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Developing a Comprehensive Handwriting Curriculum Utilizing the Handwriting Without Tears™ Approach for Typically Developing Elementary School Aged Children

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Developing a Comprehensive Handwriting Curriculum Utilizing the Handwriting
Without Tears™ Approach for Typically Developing Elementary School Aged Children

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

Master of Science in Occupational Therapy

School of Health and Natural Sciences

Dominican University of California

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This thesis, written under the direction of the candidates' thesis advisor and approved by the Chair of the Master's program, has been presented to and accepted by the Faculty of the Occupational Therapy department in partial fulfillment of the requirements for the degree of Master of Science in Occupational Therapy. The content, project, and methodologies presented in this work represent the work of the candidates alone.

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Abstract

It is estimated that 27% of school-aged children in the United States have handwriting difficulties (McHale & Cermak, 1992). According to Hammerschmidt and Sudsawad (2004), illegible handwriting is the most common reason for referral to occupational therapy services; 49.2% of total referrals. Previous research on handwriting intervention supports that task-oriented handwriting instructional methods, such as Handwriting Without Tears™ (HWT), are among the most effective handwriting intervention approaches (Lust & Donica, 2011; Olsen, 2011; Weintraub et al., 2009). The purpose of this project was to develop a comprehensive handwriting curriculum based on the HWT™ technique, including the new iPad application and prewriting activities, to assist kindergarten, first, and third grade teachers in utilizing a standardized handwriting program. Dominican University of California occupational therapy graduate students partnered with The North Oakland Community Charter School (NOCCS) in developing and implementing this project. As a result, a comprehensive 14-week handwriting curriculum guide was developed and tailored to meet the specific needs of the primary school teachers at NOCCS. The main goals of this project were to create an outline of HWT™ activities to be administered once per day, three days per week, and to organize the material in a straightforward format that would be easily understood and implemented in the classroom. A Likert scale, handwriting curriculum assessment was created to evaluate the curriculum's content, ease of use, and satisfaction among kindergarten, first and third grade teachers. Although the teachers did not complete or return the curriculum assessment, they informally reported that they had begun utilizing the HWT curriculum, and felt it was an effective teaching tool.

Introduction

Children need to develop handwriting skills to achieve success both in and out of the classroom. Handwriting enables students to successfully communicate their thoughts and knowledge with peers and adults (Weintraub et al., 2009). Students experiencing handwriting difficulties often struggle academically, limiting their participation in everyday school activities. Nearly 60% of the average school day involves fine motor activities, including handwriting (McHale & Cermak, 1992). Fine motor skills are vital in the development of handwriting. Children in kindergarten spend an average of 46% of the school day on fine motor tasks, with 42% of that time being spent on paper and pencil tasks (Marr, Cermak, Cohn, & Henderson, 2003). Hammerschmidt and Sudsawad (2004) identified multiple factors relating to quality of handwriting that teachers use as a determinant for grading including neatness, legibility, and the student's ability to write on the line.

The DSM IV describes a disorder of written expression as "writing skills... that fall substantially below those expected given the individual's chronological age, measured intelligence, and age-appropriate education... The disturbance in written expression significantly interferes with academic achievement or with activities of daily living that require writing skills" (American Psychiatric Association, 2000, pp. 54-55). Illegible handwriting, uneven letter or word spacing, inconsistent letter size, and the inability to maintain writing within the confines of the lines are characteristics of handwriting dysfunction. Handwriting difficulties affect up to 27% of school-aged children in the United States (McHale & Cermak, 1992). According to Feder and Majnemer (2007), 10-30% of school-aged children have handwriting difficulties that

cannot be resolved without intervention. Blöte and Hamstra-Bletz (1991) found that boys are more likely than girls to display handwriting problems.

There are a number of factors that contribute to quality of handwriting including practice, legibility, letter formation, letter spacing, word spacing, letter size, and the ability to write within the confines of the lines (Hoy, Egan, & Feder, 2011; Volman, van Schendel, & Jongmans, 2006). Handwriting requires multiple sensory systems to operate simultaneously with one another (Asher, 2006; Denton, Cope, & Moser, 2006; Feder & Majnemer, 2007). Components such as visual-motor integration, visual-perception, motor planning, somatosensory discrimination, kinesthesia, attention, and bilateral sequencing are vital in producing successful handwriting skills (Asher, 2006; Denton et al., 2006; Feder & Mejnemer, 2007; Klein, Guiltner, Sollereder, & Cui, 2011).

There is a growing body of research on several different intervention methods to improve handwriting. Some remediation approaches rely upon multisensory theory, targeting individual components of kinesthetic, tactile, visual and auditory feedback (Amundson, 2005). Although some studies point to this method's effectiveness, current research is mixed. Most literature suggests that when compared to alternate methods, multisensory approaches are less effective in improving printing performance (Denton et al., 2006; Weintraub, Yinon, Hirsch, & Parush, 2009; Zwicker & Hadwin, 2009).

Recent trends in research highlight the benefits of task-oriented approaches to handwriting remediation (Zwicker & Hadwin, 2009). Task-oriented intervention targets higher level cognitive functioning. It includes aspects of modeling, imitation, feedback, and practice. When compared to multisensory approaches, task-oriented intervention yields greater increases in overall handwriting speed and legibility (Graham, Harris &

Fink, 2000; Jongsman, Linthorst-Bakker, Westenberg & Smits-Engesman, 2003; Macklay & KcCuskey, 2010).

Handwriting Without Tears™ (HWT) is a program developed by occupational therapist Jan Olsen (Olsen, 2011). It is a full curriculum program for grades K-5 and is based on a task-oriented approach with aspects of sensory exploration. Current studies that incorporate the HWT curriculum have yielded positive results, pointing to HWT as an effective teaching method for handwriting remediation (Kiss, 2007; Lust & Donica, 2001; Owens, 2004).

Occupational therapy practice is focused on the interdependent relationship between participation in occupations, such as school-related activities and handwriting, and health (American Occupational Therapy Association, 2006). In order for students to actively participate and effectively communicate in the classroom, they must possess competent handwriting skills. However, inadequate handwriting performance can lead to occupational deficits and isolation, which may negatively impact psychological wellbeing.

Previous research on motivation and technology suggests that incorporating technology into the classroom engages students in the learning process by providing individualized instruction (Wei, Hung, Lee, & Chen, 2011). The more intrinsically motivated students are to practice their handwriting skills, the more likely they are to practice, which increases the likelihood that their handwriting will improve (Kowal & Fortier, 1999). By harnessing the motivational aspects of technology, we aimed to improve children's educational occupation of handwriting by actively engaging them in a technology-enhanced instructional program.

We proposed developing a comprehensive curriculum using the Handwriting Without Tears™ program. This program was designed to aid handwriting instruction by providing comprehensive weekly outlines for instruction, homework, and support activities for kindergarten, first grade, and third grade at an elementary charter school in need of a standardized method. A curriculum was created for Kindergarten (See Appendix A) and first grade (See Appendix B) to set the foundation for functional handwriting skills. The third grade curriculum (See Appendix C) was created due to decreased handwriting skills. The second grade class would be focusing on remediation, and therefore, did not require a curriculum at the time of this project. Additionally, all three grades were provided resources for the use of the iPad as a supplemental instructional tool for the students to increase motivation for practice.

Literature Review

In the literature review we will be discussing three main overarching factors contributing to our project; handwriting dysfunction, handwriting intervention, and motivational aspects of technology. The first section discusses factors that contribute to handwriting dysfunction and the necessary skills for producing successful handwriting. The second section focuses on the effectiveness of multisensory and task-oriented approaches to handwriting remediation. The last section will define motivation and describe the motivational aspects of technology, which can be used to enhance learning environments and curricula.

Handwriting Dysfunction

In this section we will discuss the factors that contribute to handwriting and the dysfunction that occurs when the necessary skills are not at an optimal level. Dysgraphia

is characterized by handwriting problems including inappropriate letter sizing for the child's age, inaccurate word alignment or word spacing, varying letter size, distorted letters, and incorrect letter formation (Volman et al., 2006). Engel-Yeger, Nagauker-Yanuv, and Rosenblum (2009) found that children with dysgraphia had inferior handwriting skills when compared to typically developing children.

There are a number of factors that contribute to the quality of handwriting. The quality of handwriting is based on legibility, correct letter formation, and proper letter spacing (Volman et al., 2006). Some of the foundational skills necessary to produce quality, legible handwriting include visual-motor integration and fine motor skills (Klein et al., 2011; Volman et al., 2006). Volman et al. (2006) found that visual-motor integration, the ability to look at an object and copy it, was a strong indicator of handwriting quality.

Legibility, the ability to decipher handwriting, is one important component of handwriting quality. According to Hammerschmidt and Sudsawad (2004), 49.2% of teacher referrals to occupational therapy services were for illegible handwriting, making it the most common reason for referral for occupational therapy. Teachers identified the inability to read students' handwriting as a common method for distinguishing handwriting difficulties (Hammerschmidt & Sudsawad, 2004). Endurance may contribute to handwriting legibility. Shorter writing tasks produced more legible handwriting, while longer writing tasks produced less legible handwriting. This may suggest endurance as a key factor relating to quality of handwriting (Dennis & Swinth, 2001).

Correct letter formation and directionality are other important components of handwriting quality. Incorrect letter formation and directionality include unusual letter

formation (Asher, 2006). Directionality is the formation of the letter facing the correct direction. An example of incorrect directionality would be a letter that is written backwards. Teachers identified correct letter formation and directionality as two of the most important factors used to determine acceptable handwriting (Hammerschmidt & Sudsawad, 2004). Accurate letter and word spacing further affects the quality of handwriting and was identified by teachers as another crucial element in deciphering acceptable handwriting (Hammerschmidt & Sudsawad, 2004). Accurate letter spacing is defined as using the same distance consistently between each character. The inability to master skills associated with any of these factors can lead to handwriting dysfunction.

Poor and underdeveloped handwriting skills can lead to many negative outcomes. Engel-Yeger et al. (2009) found that children with poor handwriting required more time for assignment completion. This was due to an increase in the number of writing corrections the students need to make, including erasing to fix sloppy, illegible writing or incorrect letter formation. Delays may be due to the constraints of lined paper or difficulties with word and letter spacing. Children with handwriting problems may have increased difficulty with time-constrained class assignments. This could negatively affect the child's self-efficacy and increase pressure to complete the assignment quickly. Typically developing students may complete the task and then have to wait for the struggling child to complete the time-constrained assignment, increasing pressure on the struggling student (Engel-Yeger et al., 2009).

There are a multitude of factors that contribute to the development of good quality handwriting. Writing is a complex task that requires visual-perception skills such as hand-eye coordination and figure-ground perception (Denton et al., 2006; Klein et al.,

2011). Volman et al. (2006) observed that children with handwriting problems had more difficulty with multiple factors, including fine motor coordination, visual-motor integration, visual perception, and cognitive planning than typically developing children. Preminger, Weiss, and Weintraub (2004) found that visual motor integration and spatial perception related to handwriting precision. Poor visual-motor integration may also be a predictor for slow writing speed (Volman et al., 2006).

Children need fine motor skills such as strength and dexterity for grasping a writing utensil, in order to produce the sufficient in-hand manipulation skills necessary for handwriting. The dynamic tripod is the ideal grasp for holding a pencil (Dennis & Swinth, 2001). For some children, handwriting dysfunction may be a result of a non-functional pencil grasp, while for others different factors are contributing to dysfunction. Proficiency in fine motor coordination and type of pencil grasp may be predictors of handwriting quality in typically developed children (Volman et al., 2006).

Children need attention to maintain focus on the handwriting task (Klein et al., 2011). Attention deficits may lead to handwriting errors due to decreased concentration on detail or an increase in distracting environmental factors. For children exhibiting difficulty with handwriting skills, attention to learning may be divided or decreased. This may be due to slowed handwriting speed and increased focus on the actual process of handwriting, rather than to the assignment itself (Overvelde & Hulstijn, 2010).

Sensory processing impairments may play a role in handwriting dysfunction (Denton et al., 2006). Discriminating sensory information enables an individual to efficiently motor plan, which may contribute to handwriting skill and ability. In order to process sensory information an individual must have well-organized sensory processing,

including somatosensory, proprioception and vestibular discrimination (Schaaf et al., 2010). This enables postural control and balance for increased handwriting ability.

Somatosensory discrimination requires a combination of proprioception, knowing where one's body position is in relation to his environment, and tactile discrimination, sense of touch, to coincide efficiently (Schaaf et al., 2010).

Speed of handwriting may be influenced by multiple different factors. Visual-perception and motor-coordination correlated with handwriting speed in a study done by Preminger, Weiss, and Weintraub (2004). Hammerschmidt and Sudsawad (2004) found that teachers placed greater importance on students' legibility than on the speed of writing. However, dysgraphia may lead to slower completion time of assignments. This may be caused by slower writing speed due to limited compositional ease and quality (Rosenblum, Parush, & Weiss, 2003). Incorrect letter formation and directionality can also decrease writing speed (Asher, 2006).

Another factor contributing to handwriting development includes handwriting instruction methods. Standards for handwriting performance may not be consistent across grade levels. There is variability among the way teachers instruct handwriting and teachers' beliefs on the stage of handwriting that should be taught at the different grade levels (Asher, 2006). This may result in a child missing instruction on certain aspects of handwriting. Children who do not receive adequate handwriting instruction within and across grade levels may be more likely to develop dysgraphia (Asher, 2006).

Amount of practice affects handwriting quality (Hoy, Egan, & Feder, 2011). According to motor learning theory, both adequate feedback and practice are essential in learning new skills (Kaplan, 2010). A systematic review conducted by Hoy et al. (2011)

looked at 11 different intervention methods for handwriting dysfunction and found that one common thread in every successful intervention was adequate practice. Decreased importance and reinforcement of handwriting skills practice by parents and teachers may lead the child to insufficient skill level (Marr, 2005). Practice promotes proper and consistent letter formation, which leads to kinesthetic memory (Asher, 2006).

