



Research Review

Handwriting Without Tears® | K-5

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Why Is Handwriting Important?



Handwriting Is an Essential Life Skill

Handwriting fluency is an important component of early learning and communication. To help acquire knowledge and share or demonstrate what they have learned, elementary-aged children need to be able to handwrite automatically, with speed and ease. When children are taught handwriting skills, they are able to focus on the content of what they are writing, rather than thinking about how to form their letters. When children acquire good handwriting skills, they are set up for success in written communication and have positive feelings about school (Graham and Harris 2005; Graham, Harris, and Fink 2000a; Berninger 2012).

Handwriting builds a solid foundation for school success. Research shows that handwriting is a foundational skill that can influence student's reading, writing, language use, and critical thinking (Saperstein Associates 2012). It has an important role in brain development, is necessary alongside technology in the classroom, and promotes success in other academic subjects.



Handwriting & the Brain

Various research studies show the impact of handwriting on the developing brain. MRI scans at Indiana University (done before and after letter instruction) found that when children practiced printing by hand, their neural activity was far more enhanced and "adult-like" than those who had simply looked at their letters (Bounds 2010).

In terms of learning to read, teaching handwriting has also been shown to have significant impact in the areas of the brain related to literacy development (Berninger 2012; James 2012).

Handwriting & Technology

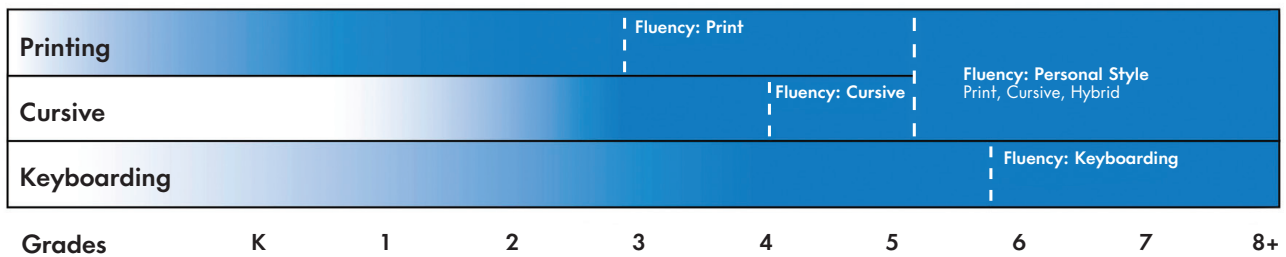
Though today’s elementary students are increasingly influenced by tablets and computers, they are still required to write on paper for 25 to 60 percent of their classroom learning time in grades K–5. This compares to 15 to 22 percent spent on various forms of technology (computers, tablets, interactive whiteboards, etc.).¹ Research also states that even in the higher grades, students who took notes by hand versus on a computer were shown to have better comprehension of what was being said and had more sustained attention during discussion of texts and concepts (Peverly 2012).

However, we should not focus on handwriting versus technology in the classroom. We should be looking at how they work together in the classroom to create an engaged, balanced, and successful learning environment.

As a rule, research states that learning how to write by hand is a necessary motor exercise as it helps develop eye-hand coordination motor skills (Saperstein Associates 2012; James and Gauthier 2006; James 2012; Berninger 2012). Handwriting is a foundation skill that needs to be developed first and will influence students’ reading, writing, language use, and critical thinking.



Where Handwriting & Keyboarding Intersect



¹ Based on a survey conducted by Handwriting Without Tears®. The survey interviewed 459 kindergarten through fifth grade teachers from June to August 2013.

Handwriting is taught in the beginning of elementary school and is mastered toward the end of the elementary years. In these grades, various apps and interactive software add a multisensory level to handwriting instruction.

Students will first develop fluency with print, and personalization and speed with cursive handwriting. Next, teachers should combine keyboarding with letter-recognition and hand-eye coordination.

Keyboards are generally introduced for the purposes of producing written text in the mid-elementary years, in late third grade or fourth grade. Fluency is expected by middle school.

