without Tears" is a program that has been recommended for students who have fine motor deficits or special learning needs. The following study analyzes the effective use of the program "Handwriting without Tears" for students having special learning needs who require a unique approach for the mastery of handwriting skills.

Chapter III: Methodology

Research studies have indicated that successfully teaching handwriting skills can be challenging when working with students having special learning needs. Finding appropriate teaching methods and curriculum materials is critical to student success. For the purposes of this study, the first grade level of the HWT curriculum was examined for its effectiveness with students requiring an alternative or individualized approach to handwriting instruction. Several methods and/or strategies were utilized to answer the key questions in this evaluation. The following section describes the methods used in evaluating the effectiveness of HWT with students requiring specialized handwriting instruction.

Subject Selection and Description

The subjects selected for this study were a sample of five Sand Lake Elementary special education teachers as well as seven students who were currently participating in the HWT curriculum. Sand Lake Elementary School has several special education teachers working with specific needs including high functioning autism, low functioning autism, cognitive disabilities, learning disabilities, emotional disabilities, as well as students having other health impairments (OHI). Five of the special education teachers at Sand Lake Elementary School had received some training using HWT and were implementing the program with students.   The five special education teachers participating in the study were surveyed about their experiences using the program and observed implementing various lessons and/or strategies with individual students. The teacher participants utilizing the curriculum were experienced in working with students having specialized learning needs and were also familiar with the HWT curriculum.

Seven student subjects also were observed during lesson implementation. Of the student's participating in the study, four were males and three were females ranging in ages from 6-8

years. Three of the students were receiving one to one instruction and four of the students participated in a group of two during handwriting instruction. All of the students in the small groups of two had high functioning autism. The students in the one to one groups had identified learning disabilities or cognitive delays. All students struggled with focus/attention, interest in handwriting and fine motor tasks. Each of the students included in the study was at a developmental level considered appropriate for the first grade level of the HWT curriculum. This level focused on beginning printing of traditional manuscript letters and utilized a multi-sensory approach.

Instrumentation

Several instruments and methods of collecting data were utilized in order to get a cross section of information about the HWT curriculum. All of the instruments were developed for the purpose of this study and were beneficial in developing a broad understanding of the HWT curriculum for future use with students having special educational needs in handwriting skill development.

First, a checklist that listed important features for individualized program implementation was developed to analyze the teaching guide (See appendix A). The checklist format incorporated a list of teaching guide features that were important to successful program implementation to students requiring individualized and/or alternative instructional methods. Next to the listed criteria, a yes and no box was provided for the evaluator to check. A comments section was also created next to the yes/no boxes in case further explanation was needed. The checklist included features that were considered important for implementing a curricular program to students having special educational needs. Specific criteria that were evaluated in the teaching guide checklist criteria focused on analyzing whether the teaching

guide provided key features that would be important for using the HWT curriculum for individualized instruction with students needing intensive handwriting support.

The need for special education teachers to support students in varying classrooms throughout the day made it critical that this handwriting program be easy to use, include effective handwriting methods and strategies as well as provide instructional components for varying ability levels. A few items that were assessed within the teaching guide checklist focused on the clarity of the programs intent and goals for handwriting instruction as well as the purpose of all the HWT materials. Other checklist criteria that were important included the teaching guide's outline of developmental teaching order as well as how well it explained specific skills/strategies and/or instructional stages within the teaching guide.   A clear description of the varying multi-sensory approaches as well as the student supplies needed was also assessed in the checklist criteria. In addition, the checklist assessed whether the teaching guide had tips and helpful ideas for the struggling learner in various educational settings.

Next, the scope and sequence of the HWT curriculum was evaluated using a criterion-referenced checklist which aligned with state and district standards in the area of handwriting skills (See appendix B). The second checklist had the same format that was used to evaluate the teaching guide, but contained important objectives and standards that would be necessary in the scope and sequence for effective handwriting implementation. This data provided objective information about the program's components before collecting the data through other methods. The criteria examined on the scope and sequence checklist identified aspects such as whether the design was user friendly and easy to follow, provided developmentally appropriate skill introduction, used consistent rules and strategies, aligned with state and district standards,

described the physical approach to making letters and several other criteria which were considered useful in the scope and sequence.

The third method of instrumentation for data collection was in the form of a questionnaire/survey which was given to five teachers who were experienced users of the program. This document was sent electronically via email to the teachers using the HWT curriculum with students having specialized instructional needs. Teachers were given a 3-page survey of open-ended questions about all four of the key questions being evaluated in this study. The questions were broken up into the following four categories: teaching guide, scope and sequence, multi-sensory activities, and handwriting correction techniques (See Appendices C,D,E,& F). The goal of the survey was to acquire a more detailed understanding of the various program components. Questions asked for examples of what material were most useful, strengths and weaknesses of the HWT curriculum, as well as the best ways methods for use with individual students having special needs.

Upon completion of the survey questions, teachers were asked to provide additional comments regarding their experiences utilizing the HWT curriculum with students having unique instructional needs. The completed surveys were collected electronically.

Lastly, observations were recorded on a data collection form that was filled out during each of the lesson observations. The observation form included a section to list instructional strengths of the lessons, student behaviors observed during the lesson, and areas of the lesson needing follow-up and/or change (See Appendix G). During the teacher observations, lessons that focused on multi-sensory methods and/or activities as well as handwriting correction strategies were implemented. Each teacher was observed doing a HWT lesson at least once, and two

teachers were observed twice demonstrating specific correction strategies with students needing extra handwriting instruction.

