Research Review

Handwriting Without Tears® | K–5

Why Is Handwriting Important?

Handwriting in Today's Classroom

Today's elementary classroom has students producing more written work than ever before. To succeed with all of their written assignments, students need to master all the foundation skills of written production.

A survey of K–5 teachers found that elementary students spend 24 to 58 percent of their classroom instruction time writing on paper. Handwriting plays a significant role in students' work, including journal work, note-taking, math worksheets, science labs, and spelling tests. Students spend up to 20 percent of the instruction day using technology, including computers, interactive whiteboards, and tablets.[1]

Several research studies have found that handwriting is essential in higher grades, too. 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 text and concepts (Mueller 2014, Peverly 2012).

An engaged, balanced learning environment focuses on both handwriting and keyboarding as foundation skills, not one or the other. When taught both skills, students can successfully tackle any assignment or testing, in any setting.

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

Developmental Sequence of Handwriting and Keyboarding

Handwriting and keyboarding should be taught in a developmental sequence that follows the way children learn best.[2] There are numerous research studies and articles that establish the relationship between writing and keyboarding (Berninger et al. 2009; Goldberg 2003; Cook 2007).

As a rule, research states that learning how to write by hand is a necessary early motor exercise for other cognitive and physical skills. It helps develop eye-hand coordination skills and boosts brain development at a greater rate among young children (Saperstein Associates 2012; James and Gauthier 2006; James 2012; Berninger 2012). Handwriting is a foundation skill that needs to be developed early as it affects students' reading, writing, language use, and critical thinking.

Handwriting is taught beginning in kindergarten with printing. Most students will achieve printing fluency by the end of second grade, then fluency and speed with cursive handwriting by the end of fourth grade. In grade 5, children will develop their personal style that continues into middle and high school.

Pre-keyboarding is introduced first in K–2 classrooms, to develop finger and hand motor skills, as well as computer readiness concepts. The emphasis switches to keyboarding in third grade. Since fluency for printing has often developed by third grade and cursive fluency is emerging, more focus on keyboarding around this

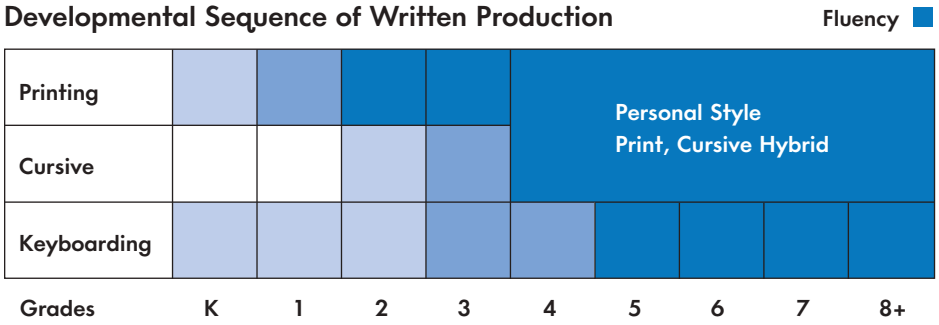
time is developmentally appropriate. By third grade, children have both increased attention to tasks as well as improved motor control, which makes learning to touch type easier. Students should be able to complete typewritten assignments and assessments as they enter middle school.

Handwriting and the Brain

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

Teaching handwriting has also been shown to have significant impact in the areas of the brain related to literacy development (Berninger 2012; James 2012).

Developmental Sequence of Written Production



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

Handwriting Mastery Builds Academic Success in All Subjects

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. With the adoption of more rigorous education standards like the Common Core State Standards, the emphasis and expectations placed on classroom note-taking and expository writing in grades K–5 are greater than ever.

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 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 them to "create good reader-friendly prose" (Peverly 2006).

Students who have mastered handwriting are better, more creative writers. (Graham and Harris 2005; Graham, Harris, and Fink 2000a; Berninger 2012). 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 control group (as cited in Medwell and Wray 2007).

Handwriting also builds a solid foundation for success in all subjects. Research shows that handwriting is a foundational skill that can influence students' 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 ease and fluency is a predictor of success in other subjects. Research at Florida International University indicates that handwriting ability in preschool is a strong predictor of reading and math achievement in second grade. Handwriting provides children with the opportunity to create internal models for the symbol system necessary to succeed in academic disciplines (Dinehart 2013).

Struggles with handwriting can affect students' testable skills in other subjects. It also has an adverse effect on self-esteem, which affects academic performance. 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).

Handwriting is a foundational skill that can influence students' reading, writing, language use, and critical thinking.

Studies have estimated that between 10 to 30 percent of elementary school children struggle with handwriting (Karlsdottir 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 handwriting may avoid writing and decide that they cannot write. Other experts claim that illegible handwriting has secondary effects on school achievement and self-esteem (Engel-Yeger 2009).

What are the Best Practices in Teaching Handwriting?

Handwriting instruction is available through various methods and commercially available programs. 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 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.

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 at el. 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 as many as six commercial handwriting programs and instructional methods. 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.

Motor Development

Quality handwriting instruction addresses posture, grip, and correct positioning in the classroom. Nonproficient 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) found complex hand skills such as those used in handwriting, are affected by the quality of a child's seated position. It is therefore important to include instructions for correct posture, grip, and positioning in instructional guides.

