by WILLIAM VAN CLEAVE

Handwriting in a Modern World: Why It Matters & What To Do About It

IN MY THIRD SUMMER AT CAMP DUNNABECK *at Kildonan, the oldest summer camp for students with dyslexia in the country, I was assigned two older students who had incredible difficulty with handwriting, a fact that impacted their writing output severely. Throughout the summer, Diana Hanbury King, one of my mentors and the founder of Dunnabeck, tirelessly worked with me so that I could learn to help these two middle schoolers remediate their handwriting to a level of automaticity. This work was at once challenging and tedious, but what I learned in that one summer dramatically impacted the value I place on handwriting and its instruction and expanded the techniques at my disposal for remediating it. What intrigues me now, twenty-five years later, is how much current research supports what I learned about teaching handwriting from King and those two students that summer and in my professional work with students and teachers ever since.*

Using Research to Inform Practice

One of the greatest frustrations struggling writers face is the inability to capture their fine ideas on paper. Difficulty with transcription skills, and in particular the motor component, significantly hinders a student's ability to get ideas onto paper. Though handwriting does not correlate with intelligence, poor and inefficient handwriting clogs students' working memory, preventing them from writing their thoughts in a way commensurate with their intelligence. Instruction in handwriting, then, is not about making handwriting pretty or perfect but instead about automatizing letter and word formations to free up working memory for the significant idea management necessary for good writing.

Unfortunately, handwriting instruction has been de-emphasized or sidelined in many educational settings, to the detriment of students' literacy skills. Even in the 21st century, when students have ready access to technology, automatic handwriting is an important "cornerstone of literacy" *(Sheffield)*.

It should come as no surprise that handwriting impacts the writing process. Graham et al *(2009)* found that the handwriting of students 3rd grade and below, both regular ed and L.D., may impede text generation. Further, they found that students benefit from direct and explicit handwriting instruction. Mather et al *(2009)* found that "rapid, legible, and comfortable handwriting facilitates writing production." In addition, Berninger *(2012)* and Graham et al *(2009)* found that automatized handwriting significantly improves not just the quantity of students' writing but also its quality. The research is convincing across the board: handwriting is important to the writing process, and direct, explicit handwriting instruction makes fluent handwriting happen.

Compellingly, handwriting instruction also positively affects reading skills. Research indicates a causal link between teaching manuscript and improved reading skills. In a controlled study of low-achieving first graders, manuscript taught in isolation improved reading *(Berninger et al. as cited in Wolf and Berninger, 2018)*. It is logical to assume that learning to form letters "in a format that children will encounter when they read" will strengthen their reading skills *(Wolf and Berninger, 2018)*. Berninger *(2012)* found that "learning to form letters by hand improves perception of letters and contributes to better reading and spelling." Moreover, James, Jao, & Berninger *(2016)* found that "writing is essential for developing the