Handwriting Intervention

In this section, we will be discussing multisensory and task-oriented approaches to handwriting intervention. Review of the literature points to the effectiveness of an array of different intervention and remediation approaches to handwriting dysfunction (Hoy et al., 2011). The results of various studies suggest that intervention is necessary to improve handwriting legibility and minimize dysfunction (Case-Smith, 2002).

Intervention is effective in improving both individual component skills of handwriting, as well as overall letter and word legibility. Intervention targets individual sensorimotor and cognitive skills, teaching methods, and practice (Hoy et al., 2011).

Researchers have studied several different methods of instruction for students with handwriting difficulties (Hoy et al., 2011). These interventions can be organized into two main categories, multisensory approaches and task-oriented approaches.

Multisensory interventions for handwriting deficits focus on individual handwriting component skills through various sensory modalities, including kinesthetic, tactile, visual, and auditory feedback (Amundson, 2005). These types of interventions are based on the sensorimotor model of practice that involves the use of sensory experiences through various media and instructional materials (Amundson, 2005). Task-oriented approaches to handwriting focus on higher-level functioning, such as the entirety of the

task of handwriting itself (Weintraub et al., 2009). Common components of task-oriented approaches include practicing letter formation, imitation, copying, and self-monitoring (Zwicker & Hadwin, 2009).

Although research has been conducted on multisensory intervention, a majority of the studies are over 15 years old. Most current research suggests that multisensory methods are less effective than alternate approaches to handwriting remediation (Zwicker & Hadwin, 2009). Few recent studies have been done on multisensory handwriting interventions, and most of them use an eclectic approach rather than basing the intervention solely on sensorimotor theory. Case-Smith (2002) compared 29 students receiving direct occupational therapy services to a control group of nine students and found that those students receiving occupational therapy improved significantly in legibility. Although researchers used multisensory techniques including vibration and resisted writing, intervention also relied heavily upon cognitive aspects such as letter formation, alignment, and spacing (Case-Smith, 2002).

Similar results were found in studies conducted by Peterson and Nelson (2003) and Sudsawad, Trombly, Henderson, and Tickle-Degnen (2002). Peterson and Nelson (2003) used multisensory techniques but combined them with biomechanical and teaching-learning principles to explore the effectiveness of occupational therapy on 59 first grade students' handwriting. Although researchers found positive results with the intervention, it is impossible to draw conclusions about multisensory techniques alone from this study. Sudsawad et al. (2002) investigated kinesthetic training on first-grade students' handwriting and found no significant differences between the kinesthetic training group, practice group, and control group. Based on the results from these studies,

evidence supporting multisensory techniques is mixed, and therefore significant conclusions cannot be drawn about the effectiveness of this type of intervention.

A second approach to handwriting remediation is task-oriented intervention. Task-oriented remediation is a type of cognitive intervention that is based on learning theory concepts of imitation, practice, self-evaluation, and feedback (Zimmerman, 2000). It focuses on cognitive components, such self-instruction and self-evaluation, while emphasizing meta-cognitive awareness (Zwicker & Hadwin, 2009). Meta-cognitive awareness in the task of handwriting refers to a child's ability to identify errors and problem-solve in order to overcome challenges with letter formation. Zwicker and Hadwin (2009) found that second grade elementary students using this style of remediation improved more in total letter legibility compared to those who were taught from a multisensory perspective. The study of 66 participants tested the effectiveness of multisensory and cognitive approaches to handwriting intervention. All second-grade students in the cognitive intervention group obtained higher legibility scores at posttest, while approximately half of the students in the multisensory group had lower legibility scores at posttest (Zwicker & Hadwin, 2009). Results of this study allude to the greater potential of cognitive strategies over multisensory in improving children's handwriting abilities.

Weintraub et al. (2009) also found that students with handwriting difficulties may benefit more from "higher-level" intervention programs. Fifty-five general education students in the second to fourth grades were assigned to one of three groups, a sensorimotor intervention group, a task-oriented group, and a non-treatment control group. Measures of handwriting speed and legibility indicated that students in both

intervention groups improved, but that students in the task-oriented group made significantly greater gains in overall legibility than the sensorimotor group (Weintraub et al., 2009). Denton et al. (2006) reported similar findings in their study of 38 six to eleven-year old students with handwriting difficulties. Students who participated in a curriculum focused on therapeutic practice involving worksheets, writing from memory, and real-life writing assignments, such as thank you letters, demonstrated better handwriting performance than those in the sensorimotor-based intervention group (Denton et al., 2006).

Results from Mackay and McCluskey (2010) also support the effectiveness of task-oriented intervention for handwriting. First and second grade students participated in an eight-week log handwriting program consisting of verbal feedback, modeling, and daily practice. The term “log” refers to the students’ writing line, which is colored brown to represent a wooden log. The letters of the alphabet are introduced as different animals living inside of the log. After each weekly instructional session, students were asked to practice the skills they had learned at home. Students’ handwriting improved significantly in aspects of legibility, form, alignment, size, spacing, and speed (Mackay & McCluskey, 2010). Research supporting task-oriented approaches to handwriting dysfunction is vast, with several additional studies yielding positive results (Graham et al., 2000; Jongsman, Linthorst-Bakker, Westenberg & Smits-Engesman, 2003).

The Handwriting Without Tears (HWT) program is a specific approach to handwriting skill development and remediation that combines aspects of each of the above intervention approaches (Olsen, 2011). HWT includes a full curriculum for developing prewriting and writing skills (Lust & Donica, 2011). Teaching focuses on

task-oriented concepts, which instructors accomplish through imitation, feedback, and practice (Olsen, 2011). It also addresses sensory components in developmentally appropriate ways by incorporating aspects such as singing, playing, motor skills, visual-perceptual skills, sensory processing, and body awareness (Olsen & Knapton, 2008).

Kiss (2007) conducted a pilot study on the HWT method and found that overall legibility improved noticeably in children who participated compared with those who received traditional handwriting instruction by means of self-instruction, modeling, imitation, guided practice, and self-evaluation. Similar results were obtained from Owens (2004) that pointed to the effectiveness of the HWT approach on improving letter size and spacing compared to traditional methods. Lust and Donica (2011) conducted a two-group controlled trial study testing the effectiveness of a handwriting readiness program using the HWT curriculum. Students who participated in the program made significant improvements in prewriting, kindergarten readiness, and fine motor skills compared to the control group (Lust & Donica, 2011). These findings indicate the effectiveness of the HWT program as an approach to handwriting intervention that considers all aspects of learning.

Motivational Aspects of Technology

In this section, we will define motivation and give examples of how motivation influences learning. We will then discuss several studies that document how the use of technology increases learning and motivation to engage in the learning process in a variety of educational settings. Motivation can be defined as the energy to accomplish knowledge achievement, to initiate, and to maintain participation in the learning process (Ghergulescu & Muntean, 2010). It involves the energy, persistence, and interest a

student is taking in his or her activities (Ghergulescu & Muntean, 2010). Motivation facilitates learning because it keeps the student focused, enthusiastic and engaged in the learning process (Huizenga, Admiraal, Akkerman, & ten Dam, 2009).

There are several factors that influence students' motivation. A student's perceived ability to perform a task and satisfaction with the task are directly related to his or her level of motivation (Ghergulescu & Muntean, 2010). Contextual characteristics, students' backgrounds, and the continuous interaction between the student and his or her learning environment all contribute to an individual's level of motivation (Na, Kang-hao, & Chun-hao, 2010).

Horton, Liu, Olmanson, and Toprac (2011) found eleven key factors that contribute to motivation: authenticity, challenge, cognitive engagement, competence, choice, fantasy, identity, interactivity, novelty, sensory engagement, and social relations. Furthermore, Hoffman and Nadelson (2009) found that perceptions of control and challenge were associated with engagement and motivation. In other words, the degree of difficulty and extent to which an individual believes he or she can control or influence a task is directly related to an increase in motivation (Hoffman & Nadelson, 2009).

Motivation is necessary for academic success and plays a significant role in the learning process (Ghergulescu & Muntean, 2010). Incorporating technology into the learning curriculum significantly improves students' motivation. Reed-Swale (2009) found that the use of technology increased students' intrinsic motivation and improved their writing abilities. Liu, Olmanson, Horton, and Toprac (2011) found a positive correlation between students' motivation levels and their science knowledge test scores in a multimedia enriched, problem-based learning environment. Huizenga et al. (2009)

found that students who played a mobile-based game attained more knowledge on Medieval history in Amsterdam than students who received regular project-based, paper-and-pencil instruction.

Kayaoglu, Dag Akbas, and Ozturk (2011) studied the effect of using animation versus paper-and-pencil tasks on vocabulary achievement scores. Animations and multimedia were found to positively enhance the classroom atmosphere and students' motivation (Kayaoglu et al., 2011). Kayaoglu et al. (2011) concluded that interactive technology improves students' ability to focus more than traditional teaching methods, because it addresses more sensory systems. In another study, Liu et al. (2011) found that opportunities for problem solving, embedded within the context of videogames and fantasy, evoked the high levels of motivation in middle school students.

Technology promotes learning because it allows for an incomparable level of individualized instruction in the classroom (Cordova & Lepper, 1996). Wei et al. (2011) studied the impact that robot-learning companions (RLC) had on mathematical multiplication scores in elementary students. They found that technology provided more hands-on exercises, improved classroom atmosphere, and enhanced the students' motivation to learn. Additionally, Liu et al. (2011) found that students' perceived ability to perform a task (i.e., "perceived confidence") significantly contributed to the relationship between students' motivation and their academic performance. More specifically, motivation towards computer use was influenced by students' perceived importance of the topic being studied (Genc & Aydin, 2010). Furthermore, while investigating motivation and engagement in computer-based learning with elementary school students, Otta and Tavella (2010) found that students' motivation was

significantly increased when playing computer-based learning games. Horton et al. (2010) found that digital problem-based learning games enhanced motivation for solving complex issues and facilitated learning in middle school students.

Statement of Purpose

Handwriting is a key component of academic success (Medwell & Wray, 2008). However, motivating children to practice their handwriting skills is often a challenging task. The use of technology as a motivating factor may increase the likelihood of handwriting practice. The purpose of this project was to develop a comprehensive handwriting curriculum based on the Handwriting Without Tears approach, including the new “Wet-Dry-Try” iPad application, to assist kindergarten, first, and third grade teachers in utilizing a unified handwriting instruction method.

The objectives addressed were:

1. Provide the community charter school with a comprehensive kindergarten, first grade, and third grade 14-week handwriting curriculum.
2. Provide the community charter school with prewriting activities for kindergarten.
3. Provide the community charter school with cursive prewriting activities for third grade.
4. Educate charter school staff members on implementing handwriting curriculum.
5. Evaluate efficacy of handwriting curriculum based on charter school staff members’ feedback.

Theoretical Framework

In this section we will be discussing the self-determination theory and how it guided our project. The self-determination theory explains that all human beings have “natural, innate, and constructive tendencies” (Deci & Ryan, 2002, p. 5) to expand a more complex integrated sense of self. Humans have an innate predisposition for integration, including autonomy and homonomy. Autonomous integration is the organizing within one’s self, while homonomous organization involves integrating with others. The outcome of integration, such as an active or passive self, is highly dependent upon the social-environmental conditions (Deci & Ryan, 2002).

Self-determination theory focuses on motivation and the distinction between two types of intentional regulation of actions, self-determined and controlled (Deci, Vallerand, Pelletier, & Ryan, 1991). Self-determined internal regulation is when the action is based on the individual’s own volition, or choice. Controlled internal regulation differs in that the action is not based on the individual’s volition. Instead the action relates to an interpersonal or intrapsychic influence. This means that the regulatory process is not based on choice. Instead it is based on compliance or defiance. When the regulatory process is self-determined, the reason behind action is internal to the individual. However, when the regulatory process is controlled, the reason behind action is external to the individual (Deci et al., 1991).

Self-determination theory is based on three basic psychological needs vital to human life, competence, relatedness, and autonomy, also known as self-determination (Deci et al., 1991). Competence is the ability to achieve a multitude of internal and external outcomes, and to perform the required actions for those outcomes. Relatedness

refers to the ability to develop fulfilling social connections with others. Autonomy is the capability of the individual to be “self-initiating and self-regulating” (Deci et al., 1991, p. 327) of actions. These three basic needs are what influence motivation. Motivation and internal regulation are what produce and promote effective functioning in the social world (Deci et al., 1991).

Motivation consists of activation, intention and production of actions (Ryan & Deci, 2000). These produced actions are completely volitional and based on the individual’s sense of self (Deci et al., 1991). There are four types of motivation, intrinsic motivation, self-determined extrinsic motivation, non-self-determined extrinsic motivation, and amotivation (Kowal & Fortier, 1999). The different types of motivation are based on an individual’s reasoning behind his or her actions (Ryan & Deci, 2000). Intrinsic motivation is the engagement in activity for the interest and fulfillment that is a result of participation in the given activity. Intrinsic motivation results in behavior that is both a means to an end, as well as the end result itself.

Extrinsic motivation is characterized by a means to an end. The motivation does not come from the process of doing the action. Instead the motivator to complete the process is the end result. Self-determined extrinsic motivation is based on the importance and worth of participation in an activity based on the end result and is dependent upon personal choice (Kowal & Fortier, 1999). Non-self-determined extrinsic motivation is controlled by external factors such as incentive or avoidance of punishment. Amotivation occurs when there is no intrinsic or extrinsic motivation. Often, the individual does not feel that he or she has a control over his or her actions, leading to no gain or advantage

from participation in activities (Kowal, & Fortier, 1999). The intention behind behavior deciphers which type of motivation an individual acts on (Ryan, & Deci, 2000).

Self-determination theory provided a framework for our project. It allowed us to understand the key contributing factors and types of motivation that promote learning (Kowal & Fortier, 1999). We chose SDT to better understand the relationship between students' motivation and technology. Although previous research has stated that technology is an inherently motivating factor, there is limited research on the specific type of motivation that technology-enhanced environments elicit (Liu et al., 2011).

