



## Research-Based Handwriting

### WRITE-ON HANDWRITING™

by Amy Ford-Hebert

#### Introduction

*Write-On Handwriting™* is a pair of related interactive handwriting software programs comprised of *Powerful Printing™* and *Conquering Cursive™*. They help struggling students, who may or may not have a diagnosis of dysgraphia, develop handwriting skills. When students have difficulties with their handwriting, they face barriers to success in other academic areas and challenges when writing on state-standard and other high-stakes tests.

Today, students in classrooms across the country are expected to produce legible written work in a timely manner. Handwriting proficiency involves complex motor skills; bilateral coordination, muscle tone, kinesthetic awareness, and repetitive sequencing are essential motor skills for mastering handwriting. Students who struggle with quick and legible writing need instruction, and *Write-On Handwriting* utilizes the best of computer-based and paper-based publishing techniques and offers with both a unique multisensory approach. *Powerful Printing™* and *Conquering Cursive™* combine computer technology with auditory instruction, visual images, and hands-on learning in a four-step process that ensures that all children learn proper letter formation.

#### Program Description

*Write-On Handwriting™* provides two keystone product lines: *Powerful Printing* and *Conquering Cursive*. Each product line addresses the components involved in successful handwriting. Each has its own digital workbook, paper workbook, and uniquely designed font. The interactive software is designed to be a self-guided learning tool. Summary reports are provided to help assess student progress and to identify students who need additional practice with specific letters. The paper workbooks reinforce proper letter formation through written output. The handwriting software runs on both Macintosh and Windows operating systems. The corresponding fonts are included so that teachers can create custom worksheets.

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Motor memory is the ability to store, retrieve, and execute a memorized plan or pattern. In handwriting, the spatial components and sequential movements of each letter comprise this memorized plan.

The *Powerful Printing* and *Conquering Cursive* paper workbooks contain step-by-step activity pages to teach print or cursive handwriting and focus on building motor memory. *Powerful Printing* and *Conquering Cursive* digital workbooks use the computer to teach print or cursive handwriting with a multisensory approach that captures students' attention and involves them in learning to write.

Skill-building is the foundation for both the *Powerful Printing* and the *Conquering Cursive* handwriting curricula. Both:

- Emphasize correct letter formation with the four steps to writing a letter correctly:
  - Step 1** See and hear the instructions and formation of a letter on writing lines.
  - Step 2** See the letter written in one smooth motion, following the instructions.
  - Step 3** See the letter pattern instructions reinforced with arrows to confirm direction.
  - Step 4** Write the letter correctly so that the arrows fade; retry or return to steps 1, 2, or 3 for review.
- Use basic directional terms.
- Address spatial components.
- Provide a variety of practice opportunities.
- Capture and maintain student attention.

### Program Pedagogy

Motor memory is the ability to store, retrieve, and execute a memorized plan or pattern. In handwriting, the spatial components and sequential movements of each letter comprise this memorized plan. To write proficiently, students must be able to rapidly recall and produce the plan and pattern that underlies the construction of each letter. In other words, they must possess the proper motor memory. Students who lack motor memory for letters typically draw their letters, often creating them differently each time. In *Write-On Handwriting*, visual and auditory prompts guide the writing of each letter,

ensuring that students write each letter correctly—in the same way every time.

The *Powerful Printing* and *Conquering Cursive* paper workbooks contain step-by-step activity pages to teach print or cursive handwriting and focus on building motor memory. Letters are introduced in groups according to their initial pencil stroke. For example, the print “dive up and over” sequence is similar in the letters “r” and “n.” By grouping letters of the same basic pattern, *Write-On Handwriting* reinforces important spatial and sequential themes, thus facilitating the acquisition of the necessary motor memory. After each group of newly learned letters, students work through additional practice pages. More practice is provided at the end of the workbook.

*Powerful Printing* and *Conquering Cursive* digital workbooks use the computer to teach print or cursive handwriting with a multisensory approach that captures students' attention and involves them in learning to write.

Self-directed learning, individualized instruction, and learning at one's own pace are hallmarks of the contemporary classroom. These computer-based handwriting lessons are self-teaching tools that promote the use of technology in the classroom. Both handwriting and technology standards can be met with *Powerful Printing* and *Conquering Cursive* handwriting software.



## Research Supporting *Write-On Handwriting*

The *Write-On Handwriting* products are supported by research as well as years of experience teaching individuals and groups. Applicable research providing the basis for the methodology developed by *Write-On Handwriting* follows, along with some of the foundational research that supports the importance of teaching handwriting to insure future academic success.

In clinics and schools, children frequently struggle with motor memory. For them, the retrieval of motor patterns is a slow, strenuous, and sometimes futile exercise. Writing can be thought of as a rotating drum connected to memory: it is a tracing, an indelible record of what is recalled and then transmitted through the writing implement. Children with motor memory deficits have characteristic handwriting, marred by frequent hesitation, retracing, and illegibility. Memory disorders of this type, in fact, may be the most common cause of poor handwriting (Levine, 1999).