Both handwriting and keyboarding are essential life-long skills that develop through proper instruction over time. These two skills require very different forms of instruction. There are numerous research studies and articles that establish the relationship between writing and keyboarding (Berninger et al. 2009; Goldberg 2003; Cook 2007). The techniques and timing for teaching them are critical in order to adhere to developmental appropriate instruction in the classroom.²

Handwriting & Other Subjects

The demands for handwriting in the classroom do not always match children's developmental skills. However, the earlier children master handwriting in elementary school, the more likely they are to succeed in school. With the adoption of the Common Core State Standards, and other state standards, the emphasis and expectations placed on classroom note-taking and expository writing in grades K–5 are greater than ever.

Children need to be equipped to have success with expectations in the classroom by having a solid foundation to produce other work. Handwriting is a predictor of success in the other subjects because good handwriting has a positive impact on grades. If children struggle in handwriting, it can have an adverse effect and affect their "testable" skills.

Good handwriting skills help students write with speed and ease in all subjects. (Marr et al. 2003; Feder and Majnemer 2007). Greater writing speed will "lessen the burden on working memory," enabling children and adults to "create good reader-friendly prose" (Peverly 2006).

A study by Vanderbilt University's Peabody College indicated that difficulty with handwriting results in lower grades on written assignments, has a negative effect on the quantity and quality of students' writing, and influences how long students take to complete written assignments (Graham et al. 2007). Students without consistent exposure to handwriting are more likely to have problems retrieving letters from memory, spelling accurately, extracting meaning from text or lecture, and interpreting the context of word and phrases (Saperstein Associates 2012).

Studies have estimated that between 10 to 30 percent of elementary school children struggle with handwriting (Karlisdottir and Stephansson 2002, as cited in Feder and Majnemer 2007). Research literature extensively documents the consequences of poor handwriting on academic performance. Graham, Harris, and Fink (2000b) suggest that children who experience difficulty mastering this skill [handwriting] may avoid writing and decide that they cannot write, leading to arrested writing development. Other experts claim that illegible handwriting has secondary effects on school achievement and self-esteem (Engel-Yeger 2009).

Research implies that handwriting is critical to the production of creative and well-written text (Graham and Harris 2005). Handwriting affects both fluency and the quality of the composition. Christensen (2005) demonstrated how children enrolled in an eight-week handwriting intervention program outperformed their peers in all measures of writing, achieving a 46 percent improvement in the quality of written text beyond the journal [control] group (as cited in Medwell and Wray 2007).

² See **Handwriting & Keyboarding: Standards for the Production & Presentation of Writing**, hwtears.com/standards

What Are the Best Practices in Teaching Handwriting?

Handwriting education is available through various methods and commercially available programs. Given that handwriting is a crucial skill for children, which method provides the best outcome for classroom performance? The answer lies in teacher implementation, an effective curriculum, and student engagement.

Developmental Progression

Handwriting curricula must adhere to developmental principles to ensure success for all children. Daly, Kelley, and Krauss (2003) recommend that professionals consider the variations in maturation and skills among kindergartners when implementing a handwriting curriculum. It is crucial that all young children learn to write well. To meet this goal, educators rely on research and experience to guide their curriculum-based interventions.

The use of developmentally appropriate practices has become increasingly important as more young children face higher academic standards each year. The National Association for the Education of Young Children (NAEYC) recommends that newborn to eight-year-old children learn best from methods that are consistent with developmentally appropriate practices, and all teaching practices should be appropriate to children's age and developmental status, attuned to them as unique individuals, and responsive to the social and cultural contexts in which they live (NAEYC 2009). Their guidelines include using methods that incorporate established, tested practices of child development and learning.



Therefore, children need to learn how to write in a developmentally appropriate manner. Children learn the vertical stroke before the slanted stroke as they develop copying skills (Gesell 1940). The tendency to write vertical letter forms is a natural occurrence in young children. Teaching a special [slanted] alphabet means that children will have to re-learn many letters that they can already write when they enter school.