Based on the SDT, the motivational aspects of technology can fall anywhere along the continuum of the taxonomy of motivation illustrated in Fig. 1. More specifically, a student's motivation for engaging in a technological task may be amotivational, intrinsic or extrinsic in origin depending on his or her perceived locus of control, competence, and autonomy (Ryan & Deci, 2000).

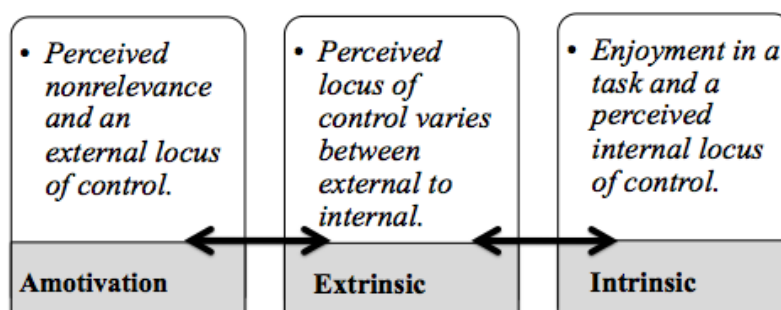


Figure 1. Taxonomy of continuum of human motivation (Adapted from Ryan & Deci, 2000).

Furthermore, self-determination theory assisted us in making assumptions about students' motivational consequences (Kowal & Fortier, 1999). For instance, if a child perceives a task as being intrinsically or self-determined extrinsically motivating, he or she has internalized the value of an activity. Thus, the student has taken responsibility for

performing the task and will be more likely to perform it in the future (Kowal & Fortier, 1999). This internalization and perceived internal locus of control often results in quality learning and further exploration (Ryan & Deci, 2000). Conversely, if a student is extrinsically motivated, specifically non-self-determined extrinsically motivated by external factors, such as a deadline or parental sanctions that she has not yet self-endorsed, she will lack a sense of volition and autonomy (Ryan & Deci, 2000). This type of extrinsic motivation provides an impoverished driving force in comparison to intrinsic motivation. Therefore, students who are non-self-determined extrinsically motivated may passively comply with a task, but may not be actively engaged in it (Ryan & Deci, 2000).

Students must be intrinsically motivated to practice an activity of their own accord. If a child is amotivated, he or she will not choose to practice a task because it is unappealing or unpleasant. Yet, if a child is intrinsically or at least extrinsically motivated by positive feedback, then he or she is more likely to continue practicing the activity.

Previous research suggests that technology-enhanced learning environments encourage intrinsic motivation. Students are motivated to participate in technology-enhanced tasks because they are inherently motivating (Otta & Tavella, 2010). A student's interest and enjoyment in using technology is akin to intrinsic motivation. Consequently, we are making the assumption that if a student is intrinsically motivated by technology, such as the "Wet-Dry-Try" iPad application, he or she will practice a technology-enhanced activity more often (Kowal & Fortier, 1999). Over time, depending on the student's quality and frequency of practice, his or her skills pertaining to the task will improve.

Lastly, self-determination theory describes human motivation and the perceptions and factors contributing to engagement in a task. Ultimately, this theory helped provide an explanation and justification for the use of technology, such as the “Wet-Dry-Try” iPad application, in handwriting instruction. It allowed us to understand how and why technology and intrinsic motivation enhance the learning process.

Methodology

Agency Description and Target Population

The North Oakland Community Charter School (NOCCS) partnered with Dominican University occupational therapy students in developing and implementing this project. NOCCS is an Oakland, CA public charter school serving approximately 215 K-8 students. The school staff consists of six administrative team members and 20 teachers and specialists.

The K-5 classrooms at NOCCS are set up in multi-aged learning environments, with each classroom consisting of a span of two grade levels. This type of environment promotes leadership skills, nurturing behaviors, and a greater sense of community while de-emphasizing competition. Students are placed with the same teacher for two years. Research evidence strongly supports this type of structure, as close, sustained relationships foster academic success. The target population of this project included kindergarten, first, and third grade teachers with a concern for improving the quality of students’ handwriting. Initial feedback from the teachers suggested that the handwriting curriculum would not be a fit for the second grade classrooms. The second grade teachers expressed the need for a more remedial handwriting approach, which the curriculum

design did not meet. Therefore, the decision was made to design the developmental program for kindergarten, first, and third grade classrooms only.

Project Design

The goal in designing this project was to develop a comprehensive 14-week handwriting curriculum utilizing the Handwriting Without Tears approach to meet the needs of kindergarten, first, and third grade students and teachers. In designing a curriculum, the objective was to create a clear, specified outline of activities that could be accomplished in 15 minutes per day, three days per week, and to organize the material in a clear, concise format that would be easy for teachers to understand and implement in the classroom.

Handwriting Without Tears is an effective method for addressing these goals. Research supports HWT as successful in developing prewriting skills and increasing legibility (Kiss, 2007, Lust & Donica, 2011 & Owens, 2004). The program's systematic sequence of letters combined with a variety of multisensory activities provides teachers with a structured curriculum, while allowing flexibility and freedom of choice in activities. Given that time was a primary concern for teachers, the HWT activities can be adapted and organized in various ways to accommodate classroom time constraints.

Project Development

An informal questionnaire was sent to teachers to gain more information about the specific handwriting needs of each classroom. The following questions were initially presented:

1. What has been your approach in the past to teach handwriting?

2. Do you feel comfortable teaching handwriting? If not, why not and what would help you to feel more comfortable?
3. If you taught at NOCCS last year, what were the challenges you (and your students) faced with handwriting? What worked well?
4. What are your concerns (if any) about including handwriting as part of your curriculum?

The answers to these questions, along with an initial focus group with the NOCCS teachers and teaching assistants, helped to develop a needs assessment for the kindergarten, first, second, and third grade classrooms in terms of handwriting development and remediation. After discussing concerns about students' handwriting, as well as ways to incorporate handwriting instruction into the daily classroom routine, a few common themes emerged.

Second and third graders were showing signs of poor legibility. As a result of expending considerable effort with letter formation, students lacked the ability to form ideas during writing activities. Kindergarten teachers expressed concern that students had been introduced to a different sequence of letters for reading than for writing. In addition, students displayed a wide variety of handwriting skills and abilities, which made it difficult to target specific needs. Teachers had observed that students entering NOCCS from other schools often demonstrated much better legibility. Parents had also experienced difficulty assisting their children with handwriting homework.

Teachers expressed feeling uncomfortable teaching handwriting, not having a lot of background teaching handwriting, or not particularly enjoying teaching it in the classroom. Given their apprehension, and the wide variety of abilities amongst their

students, they did not feel there was a way to incorporate handwriting into the academic curriculum without taking valuable classroom time away from other subjects. They also anticipated that students would not be motivated to complete handwriting homework.

Based on initial feedback from teachers, a 14-week comprehensive curriculum, accompanied with prewriting activities, was developed to meet the needs of each classroom. An inventory was taken to determine the HWT supplies classrooms were equipped with and which materials were still needed. The Handwriting Without Tears Teacher's Guide for kindergarten, first, and third grade was used, along with accompanying workbooks for student practice. Additional materials included wood pieces, slates, chalk, sponges, play-doh, golf pencils, adapted paper, and the HWT Rock, Rap, Tap & Learn CD. The iPad or Android tablets were recommended for supplemental classroom and homework use.

In developing the handwriting curriculum, the HWT teacher's guides, along with supplemental online HWT materials, were utilized. Occupational therapy graduate students' specialized knowledge and skill relating to fine motor skills and development helped in developing a curriculum that focused on all aspects of handwriting, including eye-hand coordination, figure-ground perception, fine motor coordination, and cognitive planning. The HWT basic training was attended by the three graduate students in preparation for the development of the curriculum.

Prior to delving into the curriculum, teachers were instructed to begin with pre-writing activities that would help develop necessary pre-writing skills. Kindergarten teachers were provided with a list of fine motor development activities such as manipulating play-doh, stringing beads, and coloring. First graders were provided with

adapted double-lined paper (See Appendix D and Appendix E) created by the graduate students that consisted of a blank box at the start of each line. Teachers were instructed to utilize this paper to review capital letters with the students. Third graders were provided with cursive warm-up activities, including tracing loops, curls, and swirls with their pencils.

Following approximately four weeks of introduction activities, teachers were supplied with materials to begin implementing the handwriting curriculum. The kindergarten curriculum focused primarily on capital letter formation, first grade on lowercase letters and numbers, and third grade on cursive writing. A one-page weekly summary outlined the daily activities to implement. Day one comprised of introducing the new letters, day two emphasized reinforcement activities, and day three focused on actual handwriting practice utilizing the HWT workbooks and adapted paper. At the bottom of every outline, teachers were provided with homework suggestions and other ways to incorporate handwriting into the classroom. Additional resources, such as strategies to promote functional pencil grasp, posture, and positioning, were provided.

Common introduction activities for kindergartners included songs from the HWT Rock, Tap, Rap and Learn CD and HWT wood pieces for capital letter formation. First graders also incorporated relevant HWT songs during the letter introduction period, along with introducing each letter in a specific format on the board. Third graders followed specific step-by-step instructions provided in the teacher's guide for letter introduction, along with activities that facilitated building connections between cursive letters.

All three curriculums encouraged teachers to refer to the HWT teacher's manual for suggestions on how to teach the letters and reinforce correct letter formation.

Reinforcement activities focused on developing correct sizing, spacing, and directionality prior to utilizing a pencil. Examples of reinforcement activities include finger tracing, using slates to perform wet-dry-try, and letter stories. Day three focused on actual letter formation using HWT workbook practice pages and adapted paper for capital letter formation. Classrooms were provided with golf-sized pencils to promote functional tripod grasp use. Weekly homework consisted of five or less minutes per day of additional handwriting practice utilizing the workbooks and adapted paper.

To promote engagement in handwriting practice and increase students' motivation, teachers were provided with information on purchasing the HWT iPad "Wet-Dry-Try" application (See appendix F). The decision to include technology as part of the handwriting curriculum was based on research findings that indicate that technology can be a motivator for practice (Horton et al., 2010). The "Wet-Dry-Try" application is compatible with the iPad or Android. Recommendations were given to use the application as a supplement to instruction, as well as for at-home practice if the student's family owned an iPad or Android.

Project Implementation

A binder composed of an introduction letter describing the implementation process and a week-by-week curriculum was created for each of the grade levels. Binders were given to teachers with instructions to contact the graduate students if any questions or concerns arose. Prior to beginning implementation, a parent training session was planned to inform the parents of the new curriculum, familiarize them with the HWT language, and provide suggestions on how to support their children at home. Despite

multiple attempts to schedule this training session, the meeting ultimately did not occur due to external circumstances.

Following the initial weeks of prewriting activities, teachers were instructed to begin implementation of the HWT curriculum. Each week's curriculum consisted of three days of instruction, with approximately 15 minutes per day spent on handwriting. Weekly homework was provided, with instructions to assign five minutes or less of homework per night. The curriculum outlines provided teachers with some flexibility in choosing which activities to implement, while also providing a simple and clearly laid out template that required little preparation time.

The goal in implementing this project is that it will be a resource for future years to come at NOCCS. In designing this curriculum, the hope is that it will provide teachers with a comprehensive, easy-to-use guide that will increase their confidence and comfort in approaching handwriting instruction. Students will learn handwriting correctly from the beginning, and legibility problems will decrease. Ultimately, teachers will spend less time remediating handwriting and more time developing critical writing skills.

Project Evaluation

A handwriting curriculum assessment (see Appendix G) was created to evaluate the curriculum's content, ease of use, and satisfaction among teachers. A Likert Scale format was used to rate each category from 1, "strongly disagree" to 5, "strongly agree". The assessment included an area at the bottom for teachers to provide suggestions and feedback for further HWT curricula. Teachers were sent an electronic version of the survey and asked to return it after implementing the curriculum.

Ultimately following distribution of the survey, none of the assessments were completed or returned. However, one of the kindergarten teachers conveyed that the students had been using the general HWT curriculum in class and had experienced great success with it so far. She commented, “We have been using the general curriculum and I absolutely love it! We are super happy that we started teaching it in the class and thank you for the push towards doing so.” Although they had not been following the exact curriculum sequence provided, students were learning handwriting three times per week, 15 minutes per day, using the HWT approach. Although limited, the initial feedback suggests generally favorable results using the HWT model and points to the potential for continuing its use in the future.

Discussion, Summary, and Recommendations

In the United States, 27% of school age children experience handwriting difficulties (McHale & Cermak, 1992). Handwriting is a complex task involving multiple sensory systems (Asher, 2006; Denton et al., 2006; Feder & Majnemar, 2007). It is critical to academic success and is a necessary skill for children to master. Task-oriented handwriting interventions, such as Handwriting Without Tears (HWT), are among the most effective handwriting intervention approaches (Lust & Donica, 2011; Olsen, 2011; Weintraub et al., 2009). In order to learn handwriting skills, children need an adequate amount of practice and motivation to practice (Hoy et al., 2011). Research suggests that technology can increase students’ motivation to learn because it provides more interactive experiences and improves classroom atmosphere (Wei et al., 2011). By developing a handwriting curriculum utilizing the HWT approach we were attempting to

fulfill a need expressed by an Oakland, CA community charter school in need of a standardized teaching method.

There were several factors limiting the scope and efficacy of this project. Time constraints limited the curriculum implementation and follow through of the project. Furthermore, there was limited time for handwriting instruction within the pre-existing teaching curriculum, limited financial resources for the project, and inadequate access to tablet computers inside and outside of the classroom. Additionally, although we distributed the curriculum assessments to the teachers during the Fall 2012 semester, we did not receive any completed responses. Going forward, in order to properly assess the curriculum, it would be beneficial to survey the teachers, who were implementing the program. In the future, assessing the students' handwriting, with standardized assessment tool, at the beginning and end of the school year (after program implementation) would also allow for a more objective appraisal of the program.