FIGURE 1A: PROPER RIGHT-HANDED GRIP

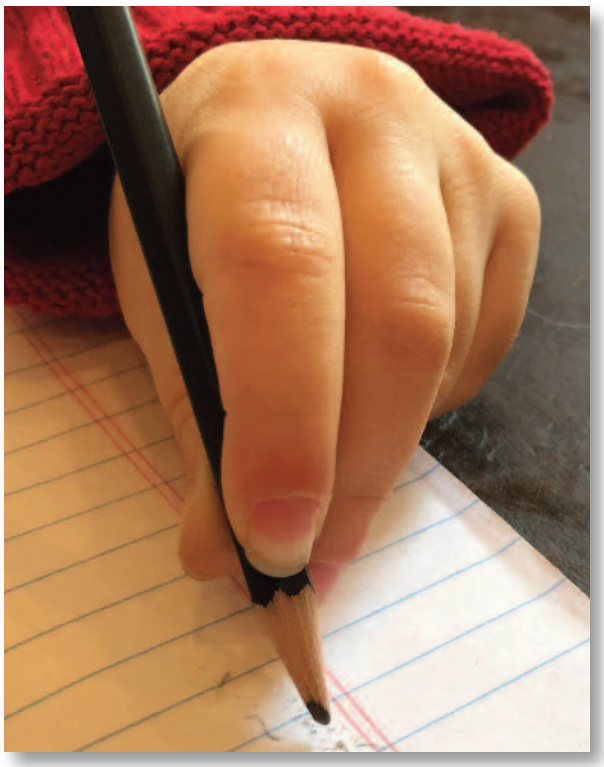

FIGURE 1B: PROPER LEFT-HANDED GRIP

networks involved in letter processing" and also that "learning to write and perceive letters during early childhood may affect learning to spell and read words during middle childhood." Berninger, Wolf, and Abbott *(2016)* found that handwriting instruction embedded into a multi-sensory, Orton-Gillingham based instructional curriculum helped students show more growth in both reading and spelling than did their peers who had no such handwriting component embedded into their instruction.

Instructors who make statements such as, "We don't have time for handwriting" or "I've got too many other things to do with my class" miss the link between handwriting as a foundational transcription skill and other skills necessary to develop, such as reading, spelling, and composition. Poor, illegible, laborious handwriting negatively impacts all the skills these teachers are teaching, and thus it serves as an essential component of a structured language-based lesson.

Handwriting fluency, like reading fluency, involves a combination of accuracy and speed, and the long-term impact of handwriting development is surprising. Graham et al *(2009)* found that 42% of the variability in the quality of the writing of students in 4th-6th grade involves handwriting and that students' handwriting speed continues to increase at least until Grade 9. In essence this foundational skill impacts reading, writing, and spelling, not only more significantly than many people once believed but also for a longer period of time in a student's development as a writer. Students complete written assignments with greater regularity when they have grade-appropriate handwriting *(McMenanin & Martin as cited in Wolf and Berninger, 2018)*, and those students with poor handwriting resulting in slow notetaking struggle with lecture comprehension *(Strickling as cited in Wolf and Berninger, 2018)*. Even college students in several recent studies learned material more efficiently and thoroughly when they took notes by hand than when they used a word processor to record those notes. Born at the end of the 20th century, these students have had technology all their lives, yet they still activate language pathways for learning content better when writing by hand than when using a word processor *(Mueller & Oppenheimer, 2014; May, 2014)*.

Teaching Handwriting – Strategies for Success

Grip

Though research indicates that many students develop a modified pencil grip as they mature as writers *(Graham 2009)*,

attention to and focused work with grip from the very beginning is perhaps the most important of the foundational handwriting skills to develop. It is certainly the most challenging to remediate when left untended for too long. The traditional triangular grip is both mainstream and efficient. Pointer and thumb grasp the pencil and bring it to rest on the middle finger, which serves as a bridge. *(Avoid the pointer and thumb touching each other, too much pressure on the middle finger, thumb tuck, and thumb overlap, modifications that add to finger and hand fatigue.)* The middle/back of the pencil rests comfortably in the joint of the hand between pointer and thumb. The wrist is placed on the table to avoid developing a hook, which again increases fatigue and decreases stamina. *(See Figure 1.)*

Some recommendations to help develop or correct grip:

- Some instructors use golf pencils as these shorter pencils force the fingers into the correct grip. A sided pencil–hexagonal or tripod–is recommended whereas harder-to-grasp, round pencils and inexpensive ballpoints that write only when held upright should be avoided.

- Have students place the pencil on the desk with the point towards them, the eraser away from them. Then, ask them to clasp the pencil with their thumb and pointer, swinging the pencil up. Doing so will help students begin with the correct grip every time!

- When students' poor grips persist, use one of the ergonomically designed writing implements or grips, good for developing a proper grip and also maintaining it when students are not directly supervised by the instructor. Rubber bands wrapped around the pencil can serve this purpose as well, but arm your students in this way at your own risk!