Cursive Instruction

As our world becomes increasingly digital, there are questions about the role of cursive in today's elementary classrooms. Cursive plays an important role in the elementary classroom and is faster than printing. Students who learn cursive in upper elementary school have the skills to develop their own personalized style, generally a hybrid of printing and cursive. This hybrid is the most efficient and serves the student throughout their lifetime, enabling them to communicate fluently and quickly.

The ability to write in cursive enables students to complete assignments quickly and take tests in a timely manner.

More states are opting to include cursive handwriting standards in their current education standards, including their adoption of the Common Core State 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.

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

Classroom Time

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, professional development should be available to close the gap in preparing teachers for handwriting instruction (Graham et al. 2007).

Professional Development for Educators

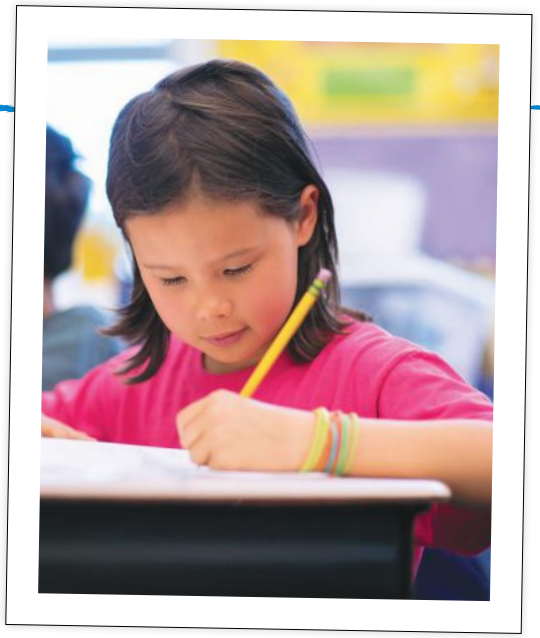
Though experts agree that specific and direct handwriting instruction is important, who teaches handwriting to our children is just as important. Many individuals—from parents to Pre-K teachers to elementary educators—direct handwriting instruction. How do these individuals learn to teach handwriting?

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 shared it would have been helpful to have handwriting instruction in their coursework.

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

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

What Makes Handwriting Without Tears® the Program of Choice?



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

Developmental Approach

Teaching handwriting skills based on how children learn best and their developmental abilities leads to success. 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.

It all starts with a no-paper, no-pencil approach to handwriting readiness in Pre-K.[4] Students learn to build letters using physical manipulatives and child-friendly, easy to remember language.

Handwriting instruction begins in kindergarten. At this early stage, the developmental principles of Arnold Gesell, Ph.D., M.D., are 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.

Handwriting Without Tears has a unique teaching order that 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.

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

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

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.

Handwriting Without Tears is suitable for children of all abilities and learning styles, and is easy to teach and incorporate in busy classrooms.

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.

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]

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

The Proof Is in the Classroom

Handwriting Without Tears works and is a proven success preparing children for the demands of school.

A 2014 analysis of more than 14,000 students' handwriting screeners completed over three years showed high end-of-year test scores for students using the Handwriting Without Tears curriculum. The screeners measured printing skills and cursive skills. In printing, the skills measured included memory, orientation, placement, and sentence skills. In cursive, the skills measured lowercase memory and word skills. Students who used Handwriting Without Tears showed significant improvement in test scores across all skills measured in the handwriting screener for both printing and cursive.[6]

A study conducted through the University of Indianapolis measured the effectiveness of Handwriting Without Tears among students in inner city first grade classrooms. Pre- and post-test results showed that Handwriting Without Tears was effective at improving memory, orientation, placement, size, start, sequence, control, and spacing skills (Hape 2014).

A 2011 study at East Carolina University used the Handwriting Without Tears Pre-K component, Get Set for School, to measure skill improvement in pre-writing skills, kindergarten readiness, name writing, and fine motor skills. This study also used a pre- and post-test design, this time in a rural Head Start. Results found that the students using Handwriting Without Tears made significant improvements, and that adding the curriculum to a Head Start program would be beneficial for improving handwriting readiness skills (Lust).

A University of Kentucky study analyzed the effectiveness of the Handwriting Without Tears program by using the Minnesota Handwriting Assessment (MHA) for pre- and post-testing in a first grade classroom. The MHA assessed five quality categories of legibility: form, alignment, size, and spacing, along with assessing the students' rate of handwriting. The findings demonstrated that Handwriting Without Tears resulted in overall improvements in handwriting during the first grade school year. Furthermore, it supported the use of a multisensory approach to handwriting, like Handwriting Without Tears, to see improvements in your classroom (Schneck 2012).

Students who used Handwriting Without Tears showed significant improvement in test scores across all skills measured in the handwriting screener for both printing and cursive.

[6] Results were analyzed using the Screener of Handwriting Proficiency—a free, universal screener for whole class and 1:1 instruction. Find more details at hwtears.com/screener

In a pilot study published in *OT Practice,* Debbie Kiss (2007) used 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 handwriting 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.

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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 handwriting skills for children of all abilities, including those with special needs (Guy 2003; Owens 2004).

Each year, more than three million children achieve handwriting and academic success with the Handwriting Without Tears curriculum. Based on research, best practices, and more than 35 years of experience, our mission is to make handwriting easy to teach, and easy to learn.

We can help students in your school or district achieve the same great results!

Visit hwtears.com or call 888-983-8409 for a demo.

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