This was a prevention-based project designed to promote handwriting skill development amongst early elementary children. By encouraging consistent handwriting instruction, we endeavored to reduce the incidence of handwriting difficulties and the need for remedial interventions. Instead of providing more traditional, school-based occupational therapy services for children with disabilities, we strove to develop a program that would prevent handwriting difficulties from occurring, or lessen in frequency, for typically developing children. This project demonstrates that occupational therapists can play a significant role in handwriting instruction, curriculum planning, and prevention-based program development in the elementary school setting.

Throughout this process, as occupational therapy graduate students, our role was more consultative in nature. Our main focus was on developing a program that would promote academic success for all students in the classroom. By collaborating with the North Oakland community charter school staff, we aspired to promote students' active participation in handwriting, and ultimately to facilitate their self-expression.

References

- American Occupational Therapy Association. (2010). Occupational therapy code of ethics. *American Journal of Occupational Therapy*, 64(6), S17–S26.
doi:10.5014/ajot.2010.64S17
- American Psychiatric Association (2000). Disorder of written expression. *Diagnostic and statistical manual of mental disorders*. (4th ed., text rev., pp. 54-56). Washington, DC: American Psychiatric Publishing, Inc.
- Asher, A. (2006). Handwriting instruction in elementary schools. *American Journal of Occupational Therapy*, 60, 461-471.
- Amundson, S. J. (2005). Prewriting and handwriting skills. In J. Case-Smith (Ed.), *Occupational therapy for children* (5th ed., pp. 586-614). St. Louis, MO: Mosby Elsevier.
- Beery, K., & Beery, N. (2006). *Beery VMI: Administration, scoring, and teaching manual* (5th ed.). Bloomington, MN: Pearson.
- Blote, A. & Hamstra-Bletz, L. (1991). A longitudinal study on the structure of handwriting. *Perceptual & Motor Skills*, 72, 983-994.
- Case-Smith, J. (2002). Effectiveness of school-based occupational therapy intervention on handwriting. *The American Journal of Occupational Therapy*, 56(1), 17-25.
doi:10.5014/ajot.56.1.17
- Chang, S., & Yu, N., (2009). Discriminant validity of the visual motor integration test in screening children with handwriting dysfunction. *Perceptual & Motor Skills*, 109(3), 770-782. doi:10.2466/PMS.109.3.770-782

- Cordova, D., & Lepper M. (1996). Intrinsic motivation and the process of learning: Beneficial effects of contextualization, personalization, and choice. *Journal of Education Psychology, 88*, 715-730.
- Deci, E. L., & Ryan, R. M. (2002). *Handbook of Self-Determination research*. Retrieved from <http://books.google.com/books>
- Deci, E., Vallerand, R., Pelletier, L., & Ryan, R. (1991). Motivation and education: The Self-Determination perspective. *Educational Psychologist, 26*(3, 4), 325-346. Retrieved from http://www.psych.rochester.edu/SDT/documents/1991_DeciVallerandPelletierRyan_EP.pdf
- Dennis, J., & Swinth, Y. (2001). Pencil grasp and children's handwriting legibility during different-length writing tasks. *American Journal of Occupational Therapy, 55*, 175-183.
- Denton, P., Cope, S., & Moser, C. (2006). The effects of sensorimotor-based intervention versus therapeutic practice on improving handwriting performance in 6- to 11-year-old children. *American Journal of Occupational Therapy, 60*, 16-27.
- Engel-Yeger, B., Nagauker-Yanuv, L., & Rosenblum, S. (2009). Handwriting performance, self-reports, and perceived self-efficacy among children with dysgraphia. *American Journal of Occupational Therapy, 63*, 182-192.
- Feder, K., & Majnemer, A. (2007). Handwriting development, competency, and intervention. *Developmental Medicine & Child Neurology, 49*(4), 312-317. doi:10.1111/j.1469-8749.2007.00312.x

- Genc, G., & Aydin, S. (2010). Students' motivation towards computer use in EFL learning. *Online Submission*. Retrieved from http://w3.balikesir.edu.tr/~saydin/index_dosyalar/ietc2010-3-Aydin-Genc.pdf.
- Ghergulescu, I., & Muntean, C. H. (2010). Assessment of motivation in gaming based e-learning. *Proceedings of the IADIS International Conference on Cognition & Exploratory Learning in Digital Age*, 71-78.
- Graham, S., Harris, K.R., & Fink, B. (2000). Is handwriting causally related to learning to write? Treatment of handwriting problems in beginning writers. *Journal of Educational Psychology*, 92, 620-633.
- Hammerschmidt, S., & Sudsawad, P. (2004). Teachers' survey on problems with handwriting: Referral, evaluation, and out-comes. *American Journal of Occupational Therapy*, 58, 185-192.
- Hoffman, B. & Nadelson, L. (2009). Motivational engagement and video gaming: A mixed methods study. *Education Tech Research and Development*, 58, 245-270. doi:10.1007/s11423-009-9134-9
- Horton, L., Liu, H., Olmanson, J., & Toprac, P. (2011). Engaging learners through interactive media: Findings and implications from a technology enhanced problem-based learning environment. *AERA Symposium*. New Orleans, LA.
- Hoy, M., Egan, M. Y., & Feder, K. P. (2011). A systematic review of interventions to improve handwriting. *Canadian Journal of Occupational Therapy*, 78(1), 13-25. doi:10.2182/cjot.2011.78.1.3
- Huizenga, J., Admiraal, W., Akkerman, S., ten Dam, G. (2009). Mobile game-based learning in secondary education: Engagement, motivation and learning in a

mobile city game. *Journal of Computer Assisted Learning*, 25, 332-244.

doi:10.1111/j.1365-2729.2009.00316.x

Jongsman, M.J., Linthorst-Bakker, E., Westenberg, Y., & Smits-Engesman, B. C. M.

(2003). Use of a task-oriented self-instruction method to support children in primary school with poor handwriting quality and speed. *Human Movement Science*, 22, 549-566.

Kaplan, M. (2010). A frame of reference for motor skill acquisition. In P. Kramer & J.

Hinojosa (Eds.), *Frames of reference for pediatric occupational therapy* (3rd ed., pp. 390-424). Baltimore, MD: Lippincott Williams & Wilkins.

Kayaoglu, M. N., Dag Akbas, R., & Ozturk, Z. (2011). A small scale experiential study:

Using animations to learn vocabulary. *The Turkish Online Journal of Educational Technology*, 10(2), 24-30.

Kiss, D. (2007). Handwriting consultation in elementary schools. *Occupational Therapy Practice*, 12(14), 11-14.

Klein, S., Guiltner, V., Sollereder, P., & Cui, Y. (2011). Relationships between fine-

motor, visual-motor, and visual perception scores and handwriting legibility and speed. *Physical & Occupational Therapy in Pediatrics*, 31, 103-114.

Kowal, J., & Fortier, M. (1999). Motivational determinants of flow: Contributions from

Self-Determination theory. *The Journal of Social Psychology*, 139(3), 355-368.

Liu, H., Olmanson, J., Horton, L., & Toprac, P. (2011). Motivational multimedia:

Examining students' learning and motivation as they use a multimedia enriched learning environment. *AERA Symposium*. New Orleans, LA

- Lust, C. A., & Donica, D. K. (2011). Effectiveness of a handwriting readiness program in Head Start: A two-group controlled trial. *American Journal of Occupational Therapy*, 65(5), 560-568.
- Mackay, N., McCluskey, A., & Mayes, R. (2010). The Log Handwriting Program improved children's writing legibility: A pretest-posttest study. *American Journal of Occupational Therapy*, 64(1), 30-36.
- Marr, D. (2005). Consistency of handwriting performance across the early elementary grades. *Occupational Therapy Journal of Research*, 25, 143-148.
- Marr, D., Cermak, S., Cohn, E., & Henderson, A. (2003). Fine motor activities in Head Start and kindergarten classrooms. *American Journal of Occupational Therapy*, 57, 550-557.
- McHale, K., & Cermak, S. (1992). Fine motor activities in elementary school: Preliminary findings and provisional implications for children with fine motor problems. *American Journal of Occupational Therapy*, 46, 898-903.
- Medwell, J., & Wray, D. (2008). Handwriting – A forgotten language skill? *Language and Education*, 22, 34-47. doi 10.2167/le722.0
- Na, L., Kang-hao, H., & Chun-hao, C. (2010). A cognitive-situative approach to understand motivation: Implications to technology-supported education. *US-China Education Review*, 7(5), 26-33.
- Olsen, J. (2011). Why it works: Teaching strategies. *Handwriting Without Tears*. Retrieved from <http://www.hwtears.com/hwt/why-it-works/teaching-strategies>
- Olsen, J. Z., & Knapton, E. F. (2008). *Handwriting Without Tears pre-k teacher's guide*. Cabin John, MD: Handwriting Without Tears.

- Olsen, J. Z., & Knapton, E. F. (2006). *The Print Tool*. Gaithersburg, MD: Handwriting Without Tears.
- Otta, M., & Tavella, M. (2010). Motivation and engagement in computer-based learning tasks: Investigating key contributing factors. *World Journal on Educational Technology, 2*(1), 1-15.
- Overvelde, A., & Hulstijn, W. (2010). Handwriting development in grade 2 and grade 3 primary school children with normal, at risk, or dysgraphic characteristics. *Research in Developmental Disabilities, 32*, 540-548.
- Owens, L. L. (2004). *The effects of the Handwriting Without Tears program on the handwriting of students in inclusion classrooms*. (Master's thesis). Virginia Commonwealth University, Richmond, Virginia.
- Peterson, C. Q., & Nelson, D. L. (2003). Effect of an occupational intervention on printing in children with economic disadvantages. *American Journal of Occupational Therapy, 57*(2), 152-160.
- Preminger, F., Weiss, P., & Weintraub, N. (2004). Predicting occupational performance: Handwriting versus keyboarding. *American Journal of Occupational Therapy, 58*, 193–201.
- Reed-Swale, T. W. (2009). Engaging digital natives in a digital world. *Connect Magazine, 22*(3), 22-25.
- Rosenblum, S., Parush, S., & Weiss, P. (2003). Computerized temporal handwriting characteristics of proficient and non-proficient handwriters. *American Journal of Occupational Therapy, 57*, 129-138.

- Ryan, R., & Deci, E. (2000). Self-Determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist*, 55(1), 68-78. doi:10.1037//0003-066X.55.1.68
- Schaaf, R., Schoen, S., Roley, S., Lane, S., Koomar, J., & May-Benson, T. (2010). A frame of reference for sensory integration. In P. Kramer & J. Hinojosa (Eds.), *Frames of reference for pediatric occupational therapy* (3rd ed., p. 113). Philadelphia, Pennsylvania: Wolters Kluwer/Lippincott Williams & Wilkins.
- Schneck C., & Amundson S. (2010). Prewriting and handwriting skills. In J. Case-Smith & J. O'Brien (Eds.), *Occupational therapy for children* (6th ed, pp. 555-580). Maryland Heights, MO: Mosby Elsevier.
- Sudsawed, P., Trombly, C.A., Henderson, A., & Tickle-Degnen, L. (2002). Testing the effect of kinesthetic training on handwriting performance in first-grade students. *American Journal of Occupational Therapy*, 56, 56-33.
- Volman, M., van Schendel, B., & Jongmans, M. (2006). Handwriting difficulties in primary school children: A search for underlying mechanisms. *American Journal of Occupational Therapy*, 60, 451-460.
- Wei, C. W., Hung, J. C., Lee, L., & Chen, N. S. (2011). A joyful classroom learning system with robot learning companion for children to learn mathematics multiplication. *The Turkish Online Journal of Educational Technology*, 10(2), 11-23.
- Weintraub, N., Yinon, M., Hirsch, I. B., & Parush, S. (2009). Effectiveness of sensorimotor and task-oriented handwriting intervention in elementary school-

aged students with handwriting difficulties. *OTJR: Occupation, Participation & Health*, 29(3), 125-134.

Zimmerman, B. J. (2000). Self-efficacy: An essential motive to learn. *Contemporary Educational Psychology*, 25(1), 82-91. doi:10.1006/ceps.1999.1016

Zwicker, J. G., & Hadwin, A. F. (2009). Cognitive versus multisensory approaches to handwriting intervention: A randomized controlled trial. *OTJR: Occupation, Participation & Health*, 29(1), 40-48.

APPENDIX A

Handwriting Curriculum: Kindergarten Week 1**Capital Letters**

F

E

Day 1: Introduction Activities

HWT CD

Track 12 Rock, Rap, Tap & Learn- Frog Jump Letters

Introduce letters on board

Handwriting Without Tears Kindergarten Teacher's Guide p. 79

Letter "F" p. 80

Letter "E" p. 81

Begin letter formation with wood pieces (can be done on the floor or at desks)

Introduce concept of "big line, little line" and "big curve, little curve" – p. 34

Formation of letters – p. 42

Day 2: Reinforcement Activities

Group activity

Wood pieces – p.42

Wet-dry-try chalkboard activity – p. 46

-Reinforce starting at the top left corner, making a big line down, and jumping back up to the top

Day 3: Handwriting Workbook Practice

Letters and Numbers For Me - Student Workbook p. 9-10

Homework (5 minutes maximum per day)

Student Workbook p. 9-10

Ways to Incorporate Handwriting in the Classroom

Form letters using play-doh, clay, or wikki stix

Write or draw on a vertical surface (such as whiteboard or easel) to promote proper hand and wrist positioning for pencil use – p. 16 Teacher's Guide

Additional Resources

See p. 60-67 in for information about posture, paper position, and pencil skills

HWT CD

Track 9-Rock, Rap, Tap & Learn– Picking Up My Pencil

Track 4-Rock, Rap, Tap & Learn - Hey, Hey! Big Line

Handwriting Curriculum: Kindergarten Week 2

Capital Letters

D

P

Day 1: Introduction Activities

Song: Track 12 Rock, Rap, Rap & Learn– Frog Jump Capitals

Introduce letters on board

Teacher's Guide p. 82-83

Begin letter formation with wood pieces - p. 42

Day 2: Reinforcement Activities

Group activity

Wood pieces – p. 42

Wet-dry-try – p. 46

Reinforce starting at the top left corner, making a big line down, frog jump back to the starting corner “ribbit,” big curve/little curve.