- Sometimes, students have a good grip, but the middle/back of the pencil is not in the joint between thumb and pointer finger. Wrapping a rubber band around the wrist and pencil will position and anchor the pencil firmly in that joint, allowing for maximum control.

- Have students who struggle with grip place a small ball, such as a bouncy ball, in the palm of their writing hand, a practice that forces the hand into the proper grip.

- Have students who clench too tightly on the pencil loosely wad a tissue into the palm of their hand, a practice that will help the palm relax and also absorb excess moisture.

FIGURE 1C: THUMB TUCK

FIGURE 1D: THUMB OVERLAP

FIGURE 1E:LEFT-HAND HOOK

FIGURE 2: PROPER SLANT FOR RIGHT-HANDED CURSIVE

- In the case of older students, who may resist the idea of changing their grip, one strategy King recommends is to drop a few raisins, peanuts, or even M&M's onto the table and ask the students to pick them up one at a time to eat them. Then ask, "Which fingers do you use?" When they answer, "My thumb and pointer," the response is, "Then you need to be using them to pinch your pencil as well."
- Make sure students breathe! Doing something new, such as developing a pencil grip, takes concentration, and they sometimes forget. Also, speak in a slow, calm voice. Handwriting is a process that requires students to relax, and an intense, harping voice will not help students automatize their letter formations. Forgetting to breathe and becoming stressed over grip typically result in over-clenching on the pencil, a practice that again increases fatigue and decreases stamina. Sometimes, having students listen to music may help.

Paper Position

Though opinions on paper position vary somewhat, the general consensus is that for manuscript, students should slant their papers slightly to the dominant hand. In other words, right-handed students should tilt their papers slightly to the left whereas left-handed students should tilt their papers slightly to the right. With cursive, use a full 45° angle for paper position, facilitating the hand's movement across the paper, an elbow pivot, and the use of large-motor muscles, which do not fatigue, over fine-motor muscles, which fatigue rapidly, wherever possible. *(See Figure 2.)*

Some recommendations to develop proper paper position:

- Make sure students have a writing surface clear of other papers and materials. Developing writing takes elbow room!
- Have students fold the bottom corner of their paper so that it is parallel to the desk bottom, allowing them to begin with a proper paper slant and maintain it throughout the writing session. *(See Figure 2.)*
- Use spray paint or colored electrical tape to form a V on the desk where the paper should begin. Then, students know where to put their paper every time.

- Students should use their non-dominant hand to pull the paper up, always keeping the paper in the ideal place for the writing hand, rather than move the dominant hand down the page, increasing discomfort and fatigue.
- The writing surface should be at the correct height. With the arm dangling down as the student sits, it should be about two inches above the elbow. Use a book or cushion to boost smaller students to the proper height, but also make sure their feet touch the floor. Use a book to "raise the floor" as needed.
- Both elbows should be on the table at all times. This is the "listening, learning position." Using an LLP poster or reference picture can help students independently position themselves correctly for good handwriting.

Warm Ups & Letter Formation

Warm-up strokes are important to the writing process. Have students practice strokes similar to the letters they'll form.

- Samples of manuscript preparation: Students can warm up with "tall grass, short grass" alternating strokes. This practice helps them orient letter formation from top to bottom and prepares them for tall letters (e.g., t, l, h, k) and short letters (e.g., i, m, n, r) respectively. *(See Figure 3.)*
- Samples of cursive preparation: Students should begin with a sweeping motion from left to right across the page–typically called window wipers–using arm, rather than hand, movement. This practice helps activate the large arm muscles, which do not fatigue as the small hand muscles do. Practicing loops that will turn into l, b, and h; waves that will turn into i, j, and p; and hills that will turn into a, c, and m, for example, helps the hand automatize the motions necessary for forming the letters students will need to form words. *(See Figure 4.)*