Multisensory

Handwriting lessons are enhanced by the use of multisensory activities that appeal to different senses and make learning fun, which is critical in the classroom. Children learn best by doing, so there should be many opportunities for active learning. Manipulatives should bring letters to life and provide a variety of different tools and techniques to reinforce lessons and concepts.

Multisensory activities help children learn. In fact, students who explored letters both visually and tactilely scored higher in a first grade post-test for pseudo-word decoding (Bara et al. 2007). Another study, conducted by Kast, Meyer, Vogeli, Gross, and Jancke (2007), found that targeting multiple senses during a writing training program helped students with and without developmental dyslexia to improve writing skills.

Multisensory instruction can also help children become more invested in the classroom. Results of a study by Molenda and Bhavangri (2009) stated that students become emotionally involved in multisensory activities in the classroom. However, when introducing multisensory elements into your classroom, make sure they are consistent with your curriculum.



Consistency

In 2006, Asher found that nine educators who taught handwriting in one school district used a variety of commercial handwriting programs and instructional methods—as many as six. Teachers reported that under these circumstances, students did not develop fluent handwriting skills. As a result, these students needed subsequent review and handwriting instruction. Asher suggests using a consistent curriculum from kindergarten through primary grades to ensure all teachers are using uniform instruction and language. This would enable children to master writing more easily.

Motor Development

Quality handwriting instruction addresses posture, grip, and correct positioning in the classroom. Non-proficient writers often display inferior biomechanics [posture, grip, and positioning] to those who are proficient (Rosenblum, Goldstand, and Parush 2006). Likewise, Smith-Zuzovsky and Exner (2004) commented that complex hand skills [such as those used in handwriting], are affected by the quality of a child's seated position. Therefore, it is important to include instructions for correct positioning in manuals for professionals.

**The answer lies in teacher implementation,
an effective curriculum, and student engagement.**

Cursive Instruction

As our world becomes increasingly digital, there are many questions about the role of cursive in today's elementary classrooms. Cursive still has an important place in the elementary classroom. Cursive is a functional skill that children will use in school and for the rest of their lives. Teaching both printing and cursive builds foundation skills students can use to communicate fluently and quickly, in any setting.

Recognizing this fact, more states have opted to include cursive handwriting standards in their Common Core State Standards adoption, and other state Departments of Education have formally recommended its continued teaching in schools or are working on cursive standards.³

Cursive—which is essentially connected printing—builds upon an already established motor and cognitive skill, thus enabling students to quickly master a skill which helps them write more quickly and fluently. Fast, fluent writing is critical in meeting the demands of today's classrooms. Research has shown that cursive is faster than printing, and greater writing speed allows students to write better by lessening the burden on working memory (Peverly 2006). Therefore, the ability to write in cursive enables students to complete assignments quickly and take tests in a timely manner. Writing in cursive helps develop motor skills in older children.

Children need to continue developing their motor skills and muscle memory to remain fast, fluent writers, beyond second grade. Cursive helps keep children interested in handwriting, and learning cursive connections enables them to develop the personalized, “hybrid” style that most adults use today.

Most children will be using cursive to produce their written texts in third and fourth grade, as they are beginning to learn keyboarding. Timing this instruction enables developmentally appropriate introduction of keyboarding, with the goal of enabling students to start keyboarding short texts by the end of fourth grade.

Classroom Time

In terms of classroom time, teachers overwhelmingly responded that handwriting should be a separate subject. Thankfully, the days of drilled penmanship are gone, but explicit handwriting instruction is necessary and should be part of the regular class schedule (Asher 2006; Ste-Marie et al. 2004). In addition, supplementary formal preparation, in the form of professional development, should be available to close the gap in preparing teachers for handwriting instruction (Graham et al. 2007).

Professional Development for Educators

Though experts agree that specific and direct handwriting instruction is important, who teaches handwriting to our children is just as important. Many individuals—from parents to Pre-K teachers to elementary educators—direct handwriting instruction. How do these individuals learn to teach handwriting?