Day 3: Handwriting Workbook Practice

Student Workbook p. 11-12

Homework

Student Workbook p. 11-12

Ways to Incorporate Handwriting in the Classroom

Form letters using play-doh, clay or wikki stix

Dot-to-dot activities or mazes using small pencils or broken crayons

Writing or drawing activity on a vertical surface

*Review/incorporate letters from the previous week

Additional Resources

HWT CD (Rock, Rap, Rap & Learn):

Track 2 Where Do You Start Your Letters

Track 3 Air Writing

Air Writing – see p. 52 in Teacher's Guide

Handwriting Curriculum: Kindergarten Week 3

Capital Letters

B
R

Day 1: Introduction Activities

Song: Track 12 - Frog Jump Letters

Introduce letters

Teacher's guide – p. 84-85

Begin formation of letters using wood pieces – p. 42

Day 2: Reinforcement Activities

Group activity

Wood pieces – p. 42

Wet-dry-try – p. 46

Letter B: Reinforce starting in the top left corner, big line down, little curve, little curve

Letter R: Big line down, little curve, little line

Day 3: Handwriting Workbook Practice

Student Workbook p. 13-14

Homework

Student Workbook p. 13-14

Ways to Incorporate Handwriting in the Classroom

Play-doh, clay, and/or wikki stix to form letters

Mazes and dot-to-dot activities for fine motor hand and wrist control

Drawing/writing activities on a vertical surface

*Review/incorporate letters from the previous weeks

Additional Resources

HWT CD (Rock, Rap, Rap & Learn):

Track 5 Diagonals

Track 2 Where Do You Start Your Letters?

Mystery Letter Game (see p. 56 Teacher's Guide) using letters F, E, D, P, B, R

Handwriting Curriculum: Kindergarten Week 4

Capital Letters

N
M

Day 1: Introduction Activities

Songs: Track 12- Frog Jump Capitals
Track 5 – Diagonals

Introduce letters: p. 86-87 of Teacher's Guide

Begin letter formation using wood pieces – p. 42

Day 2: Reinforcement Activities

Group Activity

Wood pieces – p. 42

Wet-dry-try – p. 46

Reinforce starting at the top left corner, bumping the bottom of the chalkboard, jumping to the top, making a diagonal and bumping the bottom right corner of the chalkboard (letter N), and big line to the top.

*Some children find it helpful to think of making a V after the first big line for the letter M

Day 3: Handwriting Workbook Practice

Student Workbook p. 15-16

Homework

Student Workbook p. 15-16

Ways to Incorporate Handwriting in the Classroom

Form letters using play-doh, clay, or wikki stix

Mazes and dot-to-dot activities

Form letters on a vertical surface

*Review/incorporate letters from the previous week

Additional Resources

HWT CD (Rock, Rap, Rap & Learn):

Track 5 Diagonals

Track 2 Where Do You Start Your Letters?

Mystery letter game using letters F, E, D, P, B, R, N, M – p. 56

Handwriting Curriculum: Kindergarten Week 5

Capital Letters

H
K

Day 1: Introduction Activities

Songs: Track 13 – Give it a Middle (while standing, trace “H” in the air)
Track 5 – Diagonals (letter K)

Introduce letters on board

Letter “H” p. 89 Teacher’s Guide

- Remind students *not* to frog jump back to the starting corner
- Left-handed students can write cross strokes from right-to-left pulling into their hand

Letter “K” p. 90 Teacher’s Guide

- Letter story karate “kick” – p. 58

Begin letter formation with wood pieces (on the floor or at desks) – p. 42

Day 2: Reinforcement Activities

Group activity

Wood pieces – p.42

Wet-dry-try chalkboard activity – p. 46

- Letter H: reinforce “Big line down, big line down, little line across”
- Letter K: encourage students to make the little lines of the “kick” without lifting their pencils

Day 3: Handwriting Workbook Practice

Letters and Numbers For Me - Student Workbook p. 17

Review Frog Jump capitals and play “mystery game” as a class (see p. 56 Teacher’s Guide)

Student workbook p. 18-19 (can be finished for homework)

Homework

Student Workbook p. 18-19

Practice writing letters H and K using adapted paper

Ways to Incorporate Handwriting in the Classroom

Play “Boss of the Mat” with wood pieces (p. 43) using previously learned capital letters

*Review frog jump capitals from the previous weeks

Additional Resources

HWT CD Track 3 – Air Writing

Mystery Letter Game – p. 56 Teacher’s Guide

Handwriting Curriculum: Kindergarten Week 6

Capital Letters

L
U

Day 1: Introduction Activities

Songs: Track 11 Vowels (letter U)
Track 5 Diagonals

Introduce letters on board

Letter "L" p. 91 Teacher's Guide

Letter "U" p. 92 Teacher's Guide

Form letters by finger tracing in the air

Begin letter formation with wood pieces - p. 42

*Note: Do not use wood pieces to make letter U

Day 2: Reinforcement Activities

Group activity

Wood pieces for letter L- p. 42

Wet-dry-try - p. 46

Letter L: reinforce bumping the bottom before writing the little line across

Letter U: reinforce "Big line down, turn, big line back up"

Day 3: Handwriting Workbook Practice

Student Workbook p. 20-21

*Review frog jump letters (p. 17 student workbook)

Homework

Student Workbook p. 20-21

Practice letters L and U using adapted paper

Ways to Incorporate Handwriting in the Classroom

Form letters using play-doh, clay or wikki stix

Mystery letter game using a vertical surface and taking turns forming letters

Play "Boss of the Mat" - p. 43 Teacher's Guide

*Review/incorporate letters from the previous week

Additional Resources

HWT CD Track 13 - Give it a Middle

Air Writing - see p. 52 in Teacher's Guide

Handwriting Curriculum: Kindergarten Week 7

Capital Letters

V

W

Day 1: Introduction Activities

Song: Track 15 – Sliding Down to the End of the Alphabet

Introduce letters

Letter “V” p. 93 Teacher’s Guide

Letter “W” p. 94 Teacher’s Guide

Have students make a W by making peace signs with both hands and then putting them together

Begin formation of letters using wood pieces – p. 42

Day 2: Reinforcement Activities

Group activity

Wood pieces – p. 42

Wet-dry-try – p. 46

Letter V: Reinforce making V sharp like a knife, otherwise people will think it is a U

Letter W: Tell students that W needs two sharp points, reinforce “big line, big line, big line, big line”

Day 3: Handwriting Workbook Practice

Student Workbook p. 22-23

Homework

Student Workbook p. 22-23

Practice letters V and W using adapted paper

Ways to Incorporate Handwriting in the Classroom

Play-doh, clay, and/or wikki stix to form letters

Door tracing activity– see p. 50-51 of Teacher’s Guide

Play “Boss of the Mat” – p. 43 Teacher’s Guide

*Review/incorporate letters from previous week

Additional Resources

HWT CD Track 5 – Diagonals

Track 13 – Give it a Middle

Mystery Letter Game– p. 56 Teacher’s Guide

Handwriting Curriculum: Kindergarten Week 8

Capital Letters

X
Y
Z

Day 1: Introduction Activities

Songs: Track 5 – Diagonals (trace letter X in the air)
Track 15 – Sliding Down to the End of the Alphabet

Introduce letters

Letter “X” p.95 Teacher’s Guide
Have children make Xs by crossing their fingers, then hands, then arms
Letter “Y” p. 96 Teacher’s Guide
Letter “Z” p. 97 Teacher’s Guide

Begin letter formation using wood pieces – p. 42

Day 2: Reinforcement Activities

Group Activity

Wood pieces – p. 42
Wet-dry-try – p. 46
Letter X: Reinforce “Big line, big line” and bumping the bottom
Letter Y: Tell students to stop right in the center of the slate after the “little line”, then make a “big line”
Letter Z: Reinforce starting in the corner, “zoom across, zoom down to the other corner, and zoom across” or “little line across, big line down to the corner, and little line across”

Day 3: Handwriting Workbook Practice

Student Workbook p. 24-26

Homework

Student Workbook p. 24-26
Practice letters X, Y and Z using adapted paper

Ways to Incorporate Handwriting in the Classroom

Form letters using play-doh, clay, or wikki stix
Door tracing – p. 50-51 Teacher’s Guide
Boss of the Mat – p. 43 Teacher’s Guide
*Review/incorporate letters from the previous week

Additional Resources

HWT CD: Track 13 Give it a Middle, Track 5 Diagonals
Mystery Letter Game – p. 56 Teacher’s Guide

Handwriting Curriculum: Kindergarten Week 9

Capital Letters

C

O

Day 1: Introduction Activities

Songs: Get Set for School Sing Along – Track 6: Magic C
Rock, Rap, Tap & Listen – Track 17: Magic C Rap

Introduce letters on board

Letter “C” – p. 99 Teacher’s Guide

- Introduce concept of “magic c” using door tracing (p. 50) and have students arm trace

Letter “O” – p. 100 Teacher’s Guide

Begin letter formation with wood pieces (on the floor or at desks) – p. 42

- First have students hold up pieces in the air (see p. 39 Teacher’s Guide)

Day 2: Reinforcement Activities

Group activity

Wood pieces – p.42

Wet-dry-try chalkboard activity – p. 46

-Letter C

-Letter O

* Reinforce starting in the center of the top, not the left corner

Day 3: Handwriting Workbook Practice

Student Workbook p. 28-29

Homework

Student Workbook p. 27 (Review)

Practice letters C and O using adapted paper

Ways to Incorporate Handwriting in the Classroom

Play “Boss of the Mat” with wood pieces (p. 43) using previously learned capital letters

Door Tracing

*Review/incorporate previously learned letters

Additional Resources

Magic C Bunny puppet – use while singing “Magic C” song(s), have students trace the magic C with their index finger

Air Writing - p. 52 Teacher’s Guide

Track 3 HWT CD – Air Writing

Handwriting Curriculum: Kindergarten Week 10

Capital Letters

Q
G

Day 1: Introduction Activities

Songs: Get Set for School Sing Along – Track 6: Magic C
Rock, Rap, Tap & Listen – Track 17: Magic C Rap

Introduce letters on board

Letter “Q” – p. 101 Teacher’s Guide

Letter “G” – p. 102 Teacher’s Guide

Door Tracing

Begin letter formation with wood pieces - p. 42

-Review “Magic C” and “O” by holding the pieces up in the air

-Form Q and G using blue mats

Day 2: Reinforcement Activities

Group activity

Wood pieces – p. 42

Wet-dry-try – p. 46

Letter Q – “an O with a tail”

Letter G – big curve + little line + little line

Day 3: Handwriting Workbook Practice

Student Workbook p. 32 (Magic C Capitals)

-Complete “Mystery Game” as a class

Homework

Student Workbook p. 30-31

Practice Q and G using adapted paper

Ways to Incorporate Handwriting in the Classroom

Mystery letter game using a vertical surface and taking turns forming “Magic C” capitals

“Boss of the Mat” – p. 43 Teacher’s Guide

*Review/incorporate letters from the previous week

Additional Resources

Magic C Bunny

Air Writing – p. 52 Teacher’s Guide

Track 3 HWT CD – Air Writing

Handwriting Curriculum: Kindergarten Week 11

Capital Letters

S

A

Day 1: Introduction Activities

Song: Track 3 – Air Writing

Track 13 – Give it a Middle (Letter A)

Introduce letters on board

Letter “S” – p. 104 Teacher’s Guide

Letter “A” – p. 105 Teacher’s Guide

-Finger trace letters with “air writing”

- Take turns tracing letters on the board

Begin formation of letters using wood pieces – p. 42

- “Squiggle-wiggle” for letter S – see p. 39 Teacher’s Guide

Day 2: Reinforcement Activities

Group activity

Wood pieces – p. 42

Wet-dry-try – p. 46

*See “tips” on p.104-105

Day 3: Handwriting Workbook Practice

Student Workbook p. 33-34

Review: Magic C mystery letter game – p. 32 workbook

Homework

Student Workbook p. 33-34

Practice letters S and A using adapted paper

Ways to Incorporate Handwriting in the Classroom

Door tracing activity– see p. 50-51 of Teacher’s Guide

“Boss of the Mat” – p. 43 Teacher’s Guide

Mystery letter game – p. 56 Teacher’s Guide

*Review/incorporate letters from previous week

Additional Resources

HWT CD Track 5 – Diagonals

HWT CD Track 3 – Air Writing

Letter story “Stop, drop, and roll” – see p. 59 Teacher’s Guide

Handwriting Curriculum: Kindergarten Week 12

Capital Letters

I
T

Day 1: Introduction Activities

Song: Track 14 – Give it a Top

Introduce letters on board

Letter “I” - p. 106 Teacher’s Guide

Letter “T” – p. 107 Teacher’s Guide

Take turns “door tracing” letters

Finger trace letters on board or in air

Begin letter formation using wood pieces – p. 42

Day 2: Reinforcement Activities

Group Activity

Wood pieces – p. 42

Wet-dry-try – p. 46

Letter I: big line + little line + little line

Letter T: big line + little line

See “tips” on p. 106-107

Day 3: Handwriting Workbook Practice

Student Workbook p. 35-36

Optional review: Magic C mystery letter game - p. 32 student workbook

Homework

Student Workbook p. 35-36

Practice forming letters I and T using adapted paper

Ways to Incorporate Handwriting in the Classroom

Boss of the Mat – p. 43 Teacher’s Guide

Mystery letter game using a vertical surface for writing

Door tracing

*Review/incorporate letters from the previous week

Additional Resources

HWT CD Track 3 – Air Writing

HWT CD Track 21 – My Teacher Writes (see p. 52 Teacher’s Guide)