Tactile surfaces are an excellent way to motivate young writers and also help students of all ages develop and then warm up their muscles. Sand trays, shaving cream on the desk, finger paint in a zipper storage bag, carpet squares or carpeted floors, cinder block walls, chalkboards, and white boards—both vertical and lap—serve as excellent practice surfaces for students developing their handwriting. A number of commercial products are available

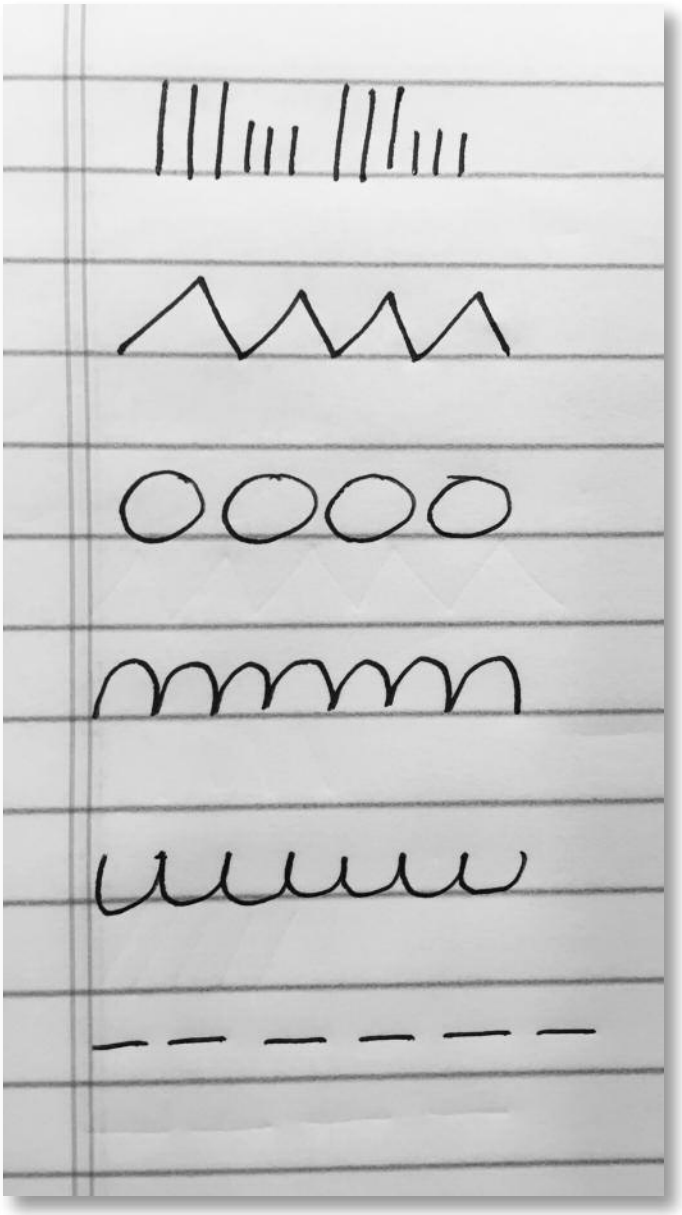

FIGURE 3: WARM-UP STROKES - PRINT

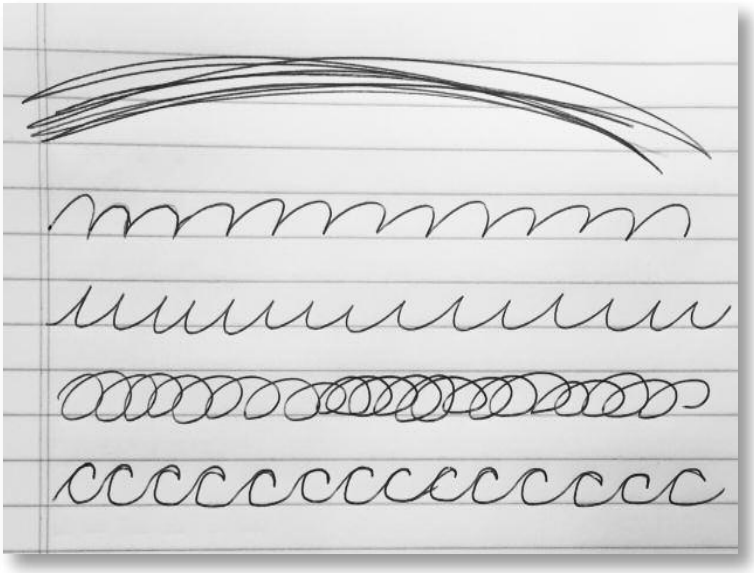

FIGURE 4: WARM-UP STROKES - CURSIVE

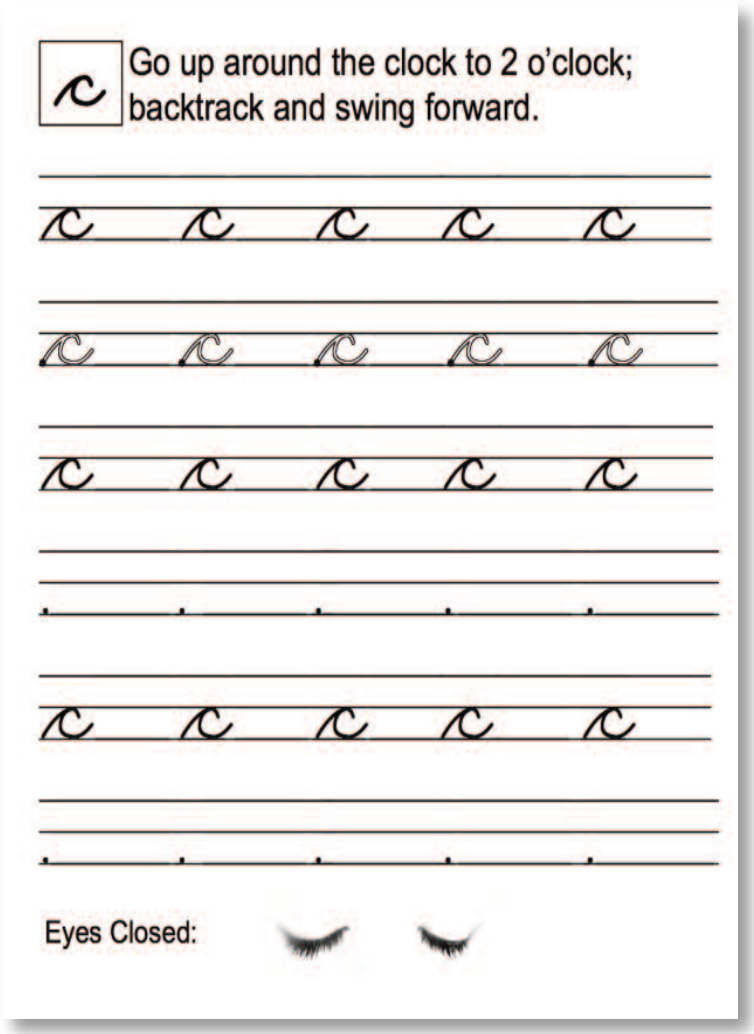

FIGURE 5: WORKBOOK PAGE FROM DHK BOOK

and can further engage even the most resistant writer.

Some recommendations to help develop or correct letter formation:

- Attention to paper position, posture, and grip
- A focus on stroke formation, including where to start the letters and how to form them
- Instructional clustering based on formation
  - In manuscript, for example, i, r, and m begin with the same, short downstroke and should be associated for formation.
  - In cursive, for example, l, b, and f begin with the same tall loop and should be associated for formation.
- A minimum number of starting points for letters (for lowercase manuscript, 7 with only 6 "lift up" letters: i, t, j, k, f, and x; for lowercase cursive, only 1 as they all start on the baseline with only 4 "lift up" letters: i, j, t, and x)
- Simultaneous oral spelling, a practice whereby students verbalize the letter name or sound as the letter is formed *(This multi-sensory approach to handwriting helps students automatize letter formation by applying visual, auditory, kinesthetic-tactile, and kinesthetic-speech to the writing process, strengthening and cementing learning.)*
- Identification of "best" letters during practice, by instructor, classmate, or self *(Graham et al, 2009)*