Data Collection Procedures

The teaching guide checklist analysis was conducted by the evaluator prior to administering surveys or performing observations. Gathering the needed information involved a careful review of the HWT teaching guide. If the features that were included on the checklist were found within the HWT teaching guide, a checkmark was placed in the "yes" box. If the feature indicated on the checklist was not included in the teaching guide, the "no" box was checked. When further explanation was needed regarding the features within the program, notes were written in the comments section of the checklist. The same procedure was used to evaluate the effectiveness of the HWT Scope and Sequence using another checklist document.

Following the data collection from the checklists, a 3-page survey about the program's components was issued to five teachers who have utilized the HWT curriculum with one or more students on an individual basis. This information was collected in the form of an open-ended questionnaire which allowed for detailed and subjective information from the teachers' who were knowledgeable about the HWT curriculum.

The final data collection method took place in the form of observation during lesson implementation. Teachers who participated in the survey were observed teaching at least one lesson. The lessons focused on both the implementation of handwriting correction strategies as well as one or more multi-sensory techniques. Observations of the lessons were recorded on data sheets and the overall effectiveness of the methods and strategies used were examined based on observed student performance. At the completion of the lessons, teacher input was included in determining the long-term effectiveness of certain instructional methods or strategies.

Data Analysis

  The information from the various data collection methods were examined and reviewed upon completion of the study. Since several methods of data collection were included in this evaluation, the analysis involved looking for relationships as well as common themes from teachers' questionnaires and lesson observations. Careful content analysis of teacher responses for each question was conducted. The main goal of the questionnaire was to gather information regarding the successful use of HWT curriculum components, teacher experiences using multi-sensory activities, and helpful tips or correctional strategies presented for students with special needs. If three out of five of the teacher participants in the study indicated similar opinions and/or experiences using the program, the information was considered an important aspect in the compilation of conclusions and recommendations about the HWT program.

  Another tool that was utilized in the data analysis was the teaching guide and scope and sequence checklist results. Prior to collecting teacher input, important aspects of teaching guide components and scope and sequence appropriateness were identified and put into a checklist format. The results of the checklist analysis were then used to look for relationships between important aspects of the program goals and/or instructional strategies and those that teachers demonstrated to be effective in lesson implementation. For example, if the scope and sequence and teaching guide suggest a particular order of letter introduction that teaches letters with lines before curves, it would be important to analyze whether the teachers using the program found letter order to be an effective aspect of the HWT curriculum as well.

Limitations

  The scope of this study was on a small scale given that the only special education teachers within the district using HWT were at Sand Lake Elementary School. Five teachers

were surveyed regarding their experiences using HWT with students having special educational needs or learning deficits. Because of the limited quantity of experienced instructors of HWT, this analysis may require further evaluation before it can be considered valid research for successful implementation of the HWT curriculum with students requiring specialized instruction in handwriting.

In addition to the limited number of teachers and students within the study, it is important to take into consideration the other levels of the HWT program. This study only researched the effectiveness of the first level methods and strategies. Examining the various developmental aspects of handwriting instruction (i.e. cursive writing) would be critical to understanding how the program can best be implemented with students having learning deficits and/or special educational needs.

Chapter IV: Results

The purpose of this study was to determine the effectiveness of the program

"Handwriting without Tears" with students having learning deficits or special educational needs.

Four main areas of the HWT curriculum were evaluated using a few different methods of data

collection. First, two separate checklist analysis were used to review the features of both the

teaching guide and scope and sequence of the program. Then, the teachers who were

experienced utilizing the HWT curriculum were given a survey about various curriculum

components within the handwriting program. Finally, observations of lesson implementation

with individual students requiring a specialized approach were conducted. Upon completion of

the data collection, the following results for each key question were gathered.

Review of Teaching Guide Effectiveness

Answering the first key question involved a detailed review of the Handwriting without

Tears teaching guide. In order to review and critique the HWT teaching guide, the following

methods took place. First, a checklist that listed necessary program features for individualized

program implementation was developed and used to analyze the HWT teacher guide (See

Appendix A for a complete list). Next, a survey was administered to 5 special education teachers.

Part I of the survey had 4 open-ended questions focusing on features of the teaching guide that

were effective for instructing students with specialized handwriting needs.

The results of the checklist analysis showed that the teaching guide included all but one

of the criteria considered important for implementation of HWT with students needing

specialized handwriting instruction. The following features considered important for successful

program implementation were included in the HWT teaching guide.

- *Teaching tips for ease of instruction:* At the bottom of the page of each lesson introducing a new letter or activity, a bolded section labeled "tips" was presented. The tips provided ideas for avoiding confusion with left-handedness, reversals, demonstrations, verbal prompts, etc.. The tips also referred to certain pages of the teaching guide to get further clarification of your teaching methods.

- *Organized and consistent design of instructional/lesson content:* Each lesson presented the content in the same format. Bold headings were used to identify the steps and modes to use in the lesson process. All lessons included the following headings with directions: Get Started, Multi-sensory Activities, Finger Trace Models Step-by-Step, Copy and Check, and Tips.

- *Narrative descriptions of recommended methods and strategies:* Prior to beginning formal lessons the coordinate with the student workbook, several narrative sections were presented in the teaching guide. Examples of strategies in a narrative form included: flexible vs. steady instruction, multi-sensory lessons, posture, paper/pencil skills, developmental handwriting process, need to review, etc.