Follow the Ball – p. 53 Teacher’s Guide

Handwriting Curriculum: Kindergarten Week 13

Capital Letters

J

Review Frog Jump capitals

Day 1: Introduction Activities

Songs: Track 14 – Give it a Top

Track 12 – Frog Jump Letters

Introduce letter “J” on board

P. 108 Teacher’s Guide

Finger trace letter on board or in the air

Take turns door tracing

Wood Pieces

Review Frog Jump letters (F, E, D, P, B, R, N, M) while playing “Boss of the Mat” – p. 43 Teacher’s Guide

*Note: Do not use wood pieces for letter J

Day 2: Reinforcement Activities

Group Activity

Wood pieces – p. 42

Play “Simon Says” while forming Frog Jump capitals

-For example, “Simon says make the letter “F”

Wet-dry-try – p. 46

Letter J – See “Tips” on p. 108

Frog Jump Letters

Day 3: Handwriting Workbook Practice

Student workbook p. 37

Student workbook p. 17

Play “Mystery Letter” game as a class

Homework

Student workbook p. 37

Practice forming letter “J” using adapted paper

Practice Frog Jump capitals using adapted paper (one line per letter)

Ways to Incorporate Handwriting in the Classroom

Door tracing

Air Writing

Follow the Ball

Additional Resources

Songs: Track 3 HWT CD: Air Writing

Track 21 HWT CD: My Teacher Writes

Handwriting Curriculum: Kindergarten Week 14

Capital Letters Review

Day 1: Introduction Activities

Songs: Track 12 – Frog Jump Letters

Track 17 – Magic C Rap

Review letters

“Mystery Letter” game while introducing letters on the board

Air trace each letter as it is presented on the board

Wood pieces

“Boss of the Mat,” taking turns choosing letters to make

Day 2: Reinforcement Activities

Group Activity

Wood pieces – p.42

“Simon Says” or “Boss of the Mat” while forming capital letters

Wet-dry-try – p. 46

“Simon Says,” following teacher instruction while forming letters of the alphabet

Day 3: Handwriting Workbook Practice

Student workbook p. 27

Student workbook p. 32

Mystery Letter game as a class

Student workbook p. 38-39

Homework

Practice writing first and last name using adapted paper

Finish workbook activities not completed in class

Ways to Incorporate Handwriting in the Classroom

Door tracing

Air Writing

Practice writing first and last names at the top of every paper

Follow the Ball

Additional Resources

Magic C Bunny

Songs: Track 3 HWT CD: Air Writing

Track 21 HWT CD: My Teacher Writes

Letter Stories – p. 59 Teacher’s Guide

APPENDIX B

Handwriting Curriculum: First Grade Week 1**Letters**

Capital Review

Day 1: Introduction Activities

Songs:

Track 1- Alphabet Boogie

Track 2- Where Do You Start Your Letters?

Day 2: Reinforcement Activities

HWT terminology review from teacher workbook:

A Pre-Pencil, Pre-Paper Start p. 19

Day 3: Handwriting Workbook Practice

Student workbook:

Capital Review p. 12

Homework (5 minutes maximum per day)

Student workbook:

Number Practice p. 13

Ways to Incorporate Handwriting in the Classroom

Day 1 can be taught to the combined K/1 class. For day 2 and 3 consider splitting the class up by grade level, possibly attaching the handwriting instruction to a subject where the class is already split.

Additional Resources

Paper and pencil skill review:

Student workbook: Pencil Pick-Ups p. 7

Basic shape review:

Teacher workbook: Basic Strokes: Sign In Please! p. 17

For students struggling to remember where different capital letters begin use teacher workbook ideas:

Frog Jump Capitals p. 55

Starting Corner Capitals p. 56

Center Starting Capitals p. 57

Handwriting Curriculum: First Grade Week 2

Lowercase Letters

c
o

Day 1: Introduction Activities

Teacher workbook for letter introduction (write on board):

Lowercase letter c p. 58

Lowercase letter o p. 59

Songs:

Track 16- CAPITALS & lowercase (for letter c and then for letter o)

Track 17- Magic C Rap

Day 2: Reinforcement Activities

Finger tracing of the letters only:

Teacher workbook: Finger Trace Models Step-by-Step pp. 58-59

Student workbook: pp. 14-15

Day 3: Handwriting Workbook Practice

Student workbook writing:

pp. 14-15

Homework (5 minutes maximum per day)

Student workbook:

Letters - Magic c Mystery p. 28

Ways to Incorporate Handwriting in the Classroom

Provide a variety of tracing activities for the students. Examples:

Wet-Dry-Try

Wood blocks

Clay

Additional Resources

Hand activity to show the students the difference in sizing between capital and lowercase letters:

Teacher workbook: Letter Size and Place: The Hand Activity p. 30

Use the Tips section for each letter in the teacher workbook to help the students that are having difficulty:

pp. 58-59

Handwriting Curriculum: First Grade Week 3

Lowercase Letters

s
v
w

Day 1: Introduction Activities

Teacher workbook for letter introduction (write on board):

Lowercase letter s p. 60
Lowercase letter v p. 62
Lowercase letter w p. 63

Songs:

Track 16- CAPITALS & lowercase (separately for each letter)

Day 2: Reinforcement Activities

Finger tracing of the letters only:

Teacher workbook: Finger Trace Models Step-by-Step pp. 60, 62, 63
Student workbook: pp. 16, 18, 19

Day 3: Handwriting Workbook Practice

Student workbook writing:
pp. 16, 18, 19

Homework (5 minutes maximum per day)

Student workbook:

Activity p. 17 (For the parents photocopy teacher workbook p. 61)

Ways to Incorporate Handwriting in the Classroom

Provide a variety of tracing activities for the students. Examples:

Wet-Dry-Try
Wood blocks
Clay

Additional Resources

Hand activity to show the students the difference in sizing between capital and lowercase letters:

Teacher workbook: Letter Size and Place: The Hand Activity p. 30

Review the meaning of plural:

Teacher workbook p. 61

Use the Tips section for each letter in the teacher workbook to help the students that are having difficulty:

pp. 60, 62, 63

Handwriting Curriculum: First Grade Week 4

Lowercase Letters

t
a

Day 1: Introduction Activities

Teacher workbook for letter introduction (write on board):

Lowercase letter t p. 64

Lowercase letter a p. 66

Songs:

Track 17- Magic C Rap

Letter Story in teacher workbook:

Multisensory Activities p. 64

Day 2: Reinforcement Activities

Finger tracing of the letters only:

Teacher workbook: Finger Trace Models Step-by-Step pp. 64, 66

Student workbook: pp. 20, 22

Day 3: Handwriting Workbook Practice

Student workbook writing:

pp. 20, 22

Homework (5 minutes maximum per day)

Student workbook:

Words pp. 21, 23

Ways to Incorporate Handwriting in the Classroom

Provide a variety of tracing activities for the students. Examples:

Wet-Dry-Try

Wood blocks

Clay

Additional Resources

Hand activity to show the students the difference in sizing between capital and lowercase letters:

Teacher workbook: Letter Size and Place: The Hand Activity p. 30

Use the Tips section for each letter in the teacher workbook to help the students that are having difficulty:

pp. 64, 66

Handwriting Curriculum: First Grade Week 5

Lowercase Letters

u
i
e

Day 1: Introduction Activities

Teacher workbook for letter introduction (write on board):

Lowercase letter u p. 71

Lowercase letter i p. 72

Lowercase letter e p. 73

Songs:

Track 7- Sentence Song

Letter Story in teacher workbook for e:

Multisensory Activities p. 34

Day 2: Reinforcement Activities

Finger tracing of the letters only:

Teacher workbook: Finger Trace Models Step-by-Step pp. 71-73

Student workbook: pp. 30, 32, 34

Day 3: Handwriting Workbook Practice

Student workbook writing:

pp. 30, 32, 34

Homework (5 minutes maximum per day)

Student workbook:

pp. 31, 33, 35

Ways to Incorporate Handwriting in the Classroom

Provide a variety of tracing activities for the students. Examples:

Wet-Dry-Try

Wood blocks

Additional Resources

Activity Page - Rhyme Time:

Teacher workbook p. 74

Student workbook p. 36

Activity Page – Sentences Punctuation:

Teacher workbook p. 75

Student workbook p. 37

Use the Tips section for each letter in the teacher workbook to help the students that are having difficulty:

pp. 71-73

Handwriting Curriculum: First Grade Week 6

Lowercase Letters

l
k

Day 1: Introduction Activities

Teacher workbook for letter introduction (write on board):

Lowercase letter l p. 76

Lowercase letter k p. 77

Songs:

Track 7- Sentence Song

Letter Story in teacher workbook for k:

Multisensory Activities p. 34

Day 2: Reinforcement Activities

Finger tracing of the letters only:

Teacher workbook: Finger Trace Models Step-by-Step pp. 76-77

Student workbook: pp. 38, 40

Day 3: Handwriting Workbook Practice

Student workbook writing:

pp. 38, 40

Homework (5 minutes maximum per day)

Student workbook:

pp. 39, 41

Ways to Incorporate Handwriting in the Classroom

Provide a variety of tracing activities for the students. Examples:

Wet-Dry-Try

Wood blocks

Clay

Additional Resources

Hand activity to show the students the difference in sizing between capital and lowercase letters:

Teacher workbook: Letter Size and Place: The Hand Activity p. 30

Use the Tips section for each letter in the teacher workbook to help the students that are having difficulty:

pp. 76-77

Handwriting Curriculum: First Grade Week 7

Lowercase Letters

y

j

Day 1: Introduction Activities

Teacher workbook for letter introduction (write on board):

Lowercase letter y p. 78

Lowercase letter j p. 79

Songs:

7- Sentence Song

Day 2: Reinforcement Activities

Finger tracing of the letters only:

Teacher workbook: Finger Trace Models Step-by-Step pp. 78-79

Student workbook: pp. 42, 44

Day 3: Handwriting Workbook Practice

Student workbook writing:

pp. 42, 44

Homework (5 minutes maximum per day)

Student workbook:

pp. 43, 45

Ways to Incorporate Handwriting in the Classroom

Provide a variety of tracing activities for the students. Examples:

Wet-Dry-Try

Wood blocks

Clay

Additional Resources

Activity Pages - Lines:

Teacher workbook pp. 80-81

Student workbook pp. 46-47

Use the Tips section for each letter in the teacher workbook to help the students that are having difficulty:

pp. 78-79

Handwriting Curriculum: First Grade Week 8

Lowercase Letters

p
r

Day 1: Introduction Activities

Teacher workbook for letter introduction (write on board):

Lowercase letter p p. 83

Lowercase letter r p. 84

Songs:

Track 7- Sentence Song

Track 18 - Diver Letters' School

Letter Story in teacher workbook:

Multisensory Activities – Diver Letters p. 82 (goes with Track 18)

Day 2: Reinforcement Activities

Finger tracing of the letters only:

Teacher workbook: Finger Trace Models Step-by-Step pp. 83-84

Student workbook: pp. 48, 50

Day 3: Handwriting Workbook Practice

Student workbook writing:

pp. 48, 50

Homework (5 minutes maximum per day)

Student workbook:

pp. 49, 51

Ways to Incorporate Handwriting in the Classroom

Provide a variety of tracing activities for the students. Examples:

Wet-Dry-Try

Wood blocks

Additional Resources

Hand activity to show the students the difference in sizing between capital and lowercase letters:

Teacher workbook: Letter Size and Place: The Hand Activity p. 30

Use the Tips section for each letter in the teacher workbook to help the students that are having difficulty:

pp. 83-84

Handwriting Curriculum: First Grade Week 9

Lowercase Letters

n
m

Day 1: Introduction Activities

Teacher workbook for letter introduction (write on board):

Lowercase letter n p. 85
Lowercase letter m p. 86

Songs:

Track 7- Sentence Song
Track 18 - Diver Letters' School

Letter Story in teacher workbook for m:
Multisensory Activities p. 35

Day 2: Reinforcement Activities

Finger tracing of the letters only:

Teacher workbook: Finger Trace Models Step-by-Step pp. 85-86
Student workbook: pp. 52, 54

Day 3: Handwriting Workbook Practice

Student workbook writing:
pp. 52, 54

Homework (5 minutes maximum per day)

Student workbook:
pp. 53, 55

Ways to Incorporate Handwriting in the Classroom

Provide a variety of tracing activities for the students. Examples:

Wet-Dry-Try
Wood blocks

Additional Resources

Hand activity to show the students the difference in sizing between capital and lowercase letters:

Teacher workbook: Letter Size and Place: The Hand Activity p. 30

Use the Tips section for each letter in the teacher workbook to help the students that are having difficulty:

pp. 85-86

Handwriting Curriculum: First Grade Week 10

Lowercase Letters

h
b

Day 1: Introduction Activities

Teacher workbook for letter introduction (write on board):

Lowercase letter h p. 87

Lowercase letter b p. 90

Songs:

Track 7- Sentence Song

Track 18 - Diver Letters' School

Letter Story in teacher workbook for b:

Multisensory Activities p. 34

Day 2: Reinforcement Activities

Finger tracing of the letters only:

Teacher workbook: Finger Trace Models Step-by-Step pp. 87, 90

Student workbook: pp. 56, 60

Day 3: Handwriting Workbook Practice

Student workbook writing:

pp. 56, 60

Homework (5 minutes maximum per day)

Student workbook:

pp. 57, 61

Ways to Incorporate Handwriting in the Classroom

Provide a variety of tracing activities for the students. Examples:

Wet-Dry-Try

Wood blocks

Additional Resources

Activity Page - Poem

Teacher workbook p. 88

Student workbook p. 58

Activity Page - Paragraph

Teacher workbook p. 89

Student workbook p. 59

Use the Tips section for each letter in the teacher workbook to help the students that are having difficulty:

pp. 87, 90

Handwriting Curriculum: First Grade Week 11

Lowercase Letters

f

q

Day 1: Introduction Activities

Teacher workbook for letter introduction (write on board):

Lowercase letter f p. 91

Lowercase letter q p. 92

Songs:

Track 7- Sentence Song

Letter Story in teacher workbook for f and q:

Multisensory Activities p. 34-35

Day 2: Reinforcement Activities

Multisensory Activities - Voices

Teacher workbook p. 31

Finger tracing of the letters only:

Teacher workbook: Finger Trace Models Step-by-Step pp. 91-92

Student workbook: pp. 62, 64

Day 3: Handwriting Workbook Practice

Student workbook writing:

pp. 62, 64

Homework (5 minutes maximum per day)

Student workbook:

pp. 63, 65

Ways to Incorporate Handwriting in the Classroom

Use a laser-pointer to show trace out the letter on the wall or board.