It is argued here that automatic, legible writing is an essential basis for written expression. And yet, crowded school curricula and neglect by educational institutions and researchers often leave no room for appropriate and sufficient attention to teaching this critical skill. There are at least three reasons handwriting must be carefully taught to all children. First, handwriting allows access to kinesthetic memory—our earliest, strongest, and most reliable memory channel. Second, serviceable handwriting needs to be at a spontaneous level so that a student is

free to concentrate on spelling and to focus on higher-level thought and written expression. Third, teachers judge and grade students based on the appearance of their work (Sheffield, 1996).

When handwriting is taught to the automatic kinesthetic level, the student is using implicit memory. This allows him to free up working memory and focus his full attention on the thought he wishes to record or the words he must spell. As long as a student has to shift his attention between remembering how to produce letter configurations and formulating an idea he wants to express, he will be at risk for “output failure” (Benbow, 1990).

Because kinesthetic learning is such a strong learning channel and so reliable, all children need to assimilate accurate formation of alphabet letters to a point that forming these letters requires no conscious effort (Sheffield, 1996).

The goal of the [direct] treatment is for the child’s writing to become automatic and fluid so that the child does not have to think about letter formation and can produce an adequate volume of work in an expected period of time without undue fatigue. Practice with letter formation is certainly a necessary component of remediation. In addition, the child’s motor skills and sensory processing abilities that contribute to and are considered to underlie good handwriting are important to consider (Tseng, 1993).

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Knowledge of letters was the single best predictor of reading success. Children learn to discriminate letters by their distinctive visual features rather than holistically. Research suggests that when the child is learning to visually discriminate between letters, visually similar letters should be taught in isolation before they are contrasted. Adams suggests that teaching uppercase letters separately from lowercase also reduces visual confusion. Writing letters helps children focus on the visual features of each, particularly when their formation is emphasized. Writing approaches that teach letters in groups with distinctive labels and visual clues are ideal for this (Jewell, 1999).

Classroom teachers may not be aware of the long-term benefits of careful, consistent teaching of handwriting. The curricula in our schools are so packed with requirements that it is often difficult to include the basics. Although the time required for teaching handwriting is not so great, it has to be incorporated regularly into a class schedule. Novice teachers, if they teach the mechanics of writing at all, are often thrown upon the resource of using publishers’ copybooks. They expect children to copy, self-teach, and internalize the material. And yet, without direct teaching, the attempt to learn writing often ends in disaster (Sheffield, 1996).

Handwriting is an important functional task used frequently in every grade beginning in kindergarten. Children are expected to gain skill gradually in handwriting legibility as formal instruction is introduced in the kindergarten and first-grade curriculum (Marr and Cermak, 2002).

According to Steve Graham, professor of education at the University of Maryland, College Park, “The researchers found the pupils given handwriting lessons produced grammatical sentences much more fluidly than their counterparts in the control group...A growing number of studies suggest that handwriting may play a bigger role in the writing process than is commonly believed... If you have to stop and think about how to form a particular letter, that increases the likelihood that you’re going to lose something you might hold in your working memory.” (Viadero, February 2001)

Children in elementary school spend 31% to 60% of each academic day on fine motor tasks, including handwriting. Handwriting is the primary way for these students to communicate with and to display what has been learned to the teacher. In the classroom environment, elementary school students use handwriting in almost all subject areas and are graded on their written output. Past studies showed that when teachers were given papers to evaluate, varying only in their degree of legibility, the papers with better handwriting received better grades (Hammerschmidt and Sudsawad, 2004).

Typically, elementary school children spend up to half their school day engaged in writing tasks, some of which (e.g., paper and pencil tests) are performed under the constraints of time. Therefore, a child’s ability to write in a manner that is both legible and efficient, directly affects his or her school performance and academic advancement (Rosenblum, Parush, and Weiss, 2003).



Legible handwriting is necessary for children to carry out many academic activities, and difficulties with handwriting can interfere with related writing processes such as planning and generating ideas. One of the most serious effects of poor handwriting occurs when the quality of handwriting detracts from the student's ability to convey information and ideas (Handley-More et al, 2003).

Handwriting is one of the most important skills that children acquire and use throughout the school years as part of their occupation as students. When handwriting skills are deficient, children suffer various consequences related to their academic performance and social interactions, thus limiting their successful participation in everyday school activities (Preminger, Weiss, & Weintraub, 2004).



**Amy Ford-Hebert's** career has focused on children who have motor-skill delays. She has a Bachelor of Science degree in Exercise Physiology and a Master's in Education.

Amy spent five years working as a Motor Skills Therapist at a school for children with diagnosed learning disabilities. During this time, she interacted with Speech and Language Therapists, Occupational Therapists, Educational Psychologists, and Special Educators. This experience helped her develop an extensive knowledge of how children learn and what children who learn differently need.

Utilizing this knowledge and experience, she developed a computer program—*Write-On Handwriting*—that teaches correct letter formation in a new, innovative, and highly effective way.

Amy presents *Write-On Handwriting* at national tradeshows and at schools and clinical assessment centers.



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