- *User-friendly visual aids:* Easy to follow visual graphics and aids were provided throughout the teaching guide. Each lesson provided a visual of the student workbook page, the Magic C bunny, letter demonstration directions using visuals as well as visual demonstrations for all multi-sensory activities that were provided in the front of the guide prior to beginning instruction.

- *Developmentally appropriate lessons:* All letter introduction was presented in a developmentally appropriate order. Letters were grouped by "frog jump capitals","starting corner capitals", and "center starting capitals". Lowercase letters were

presented using child-friendly consistent terminology such as make magic c, up like a helicopter, up higher, back down and bump (See appendix G for visual). Letter stories and illustrations were used to teach letter forms as well.

- *Remediation strategies:* There is a section devoted to remediation strategies at the end of the guide. Several bold headings with narrative information about remediation strategies were presented. Examples included: keep practice 10-15 minutes, use numbers and arrows to teach letters, use imitation, communicate with others involved, be consistent with practice, notice what's right, and refer to hwtears.com for other ideas.

- *Clear guidelines to use multi-sensory materials appropriately:* The HWT teaching manual provided 14 pages of multi-sensory activities and guidelines using the visual, tactile, auditory or kinesthetic approach. Each lesson had an interactive activity but most of the multi-sensory materials and ideas can be used with any letter. Examples included music, movement, imaginary writing, letter stories, wet-dry-try, etc.

- *User-friendly explanations of the student workbook tasks:* Each lesson is presented in coordination with the student workbook pages. A visual picture of the student pages is provided along with directions of what to say and model during the introduction of the new letter.

One criterion considered to be important for teaching handwriting individually was not included within the HWT teaching guide. Behavior expectations and suggestions were not included for students who may have difficulty staying on task or motivated. When working with students having special educational needs, teachers would need to provide their own behavioral plan and strategies.

The second method of data collection regarding the teaching guide effectiveness involved a teacher survey of special education teachers who had experience teaching to students requiring an individual approach. Four open-ended questions were administered to the teachers who were familiar with the teaching guide in part I of the HWT survey.

The first and second questions asked for overall strengths and user-friendly features of the teaching guide when implementing handwriting lessons with students having learning and/or handwriting deficits. Five teachers responded with the following information regarding the teaching guide strengths: easy to use/follow (4/5 teachers), nice visuals and illustrations (3/5 teachers), variety of approaches to instruction (4/5 teacher), helpful tips for trouble-shooting (2/5 teachers), preparation information prior to instruction (3/5 teachers), corresponded well with student workbook (4/5 teachers), useful tips for correcting handwriting problems (3/5 teachers), many review and practice techniques (4/5 teachers), checking for proper formation strategies were helpful (3/5), consistent language for teaching letter strokes (3/5 teachers). Strengths that were described by less than 2 teachers included: handwriting advice section, left-handed strategies, letter frequency charts, number writing lessons, and report card insert.

Questions 3 and 4 focused on the teaching guide features that were accommodating to teaching students with special needs in an individual or small group setting. The teachers responded with several common ideas regarding the HWT usefulness with students requiring specialized instruction. Specific features that were mentioned included: multi-sensory activities (5/5 teachers), flexible instruction approaches (3/5 teachers), remediation activities and strategies (3/5 teachers), tips for correcting handwriting problems such as reversals, handedness, and letter placement (3/5 teachers), review of previously learned skills (4/5), pencil grips and posture ideas (4/5), and graphics for quick reference (3/5). Other ideas that were mentioned by less than 2

teachers were teacher scripts for demonstrating, explanation of materials for activities, pre-paper strategies, and the use of the "magic c" term for letters formed using this stroke.

Scope and Sequence Appropriateness

Answering this question required an analysis of the program's scope and sequence. A few methods were utilized to gather the required data. First, a criterion-referenced checklist which listed important objectives and standards for teaching handwriting was developed and used to review the scope and sequence of the program. Next, part II of the teacher survey was administered to the teachers who were experienced users of the HWT program. Three open-ended questions that focused on the usefulness of the program's scope and sequence were given to each teacher.

The results of the checklist analysis revealed that the HWT scope and sequence provided all but one of the components considered important for effective implementation of HWT to students requiring specialized instruction. The following is a list of items from the scope and sequence checklist (See Appendix B) that were contained within the HWT program.

- *The skill level and pacing is appropriate for individual instructional needs:* The HWT scope and sequence begins with pre-strokes and shapes and then progresses toward capitals and numbers which are simple strokes and shapes. The tall, small and complex strokes of lowercase letters are not introduced until basic strokes are mastered.

- *A physical approach guide is included in the scope and sequence:* Beginning strokes are taught by learning to grip crayons. When a child can easily produce shapes and strokes with a crayon, a pencil grip is taught along with good posture as a child is more able to sit at a table and use paper.

- *Flexibility in modes and activities are provided in the lesson design:* HWT lessons and activities can be taught using a very structured, teacher directed approach with precise letter order. Or it can be taught using a less formal approach using a variety of multi-sensory activities for the child who isn't ready for specific handwriting skills to be introduced.

- *Developmental stages for mastery of skills are presented:* Prior to pencil and paper instruction, fine motor skills are built upon and practiced. Then 3 stages of learning are consistently taught throughout the program. Stage 1: Imitating the Teacher, Stage 2: Copying Printed Models, and Stage 3: Independent Writing is all included throughout HWT lessons.