A national survey conducted by Graham, Harris, Mason, Fink-Chorzempa, Moran, and Saddler (2007) revealed that only 12 percent of teachers rated their formal preparation to teach children handwriting as adequate. A survey conducted by Handwriting Without Tears® found that 85 percent of teachers had not received any training to teach handwriting as part of their undergraduate or post-graduate degree coursework (*Stepping Into Handwriting* 2011). Yet, 85 percent said it would have been helpful to have handwriting instruction in their coursework.

³ To see how Handwriting Without Tears correlates to the Common Core Standards and other state standards, visit hwtears.com/correlations

What Makes Handwriting Without Tears® the Program of Choice?

At Handwriting Without Tears, our goal is for students to write legibly with speed and consistency. Handwriting Without Tears aims to make legible and fluent handwriting an easy and automatic skill for all students. By having educators use effective materials, students can achieve both.

The unique curriculum design and teaching strategies facilitate this goal.

Handwriting Without Tears, developed by Jan Z. Olsen, occupational therapist, is founded on research-based principles of early childhood development, and how children learn best. Handwriting Without Tears teaches handwriting skills using developmentally appropriate practice and multisensory approaches from printing through cursive.

Developmental Approach

Teaching handwriting skills based on what children already know, how they learn best, and their developmental abilities leads to success. The developmental principles of Arnold Gesell, Ph.D., M.D., is the basis of Handwriting Without Tears' handwriting instruction. Gesell explains how children gradually develop their ability to copy forms in a very predictable order (Gesell 1940). Starting with the vertical line, children progress in their copying abilities to the horizontal line, circle, cross, square, and triangle.



The Handwriting Without Tears unique teaching order begins handwriting instruction with letters that start with the vertical stroke. Case-Smith (2002) explains that the Handwriting Without Tears curriculum uses a developmental approach by grouping letters in order of difficulty and teaching with simple vertical lines.

Such instruction helps children develop good, consistent habits for letter size, formation, and placement. Thus, they will master handwriting more quickly. Handwriting Without Tears essentially delineates the task of handwriting into specific developmental units.

By building on what children already know and using child friendly, consistent habits and language, the curriculum facilitates and strengthens handwriting skills from year to year. The Handwriting Without Tears method teaches the easiest skills first and then builds on what children have learned.

Learning to form letters correctly is a fundamental objective of any handwriting curriculum. Handwriting Without Tears begins instruction with a no-pencil, no-paper approach. In Pre-K and kindergarten, hands-on learning is necessary.⁴

The unique teaching order of letters helps children build upon previous knowledge. Letters are grouped by formation, with the easier letters taught first, then progressing to the more complicated strokes. Language is simple and consistent throughout each grade and sets children up for success in their handwriting education.

Multisensory, Physical Approach

Children learn best when actively engaged in playful learning activities. The use of manipulatives for young learners and diverse learning styles is a core component of the Handwriting Without Tears method. Children develop pre-writing skills as they move, touch, feel, and manipulate real objects.

Handwriting Without Tears incorporates activities for instruction on developing correct crayon and pencil grip, posture, paper positioning, and other physical approaches. As outlined in numerous research studies, we cannot ignore the physical approach to skilled hand use when teaching handwriting (Rosenblum, Goldstand and Parush 2006; Smith-Zuzovsky and Exner 2004). Handwriting Without Tears has a unique strategy for developing grip: using size-appropriate writing tools, crayons, and pencils along with teacher demonstration, modeling, and guided practice. Handwriting Without Tears promotes the use of little crayons and pencils for children in Pre-K and kindergarten to match the little size of their hands. Handwriting Without Tears gradually introduces children to standard writing tools as they develop proficiency with writing and grip.