Additional Resources

Activity Page - Poem

spelling

Teacher workbook p. 93

Student workbook p. 66

Activity Page - Magic c Silly

Teacher workbook p. 94

Students workbook p. 67

Use the Tips section for each letter in the teacher workbook to help the students that are having difficulty:

pp. 91-92

Handwriting Curriculum: First Grade Week 12

Lowercase Letters

x

z

Day 1: Introduction Activities

Teacher workbook for letter introduction (write on board):

Lowercase letter x p. 95

Lowercase letter z p. 96

Songs:

Track 7- Sentence Song

Track 15 - Sliding Down to the End of the Alphabet

Day 2: Reinforcement Activities

Multisensory Activities - Imaginary Writing

Teacher workbook p. 28

Finger tracing of the letters only:

Teacher workbook: Finger Trace Models Step-by-Step pp. 95-96

Student workbook: pp. 68, 70

Day 3: Handwriting Workbook Practice

Student workbook writing:

pp. 68, 70

Homework (5 minutes maximum per day)

Student workbook:

pp. 69, 71

Ways to Incorporate Handwriting in the Classroom

Creative writing short-stories, writing on an easel or on the white board, etc.

Additional Resources

Activity Pages

Teacher workbook pp. 97-104

Student workbook pp. 72-80

Use the Tips section for each letter in the teacher workbook to help the students that are having difficulty:

pp. 95-96

Helpful guide in teacher workbook: Check Your Teaching p. 105

Handwriting Curriculum: First Grade Week 13

Numbers

1, 2, 3, 4, 5

Day 1: Introduction Activities

Teacher workbook for introduction of numbers 1-5 (write on board):
pp. 107-109

Finger tracing of numbers 1-5:

Teacher workbook: Finger Trace Models Step-by-Step pp. 107-109

Student workbook: pp. 82-86

Day 2: Reinforcement Activities

Wet-Dry-Try

Teacher workbook p. 106

Day 3: Handwriting Workbook Practice

Student workbook writing:
pp. 82-86

Homework (5 minutes maximum per day)

Student workbook:
p. 89

Supplemental handout - Numbers 1-5

Ways to Incorporate Handwriting in the Classroom

Provide a variety of tracing activities for the students. Examples:

Wet-Dry-Try

Wood blocks

Clay

Additional Resources

Gray Blocks in teacher workbook p. 106

Door Tracing in teacher workbook p. 106

Handwriting Curriculum: First Grade Week 14

Numbers

6, 7, 8, 9, 10

Day 1: Introduction Activities

Teacher workbook for introduction of numbers 6-10 (write on board):
pp. 109-111

Finger tracing of numbers 6-10:

Teacher workbook: Finger Trace Models Step-by-Step pp. 109-111

Student workbook: pp. 87-92

Day 2: Reinforcement Activities

Wet-Dry-Try

Teacher workbook p. 106

Day 3: Handwriting Workbook Practice

Student workbook writing:
pp. 87-92

Homework (5 minutes maximum per day)

Student workbook:
p. 93

Supplemental handout - Numbers 6-10

Ways to Incorporate Handwriting in the Classroom

Provide a variety of tracing activities for the students. Examples:

Wet-Dry-Try

Wood blocks

Clay

Additional Resources

Gray Blocks in teacher workbook p. 106

Door Tracing in teacher workbook p. 106

APPENDIX C

Handwriting Curriculum: Third Grade Week 1**Lowercase letters**

c

a

Day 1: Introduction Activities

Teacher Workbook for letter introduction (write on board):

Lowercase c pg. 57

Lowercase a pg. 58

HWT CD Track 17 - Magic C Rap (with Magic C puppet) Pg. 56 Teacher Workbook

- Directions: Children push their chairs away from their desks to get ready. They then sing and follow along with the music and movement.
- Magic C bunny puppet- Use the puppet as your teaching assistant. The Magic C puppet character is included throughout the student handbook. (Review pg. 29 Teacher Workbook)

Day 2: Reinforcement Activities

Finger Tracing

Teacher Workbook Pg. 57 & 58- Finger Trace Models Step-by-step

Student workbook Pg. 8 & 10- Finger tracing letters only - c & a

Day 3: Handwriting workbook practice – See Teacher Workbook pgs. 56-58

Student workbook writing - Pg. 9 & 11

Homework (5 minutes maximum per day)

Cursive warm-ups worksheets

Teacher Workbook: Pg. 61 Mystery Letter Game with CC

Ways to Incorporate Handwriting in the Classroom

Imaginary writing letter “a” - have the students trace along in the air after demonstration. Teacher Workbook pg. 58 (see also pg. 27 Teacher Workbook)

Wet-Dry-Try –use the blackboard with double lines - Pg. 24 Teacher Workbook

Copy and Check c – demonstrate “c” saying the step-by-step directions. Children watch then copy. Pg. 57 Teacher Workbook.

Cursive Warm-Ups (Review Teacher Workbook pgs. 54-55)- Prepare in the Air-scooping motion

Additional Resources**Review**

Instructional Stages (Review Teacher Workbook pg. 15)

(Imitation → copying → independent writing)

Paper placement and Pencil skills – Student Workbook pg. 6 (Review Teacher Workbook pgs. 34-41)

Handwriting Instruction: Choose your approach (Review Teacher Workbook pg. 22)

Teacher Workbook Pg. 38-39 - The Correct Grip

- Includes classroom activities- Flip the Pencil Trick, “A-OK” exercise for pencil grasp

Use the Tips section for each letter in the teacher workbook to help the students that are having difficulty Pgs. 57 & 58

Handwriting Curriculum: Third Grade Week 2

Lowercase letters

d

g

Day 1: Introduction Activities

Teacher Workbook for letter introduction (write on board):

Lowercase d pg. 59

Lowercase g pg. 60

HWT CD Track 17 - Magic C Rap (with Magic C puppet) Pg. 56 Teacher Workbook

- Directions for game: Children push their chairs away from their desks to get ready. They then sing and follow along with the music and movement.
- Magic C bunny puppet- Use the puppet as your teaching assistant. The Magic C puppet character is included throughout the student handbook. (Review pg. 29 Teacher Workbook)

Day 2: Reinforcement Activities

Finger Tracing

Pg. 59 & 60 Teacher Workbook – Finger Trace Models Step-by-step

Student Workbook Pg. 12 & 14 Finger tracing letters only

Day 3: Handwriting workbook practice – See Teacher Workbook pgs. 59 & 60

Student workbook writing - Pg. 12 & 15

Homework (5 minutes maximum per day)

Pg. 7 Prepare on Paper –Complete one cursive warm-up row (Teacher Workbook pg. 54)

Cursive Activity worksheets

Teachers Guide: Pg. 61 Mystery Letter Game with “cc”

Ways to Incorporate Handwriting in the Classroom

Imaginary writing letter “d” - have the students trace along in the air after demonstration. Teachers Guide pg. 59 (see also pg. 26 in Teacher Workbook)

Wet-Dry-Try – see pg. 24 Teacher Workbook

Letter Story “g” – see pg. 32 Teacher Workbook

Cursive Warm-Ups (Review Teachers Guide pgs. 54-55)- Prepare in the Air-scooping motion – pg. 54 Teacher Workbook

Additional Resources

Review

Paper placement and Pencil skills pg. 6 (Review Teacher Workbook pgs. 34-41)

Teacher Workbook Pg. 38-39 - The Correct Grip

- Includes classroom activities- Flip the Pencil Trick, “A-OK” exercise for pencil grasp

Use the Tips section for each letter in the teacher workbook to help the students that are having difficulty Pgs. 59 & 60

Handwriting Curriculum: Third Grade Week 3

Lowercase letters

h
t

Day 1: Introduction Activities

(Review Teacher Workbook pg. 52 – What You Will Teach)

Teacher Workbook for letter introduction (write on board):

Lowercase h pg. 62

Lowercase t pg. 63

Day 2: Reinforcement Activities

Finger Tracing

Pg. 62 & 63 Teacher Workbook – Finger Trace Models Step-by-step

Student Workbook Pg. 16 & 18 Finger tracing letters only

Day 3: Handwriting workbook practice – See Teacher Workbook pgs. 62 & 63

Student workbook writing - Pg. 16 - 19

Homework (5 minutes maximum per day)

Cursive Activity worksheets

Revisit Student Workbook writing (Pg. 16-19), if additional practice is required.

Ways to Incorporate Handwriting in the Classroom

Imaginary Writing – Follow the ball and air write “h” Pg. 62 & 27 Teacher Workbook

Imaginary writing letter “t” - have the students trace along in the air after demonstration. Pg. 63 & 27 Teacher Workbook

Wet-Dry-Try –use the blackboard with double lines- Pg. 24 Teacher Workbook

Letter Story “t” – Pg. 33 Teacher Workbook

Cursive Warm-Ups (Review Teachers Guide pgs. 54-55)- Prepare in the Air-scooping motion – pg. 54 Teacher Workbook

Additional Resources

Review

Paper placement and Pencil skills pg. 6 (Review Teacher Workbook pgs. 34-41)

Teacher Workbook Pg. 38-39 - The Correct Grip

- Includes classroom activities- Flip the Pencil Trick, “A-OK” exercise for pencil grasp

Use the Tips section for each letter in the teacher workbook to help the students that are having difficulty Pgs. 62 & 63

Handwriting Curriculum: Third Grade Week 4

Lowercase letters

p
e

Day 1: Introduction Activities

Teacher Workbook for letter introduction (write on board):

Lowercase p pg. 64

Lowercase e pg. 65

Day 2: Reinforcement Activities

Finger Tracing

Pg. 64 & 65 Teacher Workbook – Finger Trace Models Step-by-step

Student Workbook Pg. 20 & 22 Finger tracing letters only

Day 3: Handwriting workbook practice – See Teacher Workbook pgs. 64 & 65

Student workbook writing - Pg. 20 - 23

Homework (5 minutes maximum per day)

Cursive Activity worksheets

Revisit Student workbook writing (Pg. 20-23), if additional practice is required.

Ways to Incorporate Handwriting in the Classroom

Imaginary Writing – Follow the ball and air write “e” Pg. 65 & 27 Teacher Workbook

Imaginary writing letter “p” - have the students trace along in the air after demonstration. Pg. 64 & 27 Teacher Workbook

Wet-Dry-Try –use the blackboard with double lines- Pg. 24 Teacher Workbook

Voices – Demonstrate “p” on the board using the Voices activity – Pg. 64 & 29 Teacher Workbook

Mystery Letters Game – Play with the lowercase cursive letters that have been taught thus far (c a d g h t p) - Pg. 30 Teacher Workbook

Additional Resources

Review

Paper placement and Pencil skills pg. 6 (Review Teacher Workbook pgs. 34-41)

Teacher Workbook Pg. 38-39 - The Correct Grip

- Includes classroom activities- Flip the Pencil Trick, “A-OK” exercise for pencil grasp

Use the Tips section for each letter in the teacher workbook to help the students that are having difficulty Pgs. 64 & 65

Handwriting Curriculum: Third Grade Week 5

Lowercase letters

l
f

Day 1: Introduction Activities

Teacher Workbook for letter introduction (write on board):

Lowercase l pg. 66

Lowercase f pg. 67

HWT "Rock, Rap, Tap" CD- Track 21(My teacher writes)

Imaginary Writing- Use MY teacher writes to demonstrate "l"

Pg. 26 of Teacher workbook for tips

Laser letters- Imaginary Writing to demonstrate "f"

Use a laser and trace letter f on an easel. Students can follow along in the air.

Pg. 27 of Teacher workbook for tips

Day 2: Reinforcement Activities

Wet-Dry-Try- Demonstrate "l" and "f"

Use blackboard with double lines – Pg. 67 & 24 of Teachers workbook

Finger Tracing

Teacher Workbook Pg. 66 & 67– Finger Trace Models Step-by-step

Student workbook Pg. 24 & 26- Finger tracing letters only - l & f

Day 3: Handwriting workbook practice

Student workbook writing Pg. 24 & 26

Homework (5 minutes maximum per day)

Student workbook writing Pg. 25 & 27

Student workbook: Review and Mastery Pg. 28-31 (See also Teacher Workbook: Pg. 46 & 68)

Ways to Incorporate Handwriting in the Classroom

Wet-Dry-Try –use the blackboard with double lines - Pg. 24 Teacher Workbook

Copy & Check l and f – Demonstrate l or f, saying step-by-step directions. Students will watch then copy f or l. (See Teacher Workbook pgs. 66 & 67)

Check letter: start, steps, bump

Additional Resources

Student workbook: Review and Mastery (See also Teacher Workbook Pg. 46, 68 & 69).

"Cursive to Cursive" Pg. 28 & 29

"Print to Cursive" Pg. 30

"Silly Spelling" Pg. 31

Use the Tips section for each letter in the teacher workbook to help the students that are having difficulty Pgs. 66-69

Handwriting Curriculum: Third Grade Week 6

Lowercase letters

u
y

Day 1: Introduction Activities

Teacher Workbook for letter introduction (write on board):

Lowercase u pg. 70

Lowercase y pg. 71

Teacher Workbook: Imaginary Writing for “u” and “y” Pg. 26, 70 & 71.

Day 2: Reinforcement Activities

Finger Tracing

Pg. 59 & 60 Teacher Workbook – Finger Trace Models Step-by-step

Student Workbook Pg. 32 & 33 Finger tracing letters only

Day 3: Handwriting workbook practice

Student workbook writing - Pg. 32 & 34 (See Teacher Workbook pgs. 70 & 71)

Homework (5 minutes maximum per day)

Student workbook Pg. 33 & 35

Revisit student workbook pages, if additional practice is required.