- *There is an overlap of skills taught and practiced across grade levels:* Printing skills and functional writing skills continue to be reviewed and practiced from kindergarten up through second grade. As students learn primary printing skills (memory, orientation, start and sequence), they move into secondary printing skills (placement, size, spacing, and control).

One criterion on the scope and sequence checklist that was not found within the HWT scope and sequence was a specific order for presenting each letter or new skill. Instead, many letters were lumped together by groups with a certain type of stroke (i.e. starting corner letters).

The other method of data collection used to analyze the scope and sequence involved having the teachers answer Part II questions on the HWT survey. Questions one and two focused on the usefulness and perceived strengths of the scope and sequence for effective teaching of handwriting skills to students needing specialized instruction. The following responses were noted by two or more of the five teachers surveyed: Easy to follow and use for

handwriting skill planning (3/5 teachers), Shows how skills progress from one grade to the next (4/5 teachers), Skills are presented in a chart followed by narrative explanations on the next page (2/5), Pre-taught skills are presented in the scope and sequence for reference (3/5), Presents narrative explanation of skills such as physical approach and stages of learning (3/5), and Nice overlap and review of printing skills across grade levels (4/5).

The third question of part II of the HWT survey focused on ways that the scope and sequence could be changed to better accommodate working with special needs students. The following were teacher's responses: More specific skill break down and letter order (3/5), Needs more in depth explanation of pre-readiness skills (2/5), Greater detail of the break-down of primary and secondary printing skills (3/5), and more focus on multisensory techniques in learning stages (4/5). Other responses by less than two teachers included: Add more integration of other subjects, Include small group skill pacing vs. large group, and provide more adaptive strategies for special needs students.

Effectiveness of Strategies for Correcting Handwriting Problems

Answering this question involved a careful review of the methods and strategies presented in the program curriculum for avoiding incorrect handwriting as well as staying motivated while learning new skills. The first method used in answering this question involved collecting the teacher participant's responses to part III of the teacher survey. Part III of the HWT survey included three questions focusing on the strengths of the program's methods and/or strategies for remediating or correcting handwriting problems. Next, observations of the implementation of 3 strategies within the HWT curriculum for correcting handwriting problems were observed.

The results of the part III teacher survey were gathered from all 5 teachers who participated in the study. The first two questions focused on determining which methods or strategies were used the most frequently for correcting handwriting challenges and how effective were the strategies for students having significant needs (See Appendix E). The following is a list of the responses the experienced teacher participants gave regarding effective and useful methods for correcting handwriting problems: Remediate through imitation—students watch and listen to the teacher use the handwriting language before trying it themselves (3/5 teachers), Fix spacing mistakes using pennies, fingers and songs to actively teach of spacing (3/5 teachers), Correct reversals one letter at a time—keep lessons short (4/5 teachers), Stick to the eight key skills for speed and legibility (memory, orientation, placement, size, start, sequence, control, spacing)—(3/5 teachers), Demonstrate pencil grip and teach it in the three stages (pick-up, scribble-wiggle, and write)—(3/5 teachers). Other responses that were listed by less than two teachers included: Use reward a grip to motivate correct pencil grip, Teach strategies for correct pencil pressure using a mouse pad underneath, and Teach use of the helper hand for holding the paper.

The second method used for analyzing the effectiveness of the HWT strategies for correcting handwriting problems involved observing 3 of the teacher participants implementing lessons that demonstrated handwriting correction methods. During the first observed lesson, the teacher implemented a lesson that corrected the student's pencil grip through a strategy called "Drive the Pencil Truck". The lesson began with the teacher giving the student a visual of a pencil with wheels call the "pencil truck". Next the teacher demonstrated the correct placement of the fingers on a pencil while giving each finger a name. The thumb was Dad, the index finger was Mom, and the rest of the fingers were the children or pets. In order to emphasize the proper

finger placement for the correct pencil grip, the teacher explained that the dad (thumb) always sits in the front next to the mom (index finger). The rest of the fingers (children, pets, friends) must sit in the back to be safe. Following her explanation, she had the student try the grip with the narrative for who each finger in the truck was. This was practiced and the student wrote her name several times on the paper. At the completion of the lesson, the student independently picked up the pencil telling the names of the fingers as they should be placed in the finger truck. The child smiled and actively participated in the pencil grip technique. She was also able to talk through the correct finger placement after practicing several times.

The second observed lesson for correcting handwriting problems involved a strategy for a student who over-corrected his work by excessive erasing. This lesson required the teacher to sit at a small round table with the student seated across from her. During this lesson the teacher focused on a HWT strategy called the "eraser challenge". First the student was given a chart with 10 small pencil/eraser icons. The student was encouraged to control the amount of times he erased in order to avoid spending too much time on the same letter or task, thus falling further behind. Before beginning, the teacher explained the rules of the "eraser challenge". If the student had at least 5 flags left at the end of the lesson, he would win the eraser challenge. If there were less than 5 flags, the teacher would win. The teacher observed the student and every time he erased, the student lost a flag from his eraser chart. The goal was to complete the handwriting tasks without erasing more than 5 times. During the lesson, the student was given two lines of letters to practice, followed by a drawing activity. Throughout this lesson, the student was engaged and appeared motivated to do his work neatly and without erasing. At one point he became frustrated with the curves in the lower case "q", but was reminded of how well he was doing and wanted to win the game. At the completion of the lesson, the student had 6

flags remaining from the eraser challenge and won the game. His reward was 5 minutes of doing his favorite math puzzle.