Manuscript Versus Cursive: The Great Debate

No research conducted in the United States indicates a preference for cursive or manuscript for mainstream students. A significant amount of statistical and empirical research supports the use of cursive with students who struggle, particularly those with language-based learning difficulties. Whatever decision is made, students require at least two years of instruction in a stroke before it is automatized, and manuscript and cursive should not be taught simultaneously *(Berninger, Wolf, and Abbott, 2016)*. In the mainstream school setting, then, teachers might instruct students in manuscript in K-1, transitioning to cursive at some point during the second grade and continuing that instruction at least through third grade. It is important to recognize that many schools designed for students

with dyslexia begin cursive in first grade and that Montessori instructors, occupational therapists, the entire continent of Europe, and, interestingly, Catholic nuns concur when it comes to starting cursive early.

Reasons to Favor Cursive Over Manuscript for Struggling Writers:

- Students who struggle with directionality and starting point will find cursive less difficult and faster. First, in a good lowercase cursive alphabet, all letters begin on the baseline. Students always know where to begin. Second, since letters within words connect, students must only "begin again" once per word, rather than for each new letter.

- The kinesthetic-motor reinforcement of cursive is stronger than that of manuscript, and cursive is therefore better for spelling. Skywrite (always with two fingers) the word "the" in print and then in cursive. Feel the difference in your arm as you "write" the letter. Your body actually learns the spelling of the word better in cursive.

- Letters sometimes reversed in manuscript (e.g., b/d and m/w) not only look different in cursive but also are formed differently, so cursive decreases the frequency of reversals in writing.

- Thanks to the connected letters in cursive, students with word spacing issues can easily discern where one word ends and another begins.

Choosing Curriculum:

There is no one best handwriting curriculum. As you investigate, pay heed to several important elements:

(1) Is there direct, explicit instruction of letter formation with plenty of practice?

(2) Are students asked to combine letters into words and eventually phrases and sentences as the curriculum unfolds?

(3) Is the sequence focused on how letters are formed rather than where they appear in the alphabet?

(4) For cursive, do all lowercase letters begin on the baseline?

(5) For cursive, is there a left-handed and right-handed practice book with corresponding slant offered?

Handwriting curricula with which this author is familiar that adhere to most or all the above criteria:

- Alphabetic Phonics*
- Diana King
- Fundations (primary Wilson)
- Language Foundations*
- Neuhaus's Curriculum*
- Slingerland
- Wilson

** Slantless alphabets only*

A Model Approach

Diana King's manuscript and cursive (left-handed and right-handed) texts introduce a T.C.C.C. (trace, copy, cover, closed) approach to instruction. *(See Figure 5.)* While King's texts do this efficiently, the strategies suggested can be adapted to any handwriting curriculum.

(1) Students receive direct, explicit instruction in letter formation. Instructors model the letter as they discuss stroke formation (e.g., "Swing up, back down, and around."). Asking students to verbalize stroke formation is not an effective practice (Graham et al, 2009), most likely because the amount of oral language required complicates the formation process. Instead, again, students should name the letter or its sound as they form it.

(2) Students follow a T.C.C.C. approach to instruction.

a. Trace: Students trace the letter, saying its name or sound.

b. Copy: Students copy the letter from a model located above the letter they're forming.

c. Cover: With all existing letters covered, students write the letter from memory, relying on their multi-sensory practice to help them remember how it is formed.

d. Closed: Students put their pencil to unlined paper and then close or avert their eyes, writing without looking at the paper. Writing is primarily a motor task, rather than a visual one, and students must rely on motor memory if they are to automatize their handwriting.

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