Cursive Activity worksheets

Practice writing letters (u y) with adapted paper

Ways to Incorporate Handwriting in the Classroom

Connection Inspection for words with “u” and “y”- Teacher workbook Pg.70, 71 & 28

Bring cursive to life by turning the students into words.

Additional Resources

Review

Pg. 7 Prepare on Paper –Complete one cursive warm-up row (Teacher Workbook pg. 54 & 55)

Connection Inspection for words with “u” and “y”- Teacher workbook Pg.70, 71 & 28

Bring cursive to life by turning the students into words.

Use the Tips section for each letter in the teacher workbook to help the students that are having difficulty Pgs. 70 & 71

Handwriting Curriculum: Third Grade Week 7

Lowercase letters

i

j

Day 1: Introduction Activities

Teacher Workbook for letter introduction (write on board):

Lowercase i pg. 72

Lowercase j pg. 73

Day 2: Reinforcement Activities

Finger Tracing

Pg. 72 & 73 Teacher Workbook – Finger Trace Models Step-by-step

Student Workbook Pg. 36 & 38 Finger tracing letters only

Teachers Workbook:

Voices – Demonstrate “i” on the board using the Voices activity Pg. 72 & 29

Imaginary Writing “j” - Have the students trace the letter j along with you.

Pg. 73 & 26

Day 3: Handwriting workbook practice

Student workbook writing - Pg. 36 & 38 (See Teacher Workbook Pg. 72 & 73)

Homework (5 minutes maximum per day)

Student workbook Pg. 37 & 39

Revisit student workbook pages, if additional practice is required.

Practice writing letters (i j) with adapted paper

Ways to Incorporate Handwriting in the Classroom

Teachers Workbook- Letter Story “i” Pg. 32 & 72

Imaginary writing letter “j” - have the students trace along in the air after demonstration. Pg. 73 & 26 Teacher Workbook

Student workbook: Review and Mastery (See also Teacher Workbook Pg. 74 & 75)

“Cursive to Cursive” Pg. 40

“Print to Cursive” Pg. 41

“Silly Spelling” Pg. 41

Additional Resources

Use the Tips section for each letter in the teacher workbook to help the students that are having difficulty Pgs. 72 & 73

Handwriting Curriculum: Third Grade Week 8

Lowercase letters

k
r
s

Day 1: Introduction Activities

Teacher Workbook for letter introduction (write on board):

Lowercase k pg. 76

Lowercase r pg. 77

Lowercase s pg. 78

Day 2: Reinforcement Activities

Finger Tracing

Pg. 76-78 Teacher Workbook – Finger Trace Models Step-by-step

Student Workbook Pg. 42, 44 & 46 Finger tracing letters only

Teachers Workbook:

Voices – Demonstrate “k” on the board using the Voices activity Pg. 76 & 29

Day 3: Handwriting workbook practice

Student workbook writing - Pg. 42, 44 & 46 (See Teacher Workbook pgs. 76-78)

Homework (5 minutes maximum per day)

Cursive Activity worksheets

Student workbook Pg. 43, 45 & 47

Revisit student workbook pages, if additional practice is required.

Practice writing letters (k r s) with adapted paper

Ways to Incorporate Handwriting in the Classroom

Wet-Dry-Try- Demonstrate each letter separately (k r s)

Use blackboard with double lines – Pg. 67 & 24 of Teachers workbook

Teachers Workbook- Letter Story “r” & “s” Pg. 33, 77 & 78

Student workbook: Review and Mastery (See also Teacher Workbook Pg. 79 & 80)

“Cursive to Cursive” Pg. 48

“Print to Cursive” Pg. 49

“Silly Spelling” Pg. 49

Tow Truck connections Pg. 81 Teachers Workbook

Additional Resources

Use the Tips section for each letter in the teacher workbook to help the students that are having difficulty Pgs. 76 -78

Handwriting Curriculum: Third Grade Week 9

Lowercase letters

o w
b v

Day 1: Introduction Activities

Teacher Workbook for letter introduction (write on board with step-by-step instructions):

Lowercase o w b v pg. 82 - 85

Tow truck connections pg. 81 of Teacher workbook (o w b v)

Connection Inspection pg. 28 of Teacher workbook (o w b v)

Day 2: Reinforcement Activities

Finger Tracing

Teacher Workbook Pg. 82-85– Finger Trace Models Step-by-step

Student workbook Pg. 50, 52, 54, 56- Finger tracing letters only (o w b v)

Day 3: Handwriting workbook practice

Student workbook writing Pg. 50, 52, 54, 56

Homework (5 minutes maximum per day)

Student workbook writing Pg. 51, 53, 55, 57

Student workbook: Review and Mastery Pg. 28-31 (See also Teacher Workbook: Pg. 46 & 68)

Ways to Incorporate Handwriting in the Classroom

Wet-Dry-Try –use the blackboard with double lines - Pg. 24 Teacher Workbook

Additional Resources

Student workbook: Review and Mastery (See also Teacher Workbook Pg. 88 & 89)

“Cursive to Cursive” Pg. 62

“Print to Cursive” & “Silly Spelling” Pg. 63

Use the Tips section for each letter in the teacher workbook to help the students that are having difficulty Pgs. 90 - 97 Teacher Workbook.

Handwriting Curriculum: Third Grade Week 10

Lowercase letters

m n
x q
z

Day 1: Introduction Activities

Teacher Workbook for letter introduction (write on board with step-by-step instructions):

Lowercase m n pgs. 90 - 91

Lowercase x q z pgs. 95 - 97

Teacher Workbook:

Wet-Dry-Try - each letter (m n x q z) pg. 24

Day 2: Reinforcement Activities

Finger Tracing

Pg. 90, 91, 95 - 97 Teacher workbook – Finger Trace Models Step-by-step

Student workbook Pg. 64, 66, 72, 74 & 76 Finger tracing letters only

Day 3: Handwriting workbook practice

Student workbook writing - Pg. 64, 66, 72, 74 & 76 (See Teacher Workbook pgs. 90 – 97)

Homework (5 minutes maximum per day)

Student workbook Pg. 65, 67, 73 & 77

Review and Mastery: “Cursive to cursive” Pg. 78

Revisit student workbook pages, if additional practice is required.

Pg. 68 – 69 “Special Situation” m & n

Practice writing letters with adapted paper

Ways to Incorporate Handwriting in the Classroom

Teacher Workbook: Letter story “m” and “n” pg. 32

Student workbook: Review and Mastery (See also Teacher Workbook Pg. 99)

“Print to Cursive” & “Silly Spelling” Pg. 79

Additional Resources

Review

Use the Tips section for each letter in the teacher workbook to help the students that are having difficulty Pgs. 90 – 97.

Handwriting Curriculum: Third Grade Week 11

Capital letters

C A O U V W X Y Z

Day 1: Introduction Activities

Teacher Workbook for letter introduction (write on board):

(Demonstrate & explain when to capitalize – examples in Teacher workbook pg. 101-102)

Capital letters C A O U pg. 101

Day 2: Introduction Activities

Teacher Workbook for letter introduction (write on board):

(Demonstrate & explain when to capitalize – examples in Teacher workbook pg. 101-102)

Capital letters V W X Y Z pg. 102

Day 3: Handwriting workbook practice

Student workbook writing - Pg. 80 & 81 (See Teacher Workbook Pg. 101-102)

Homework (5 minutes maximum per day)

Student workbook Pg. 85 “Fun Letter Sentences” (Teachers workbook pg. 106)

Select letters from this lesson only to begin sentences.

*Revisit student workbook pages, if additional practice is required.

Practice writing capitalized letters with adapted paper

Ways to Incorporate Handwriting in the Classroom

Imaginary writing letter - have the students trace along in the air after demonstration. Pg. 26 Teacher Workbook

Additional Resources

Teacher workbook pg. 116-120

“Strategies...”

Use the following exercises for additional writing activities:

Student workbook:

Pg. 88 & 89 “Paragraph & paragraph draft”

Pg 90 “Poem”

Handwriting Curriculum: Third Grade Week 12

Capital letters

P B R N M H

Day 1: Introduction Activities

Teacher Workbook for letter introduction (write on board):

(Demonstrate & explain when to capitalize – examples in Teacher workbook)

Capital letters P B R pg. 103

Day 2: Introduction Activities

Teacher Workbook for letter introduction (write on board):

(Demonstrate & explain when to capitalize – examples in Teacher workbook)

Capital letters N M H pg. 103

Day 3: Handwriting workbook practice

Student workbook writing - Pg. 82 (See Teacher Workbook Pg. 103)

Homework (5 minutes maximum per day)

Student workbook Pg. 85 “Fun Letter Sentences” (Teachers workbook pg. 106)

Select letters from this lesson only to begin sentences.

*Revisit student workbook pages, if additional practice is required.

Practice writing capitalized letters with adapted paper

Ways to Incorporate Handwriting in the Classroom

Imaginary writing letter - have the students trace along in the air after demonstration. Pg. 26 Teacher Workbook

Additional Resources

Teacher workbook pg. 116-120

“Strategies...”

Use the following exercises for additional writing activities:

Student workbook:

Pg. 88 & 89 “Paragraph & paragraph draft”

Pg 90 “Poem”

Pg. 91 “Compound words”

Handwriting Curriculum: Third Grade Week 13

Capital letters

K J F I D

Day 1: Introduction Activities

Teacher Workbook for letter introduction (write on board):

(Demonstrate & explain when to capitalize – examples in Teacher workbook)

Capital letters K J F pg. 104

Day 2: Introduction Activities

Teacher Workbook for letter introduction (write on board):

(Demonstrate & explain when to capitalize – examples in Teacher workbook)

Capital letters I D pg. 104

Day 3: Handwriting workbook practice

Student workbook writing – Pg. 83 (See Teacher Workbook Pg. 104)

Homework (5 minutes maximum per day)

Student workbook Pg. 85 “Fun Letter Sentences” (Teachers workbook pg. 106)

Select letters from this lesson only to begin sentences.

*Revisit student workbook pages, if additional practice is required.

Practice writing capitalized letters with adapted paper

Ways to Incorporate Handwriting in the Classroom

Imaginary writing letter - have the students trace along in the air after demonstration. Pg. 26 Teacher Workbook

Additional Resources

Teacher workbook pg. 116-120

“Strategies...”

Use the following exercises for additional writing activities:

Student workbook:

Pg. 88 & 89 “Paragraph & paragraph draft”

Pg 90 “Poem”

Pg. 91 “Compound words”

Handwriting Curriculum: Third Grade Week 14

Capital letters

L G S E Q

Day 1: Introduction Activities

Teacher Workbook for letter introduction (write on board):

(Demonstrate & explain when to capitalize – examples in Teacher workbook)

Capital letters L G S pg. 105

Day 2: Introduction Activities

Teacher Workbook for letter introduction (write on board):

(Demonstrate & explain when to capitalize – examples in Teacher workbook)

Capital letters E Q pg. 105

Day 3: Handwriting workbook practice

Student workbook writing – Pg. 84 (See Teacher Workbook Pg. 105)

Homework (5 minutes maximum per day)

Student workbook Pg. 85 “Fun Letter Sentences” (Teachers workbook pg. 106)

Select letters from this lesson only to begin sentences.

*Revisit student workbook pages, if additional practice is required.

Practice writing capitalized letters with adapted paper

Ways to Incorporate Handwriting in the Classroom

Imaginary writing letter - have the students trace along in the air after demonstration. Pg. 26 Teacher Workbook

Additional Resources

Teacher workbook pg. 116-120

“Strategies...”

Use the following exercises for additional writing activities:

Student workbook pg. 85 – 94

Ex:

Pg. 88 & 89 “Paragraph & paragraph draft”

Pg 90 “Poem”

Pg. 91 “Compound words”

Pg. 94 “Quotations”

APPENDIX D

This section contains eight sets of primary-ruled lines, each consisting of a solid top line, a dashed middle line, and a solid bottom line. Each set begins with a small shaded rectangular box on the left, intended for a student's name or initials. The lines are arranged vertically, providing ample space for handwriting practice.

APPENDIX E

The image displays a handwriting practice sheet with four sets of horizontal lines. Each set consists of a solid top line, a dashed middle line, and a solid bottom line. A small shaded rectangular box is positioned at the beginning of each set of lines, serving as a guide for letter height and placement. The lines are evenly spaced and extend across the width of the page.

APPENDIX F

Dear Teachers,

Handwriting Without Tears has developed a “Wet-Dry-Try” application that is compatible with either the iPad or Android. Current research supports the use of technology in classrooms, as it can help motivate students to engage in learning and practice. If an iPad can be accessed in the classroom, this would be a fun and motivating activity for students to receive additional reinforcement of handwriting skills and practice. Please pass along this information to parents who have an iPad or Android and would be willing to utilize the application with their child at home.

Information on how this application works, along with purchasing information, can be found at **wetdrytry.com**.

Please let us know if you have any questions.

Sincerely,

Taryn Clough, Jane Malone, and Christina Robertson

Candidates for Master of Science in Occupational Therapy
Dominican University of California

APPENDIX G

HWT Handwriting curriculum assessment

Select the number that best represents how you feel about the Handwriting Without Tears handwriting curriculum. Please provide additional feedback in the comments section under each question.

	Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree
1. The handwriting curriculum was easy to implement.	1	2	3	4	5
Comments:					
2. The handwriting curriculum was presented in a user-friendly format.	1	2	3	4	5
Comments:					
3. I was comfortable implementing the handwriting curriculum.	1	2	3	4	5
Comments:					
4. The handwriting curriculum saved me preparation time.	1	2	3	4	5
Comments:					
5. The handwriting curriculum included a sufficient amount of tips for teaching and additional resources.	1	2	3	4	5
Comments:					
6. I was satisfied with the overall quality of the handwriting curriculum and other handwriting resources.	1	2	3	4	5
Comments:					

In the space below, please provide any additional feedback or suggestions for future HWT handwriting curricula and resources. Thank you!