The final handwriting correction strategy observed was with a group of two students who were struggling with spacing between letters and words. Students were seated at a round table with teacher seated between them. For correcting this handwriting problem, the teacher implemented a strategy called "sentence spacing with pennies" (see appendix ___). The students were given a simple sentence on paper (MOM IS A GIRL) and then given a bag full of pennies. Next, the teacher read the sentence to the students and demonstrated how to place the pennies on the paper to represent each letter in the words. Then she had the students match the pennies to the letters in the words and emphasized the close placement of the pennies in the words as well as the spacing in between the pennies. She explained to the students that just as there are big spaces between the pennies, there also needs to be spaces between the words when we write. Students were given another sentence (I SEE A DOG) and used the pennies to represent the letters in the words once again independently. Finally, the students printed the words (I SEE A DOG) on the line. The teacher checked to see if the students used proper spacing. One student was asked to use the pennies to represent the letters. The student erased a word and added a bigger space. Students actively participated during the lesson.

Effectiveness of Multi-sensory Activities

Answering this question required examining the effectiveness of the multi-sensory materials and activities that are provided in the Handwriting without Tears curriculum. To do this the following methods took place. First, Part IV of the teacher survey was administered to the teacher participants in the study. The questions focused on the effectiveness of the multi-sensory materials and methods that were included in the HWT curriculum. The next method

involved observing the implementation of 4 lessons using different HWT multi-sensory methods or strategies to teach handwriting skills.

Questions 1 & 2 of part III of the teacher survey asked which multi-sensory strategies and materials were useful and effective with students requiring an individualized approach to handwriting instruction. The following were multi-sensory activities that 2 or more teachers listed as effective for students having specialized instructional needs: The Magic "C" bunny puppet for teaching magic "C" letters (3/5 teachers), Rock, Rap, and Tap CD (songs) for teaching letter strokes and formation (3/5 teachers), The Wet-Dry-Try method on the student double-line slate boards (4/5 teachers), Door Tracing and imaginary writing for connecting gross motor with fine motor skills (3/5 teachers), Letter Stories for reinforcing difficult letter formation (4/5 teachers). Other responses that were listed by less than two of the teachers included: Mystery letters activities, Diver letters activities, and Physical warm-up activities.

The next method of data collection for analyzing the effectiveness of the multi-sensory activities in the HWT curriculum involved the observation of teachers instructing students who require individual or small group handwriting instruction. Four lessons were observed using different multi-sensory approaches to learning the new skills.

In the first lesson, a group of two students were doing the "wet-dry-try" method of learning a new letter. Students were seated at a small round table with the teacher seated between them. First the teacher gave the students slate boards, chalk, and a wet & dry paper towel. She instructed the students by demonstrating the formation of the lower-case letter "h" using the HWT language taught in the book: "Dive down, swim up and over and down to the bottom". She did this with her wet paper towel (bunched up at the point), then went back over the language again using the dry end of the paper towel, and finally used a piece of chalk for the

"try" part of making the letter. Students watched the steps and then tried them with teacher direction. Following that, the students went through the steps of the "wet-dry-try" on their own. The technique was then repeated practicing other letters that were learned previously. Students smiled as they did the wet and dry portions of the activity. Correct letter formation that modeled the teacher's demonstration was observed during this method of instruction.

The second lesson that was observed utilized the "magic C" bunny to teach the c-based lower-case letters (a,d,g,o,q). Students were seated at a small rectangular table facing the teacher who was also seated at the table. The teacher began by bringing out the "magic c" bunny to teach the lower case letter "g" (students had seen the puppet used for the teaching of "a & d" already). She then played the "Magic C Rap" with the bunny puppet in her hand and the students listened as she sang the rap about the "Magic C" letters. The rap repeated the verses and the students were invited to sing along. Next, the teacher demonstrated the formation of the letter "g" using a slate board and the HWT language for teaching "g": "Magic c, up like a helicopter, back down and turn." Next she demonstrated once more with the students saying it along with her. Following that, the students used their own slate-board to form the letter with teacher guidance. Finally, the students independently practiced making "g" in their student workbooks using the visual cues and HWT language. Students smiled and appeared engage during the "Magic c" puppet and rap song.

The third lesson observed used the "letter story" strategy to further emphasize the correct formation of a newly learned letter. For this lesson, the teacher was seated at a small round table and her student was seated to her right. The teacher was teaching the lower-case letter "m" and used a letter story to help the letter stay in the student's memory. First, she demonstrated the correct formation of "m" through the story entitled "stinky m": *If m has a big gap, people will*

throw trash in the gap. Don't make a big gap. Make the gap so little, there is only room for an

upside down chocolate kiss. Next, the student went through the steps with her, while drawing a

picture of the wrong way to make "m" and the correct way to make "m" (see appendix __).

The fourth and final lesson observed used the "mystery letters" strategy to reinforce the

lower-case "Magic c" letters. Two students participated in this multi-sensory activity while

sitting at a table with the teacher seated across from them. First, the teacher gave the students

double-lined blackboards and a small piece of chalk. Students were then instructed to practice

making the "magic c" letters using the language that was taught to them i.e. to make "a": magic

c, up like a helicopter, bump, back down, bump. Next, the teacher gave the students the mystery

paper from the student workbooks (see appendix   ). Students received paper with several lines

having a "c" on it and selected their favorite colored pencil before beginning the activity. The

teacher then said, "magic c, wait, turn it into a ___(a,d,g,o,q)". Next, the teacher instructed the

students to use the correct HWT language to help them form the letters correctly. Once each

letter was practiced 7 times, the students went on to the next "mystery letter" until all magic c

letters had been done. Students appeared to remember the strokes needed to form each letter and

smiled as they anticipated the next letter the teacher would call out.