Gray Blocks & Double Lines

The paper style and writing guidelines comprise another unique and successful strategy used in the Handwriting Without Tears curriculum. Beginning in kindergarten, children learn to write capitals and numbers in Gray Blocks. These unique Gray Blocks encourage correct starting habits, correct size and proportion of capitals, which helps eliminate and correct reversals. Later, children learn to write lowercase letters, words, and sentences using only two lines. Double Line Paper is less confusing than typical school paper. The Double Line Paper is particularly beneficial for students who have visual figure/ground deficits.

They transition to writing on single lines within the student workbooks. Handwriting Without Tears also includes strategies that enable students to master all styles of writing paper.

The Cursive Connection

The transition to cursive is also easy with the Handwriting Without Tears cursive programs in third and fourth grade. A simple, vertical cursive means the letters look close to print. The focus on cursive connections helps children develop speed and fluency quickly with cursive. There is also an option to begin cursive instruction at the end of second grade to help children build speed.

Teacher Support

Handwriting Without Tears is suitable for children of all abilities and learning styles and is easy to teach and incorporate in busy classrooms. Children enter the classroom with a wide variety of abilities and experiences. The Handwriting Without Tears manipulatives, instructional exercises, and workbook format ensure success for all children.

⁴ Get Set for School® is a Pre-K curriculum, consistent with Handwriting Without Tears best practices. Visit getsetforschool.com for more information.

Classroom teachers benefit because all students succeed. Administrators benefit because little or no costly handwriting remediation is required.

Handwriting Without Tears sets teachers up for success. Through a variety of award-winning professional development opportunities, online seminars, and implementation support at the school and district level, Handwriting Without Tears is easy to integrate in your classroom.⁵

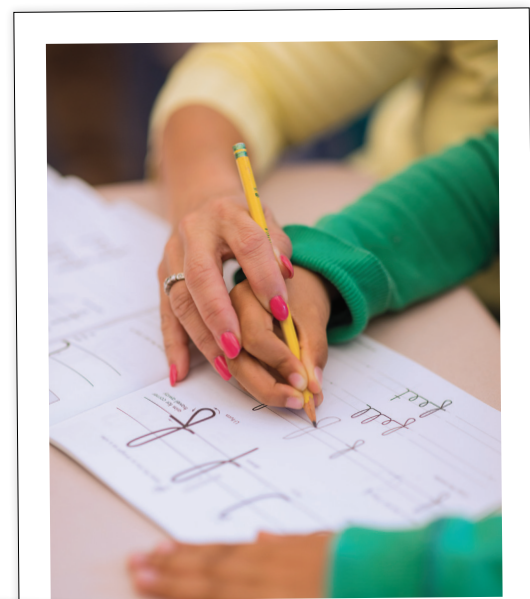
The Proof Is in the Classroom

Kiss (2007) directed a pilot study using the Handwriting Without Tears method within her school district. Results indicated that students' overall legibility improved noticeably. In addition, teachers were convinced that the time they had spent on instruction made a huge difference for their students. Another benefit of using Handwriting Without Tears was that general and special education teachers were able to collaborate with district occupational therapists to help their students develop a basic skill.

In 2004, Owens demonstrated the positive effects of Handwriting Without Tears with students in inclusion classrooms. Students from her study demonstrated statistically significant improvement in the areas of letter size and spacing compared to students receiving traditional handwriting instruction. Teachers involved in this study were overwhelmingly satisfied with the curriculum's effectiveness and usability and continued to use the curriculum after the study was completed. Incorporating a developmental approach and instructional best practices, Handwriting Without Tears has shown effectiveness in improving the handwriting skills in children of all abilities, including those with special needs (Guy 2003; Owens 2004).

In conclusion, millions of children have succeeded with the Handwriting Without Tears curriculum. Based on research, best practices, and more than 30 years of experience, Handwriting Without Tears aims to make learning and teaching handwriting easy and fun. Implementing Handwriting Without Tears in schools and districts will easily help students get great results in the classroom.

To find out more information about Handwriting Without Tears, visit hwtears.com



⁵ For information about professional development options, visit hwtears.com/training

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