Chapter V: Discussion

Finding effective programs, interventions and solutions to handwriting problems is an important step to achieving handwriting success (Erhardt & Meade, 2005). This study focused on the effectiveness of the handwriting program "Handwriting without Tears" with students who have special educational needs and require individual or small group instruction in handwriting skill development. Although the scope of this study was very limited, several methods of data collection were used to determine the usefulness of HWT with students requiring specialized handwriting instruction. The following chapter discusses the conclusions and recommendations for future implementation of HWT with students having specialized handwriting needs.

Limitations

There were several aspects in this study that limit the validity of the data collected. First, the study took place using staff and students from only one elementary school. Second, the study focused primarily on the first grade level of the HWT curriculum which is only one of five levels that is available. Another limitation of the study was the availability of teacher and student participants. Although this study revealed many pieces of information that may be useful for teachers wishing to implement the program with special needs students, the small sample of students (7) and teacher participants (5) limited the amount of data that could be collected and examined. A larger sample may add further information on how best to implement HWT curriculum when working with students in an individual or small group setting. Furthermore, a study of more levels of the HWT curriculum may lead to more information that would inform additional recommendations.

Conclusions

The focus of this study was to determine the effectiveness of the program "Handwriting without Tears" when teaching handwriting to students with specialized learning needs who

require a small group or individual approach. Several methods of data collection including criterion checklists, teacher surveys and teacher/student observation were used to answer the key questions of this study.

The first key question examined the effectiveness of the HWT teaching guide using both a criterion referenced checklist as well as a teacher survey. The results of the data collection for determining the effectiveness of the HWT teaching guide lead to the following conclusions. First, 8 out of the 9 features that were considered important for implementing HWT with students requiring individualized instruction were included in the HWT teaching guide. This information indicated that the teachers wishing to use the teacher guide for handwriting instruction with special educational needs would have the necessary instructional guidelines available to teach effectively. Second, the results of the teacher participant survey suggested several strengths in the teaching guide that aligned with the checklist criterion. Many of the features that were considered to be important such as teaching tips, multi-sensory activities, visual guides, flexible instructional approaches, consistent language, pencil grip and posture review, etc. were indicated to be useful HWT features by the teacher participants. This further emphasized the strengths of the HWT teaching guide when teaching students who have learning deficits.

The second key question focused on the appropriateness of the HWT scope and sequence when working with students requiring specialized handwriting instruction. Collecting the data to answer this question involved a criterion checklist analysis of the HWT scope and sequence as well as the administration of a teacher survey to the teacher participants who were experienced users of HWT with students requiring specialized handwriting instruction. The results of the criterion checklist analysis indicated that the HWT tears scope and sequence was appropriate for

the instructional planning of handwriting with students having specialized educational needs. Aspects such as appropriate pacing, physical approach, narrative explanations of strategies, flexibility in activities/modes, overlapping of skills taught, etc. were all included in the HWT scope and sequence

Second, the results of the teacher participant survey suggested several strengths within the HWT scope and sequence. However, some suggestions for improving the scope and sequence were suggested by the experienced users of HWT. Teachers using the scope and sequence to design handwriting instruction discussed several strengths including appropriate pacing and sequence of skills, presented narrative explanation of skills, pre-taught skills included, overlapping of skills across grade levels, user-friendly scope and sequence chart, etc. The data collected is consistent with research showing that a good handwriting program has consistent handwriting instruction, provides logical order of letter formation, uses multi-sensory approaches and allows for short, but frequent practice sessions is important for handwriting mastery for all types of learning styles (Graham (2008) as cited by Trusted MD Network, 2008). This information further emphasized the HWT scope and sequence appropriateness for implementing HWT with students having special instructional needs.

Answering the third key question involved reviewing the effectiveness of HWT strategies for correcting handwriting problems. Methods used to address this question included administration of a teacher survey as well as conducting observations of teachers implementing correction strategies within their handwriting lessons. The results of the teacher survey indicated that several of the correction strategies within the HWT curriculum were useful and effective for correcting handwriting problems. Strategies such as remediating through imitation, fixing spacing problems using pennies, correcting reversals one letter at a time, using songs and fingers

to teach spacing, and teaching eight skills for speed and legibility were all examples of strategies mentioned for correcting handwriting problems. The second method used to examine this question further revealed the effectiveness of the strategies used to correct handwriting problems. Three teachers were observed implementing a handwriting correction strategy with students. All of the lessons were shown to be engaging, helpful and successful for remediating specific handwriting problems. The data collected supports research showing that finding effective programs, interventions and solutions to handwriting problems is an important step to achieving handwriting success (Erhardt & Meade, 2005).

The fourth and final key question focused on the success of developing handwriting skills through multi-sensory activities. Answering this question involved the administration of a teacher survey as well as observations of teachers implementing multi-sensory strategies with students requiring specialized handwriting instruction. The results of the teacher survey revealed that several multi-sensory activities were found to be successful with students who struggled with handwriting skills. Strategies such as the magic "C" bunny, "Wet, Dry, Try", "Rock , Rap and Tap" music CD, Mystery letters, etc. proved to be effective activities for teaching handwriting skills to students who struggle with learning and fine-motor tasks. The other method used to examine the multi-sensory strategies involved observing 4 different multi-sensory lessons being implemented by teachers who were experienced users of HWT. All 4 of the lessons utilizing multi-sensory strategies from the HWT curriculum were observed to be successful with helping students practice handwriting skills and be motivated to learn new skills. Student appeared to be engaged, motivated and capable of performing the skills presented in the lessons. From the results of the lesson observations, it is reasonable to conclude that the HWT multi-sensory activities are effective at helping students develop handwriting skills. These

conclusions are consistent with research surrounding teaching students through multi-sensory activities.

Recommendations

For children having learning deficits or specialized physical needs, handwriting can be a daunting task (Graham, 2009). Although most teachers agree that direct handwriting instruction should be implemented into the school day, studies have indicated that a large percentage of teachers don't feel knowledgeable about aspects that influence children's writing development (Graham, Harris, Mason, Fink, Moran & Saddler, 2007). Current studies suggest that discovering curricular programs that are in line with best practices in handwriting instruction as well as provide remediation for students who struggle with handwriting development is a needed step toward preventing the negative effects that follow handwriting difficulties. Furthermore, increasing the professional awareness of the most effective programs, strategies and methods of handwriting instruction and remediation is also critical to student success (handwriting standards, 2011). The following recommendations have been developed based on the conclusions from this study.

First, research has shown that teachers need to be trained and made aware of current trends in handwriting development. Providing training in "Handwriting without Tears" for all elementary staff who may be working with students having learning deficits or special educational needs is recommended. This may involve staff development during early release days or training within the Professional Learning Communities. The second recommendation is to make all levels of HWT available to staff along with a budget for adding additional materials and resources that may be helpful for teachers to share within a building. Resource availability

will allow more teachers to implement the program which will aid in the consistency of handwriting instructional techniques across grade levels.

A third suggestion is the development of a HWT teacher guide with tips for helping teachers who are new to using the program. This guide could include information gathered from this study as well as additional suggestions. Providing useful information for teachers new to the program would eliminate challenges that come with learning a new programs as well as aid in effective instructional practices. The final recommendation is to conduct a larger study of this program beginning from pre-writing skills through the instruction of cursive writing. Developing a larger study will lead to greater understanding of how to best implement handwriting instruction to students requiring a specialized approach. In addition, it may be important to study this program across schools within the district or even in other school districts.

References

A Barrier to Academic Achievement: Difficulty with Handwriting, and a Solution (2008). Retrieved February 11, 2011 from http://trusted.md/feed/items/system/2008/04/12a_barrier_to_academic _achievement_difficulty_with_handwriting_and_a_solution#ixzz1DK3WMeqF

Berninger, V., Vaughan, K., Abbot, R., Abbot, S., Rogan, L., Brooks, A., Reed, E., Graham, S. (1997). Treatment of handwriting problems in beginning writers: Transfer from handwriting to composition. *Journal of Educational Psychology.* 89(4), 652-656.

Bumin, G. & Kavak, S. (2008). An investigation of the factors affecting handwriting performance in children with hemiplegic cerebral palsy. *Disability and Rehabilitation*, 30(18), 1374-1385.

Downs, M. (2009, January). Schools debate: Is cursive worth teaching? Retrieved March 10, 2011 from http://www.usatoday.com/news/education/2009-01-23-cursive-handwriting_N.htm.

Erhardt, R. & Meade, V. (2005). Improving handwriting without teaching handwriting: The consultative clinical reasoning process. *Australian Occupational Therapy Journal,* 52, 199-210.

Graham, S., Harris, K., Mason, Fink-Chorzempa, B., Moran, S., Saddler, B. (2008). How do primary grade teachers teach handwriting? A national survey. *Reading and Writing: An Interdisciplinary Journal.* 21, 49-69.

Graham, S. (2009-2010, winter). Want to improve children's writing? Don't neglect their handwriting. *American Educator,* 20-40.

Hagin, R.A., (1983). Write right or left: A practical approach to handwriting. *Journal of Learning Disabilities,* 16(5), 266-271.

Handwriting Standards Kindergarten through Grade Four (2010). Importance of handwriting. Retrieved February 8, 2011, from http://www.handwritingstandards.com/importance-handwriting.

Keller, M. (2001). Handwriting club: Using sensory integration strategies to improve handwriting. *Intervention in School and Clinic,* 37(1), 9-12.

Marr, D., Windsor, M., & Cermak, S. (2001). Handwriting readiness: Locatives and visuomotor skills in

the kindergarten year. *Journal of Early Childhood Research Practice*, 3(1), 1-13.

Stainthorp, R. (2006, December). Handwriting: A skill for the 21st century or just a history lesson?

Literacy Today, 22-23.

Troia, G.A. & Graham, S. (2003). Effective writing instruction across the grades: What every

educational consultant should know. *Journal of Educational and Psychological Consultation,*

14(1), 75-89.

What is dysgraphia? (2010, December 9). Retrieved on February 8, 2011 from: www.ncld.org/ld-

basics/ld-aamp- language/writing/dysgraphia

Handwriting Without Tears Teaching Guide Checklist

Criteria	NO	YES	Comments
Provides background and intent of the program goals and outlines purpose of all program materials.			
Outlines specific skills and strategies for successful implementation of the lessons before starting the lessons i.e. instructional stages.			
Provides an explanation for the developmental teaching order of the letters and detailed directions of how to form each using the HWT language/terms.			
Provides multisensory approaches to each lesson as well clear guidelines on each type of approach.			
Provides for methods and strategies that accommodate different types of handwriting instruction (structured, small group, flexible.			
Includes behavioral objectives or suggestions for working with the behavior challenged student.			
Provides visual aids which support strategies and skills within the curriculum.			
Includes tips and strategies to differentiate instruction to meet			

individual needs.			
Provides Strategies for fixing of correcting handwriting problems.			

Handwriting Without Tears Scope and Sequence Checklist

Criteria	NO	YES	Comments
Has a design which is user friendly.			
Provides a developmentally appropriate sequence of handwriting skill introduction			
Allows for overlapping need to teach/practice skills from grade to grade.			
Includes teaching of physical approach and specific introduction of writing tools			
Lists the specific order of recommended letter introduction			
Provides a narrative description for each skill the scope and sequence.			
Uses consistent rules and strategies throughout the content			
Aligns well with the student workbook			

Appendix C: Part I of HWT Teacher Survey

Handwriting without Tears
Survey Questions for Experienced Users

Part I
HWT Teaching Guide

1. What aspect of the teaching guide did you find to be the greatest strength?

2. In your professional opinion, is the teaching guide user friendly for someone who is new and/or unfamiliar with the program? Give examples.

3. List specific features in the teacher guide were helpful for working with students on an individual level? Which HWT levels have you used?

4. Did you feel the teaching guide explained or described methods/strategies that could be implemented with students having special needs? Explain.

Appendix D: Part II of the HWT Teacher Survey

Part II
HWT Scope and Sequence

1. Describe the usefulness of the program's scope and sequence. How appropriate was this for planning instruction for students in an individualized format?

2. What aspects of the scope and sequence would you consider strengths when used with cognitively or learning challenged students?

3. What would you add to or change in the scope and sequence when implementing the program for special needs students?

Appendix E: Part III of the HWT Teacher Survey

Part III
Correcting Handwriting Problems

1. Which handwriting correction strategies did you use while implementing the program?

2. Of the strategies used, which were the most effective and why?

3. What would you recommend to other teachers for remediating or correcting handwriting problems when working with students having significant learning delays or problems?

4. Do you have any other thoughts or tips to share on your experiences with using correction strategies?

Appendix F: Part IV of the HWT Teacher Survey

Part IV
Multi-Sensory Activities/Materials

1. Describe the multi-sensory activities that you implemented in the lessons.

2. Of the activities and materials used, which did you find to be most effective with students who struggled developmentally with writing tasks?

3. Did you change or add to the activities that were provided? If yes, explain changes implemented.

4. How often did you change the multi-sensory approaches?

5. Were there materials provided that you tried and did not feel worked well? If yes, Why?

Appendix G: Observation Form for HWT Lesson Implementation

Observation Form for lesson implementation of *Handwriting without Tears*

Instructional Strengths observed in the Lesson:

Student Reaction to the strategies used:

Areas Needing Change or Follow-up:

Appendix H: UW-Stout Consent Forms

Consent to Participate in UW-Stout Applied Research

Investigator:
Wendy Hanewall
N3280 Bond Rd.
LaCrosse, WI 54601
608-779-9169

Research Sponsor:
Dr. James Lehmann
MSED Program--online
UW-Stout
509-240-5029

Description:
This research project will explore the use of the program "Handwriting without Tears" for instructional use with students having special learning needs. The focus of the research will be on exploring the effectiveness of the main components of the program including the teaching guide, scope and sequence, strategies for correcting handwriting problems, as well as the multi-sensory activities. Experienced users of the program will fill out a questionnaire on their experiences using the program and they will also be observed teaching lessons to students having learning delays or challenges. This information will be used to develop conclusions and recommendations for the best instructional strategies and methods for teaching handwriting to students having significant learning delays.

Risks and Benefits:
Subjects participating in this study will have no direct contact with the investigator. All information gathered will be collected in written form or observation and will remain confidential. The benefits of the research will be the development of a better understanding of handwriting techniques and strategies within the "Handwriting without Tears" curriculum. This information will be used

to establish appropriate and effective handwriting strategies with students having more significant learning and/or developmental delays.

Special populations:
The study will require the need to observe children who have special educational learning needs as they are instructed in handwriting lessons. Observations will take place in the educational setting and will require the students to have no changes in the typical instructional setting or time period.

Confidentiality:
All subjects participating in this research study will remain confidential. There will be no use of names or identifiable information for the purpose of this study.

Right to Withdrawal:
Participating in this study is completely voluntary. If at any time you decide to no longer participate, you have the right to withdrawal immediately with no adverse consequences.

IRB Approval:
This research study has been approved by the University of Wisconsin- Stout's Institutional Review Board (IRB). The IRB has determined that this research study meets all federal requirements for gathering information involving human subjects. If you have any further questions or concerns, feel free to contact the investigator, research advisor, or IRB administrator regarding your research rights. All contact information is listed below.

Advisor:
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IRB Administrator:

Sue Foxwell, Director, Research Services

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Statement of Consent:

By signing this consent form you agree to participate or have your child participate in the project entitled, *"Effective Use of the Program Handwriting without Tears for Students having Special Learning Needs"*

_____

Signature   Date

_____

Signature of parent or guardian