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

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Our Agenda

✓ Putting handwriting in context
✓ What the research tells us
✓ Positioning
✓ Stroke instruction
✓ Handwriting vs. keyboarding
✓ Manuscript vs. cursive
✓ Recommendations for teaching & learning

Working Memory

“Writing is the act of dealing with an excessive number of simultaneous demands or constraints. Viewed this way, a writer in the act is a thinker on full-time cognitive overload.”

(Flower and Hayes as cited by Torrance and Galbraith, Writing Research 2008 Edition, 67)
What if your brain were a stove?

BACK BURNERS
things you do automatically, without actively thinking about them

FRONT BURNERS
things you must concentrate actively to do (working memory)

Transcription Skills • Some Observations

- Transcription skills, including spelling, mechanics, and handwriting, are not connected to intelligence, but difficulty with these skills interferes with working memory, preventing a student from putting her thoughts on paper effectively.
- Transcription skills distinguish speaking from writing and make writing a more difficult process for most.
- One essential reason for automatizing these transcription processes, then, is that it frees working memory for the higher-level writing skills.

Skills Required for Handwriting

- Planning to form letters
- Assessment of space requirements
- Incoming visual and touch sensory information
- The phonological-orthographic loop of working memory: integration
- Motor skills: planning movements, controlling movements during production, and executing the writing
- Combination of accuracy + speed = fluency

(Berninger, 2012)
Importance of Automaticity

- **Automatic** – occurs without voluntary control and interferes minimally with other processes (Fleishman, 1994b)

- **Spelling and Handwriting** – required in written production but not in speech (no correlation with IQ)

- **When written production less practiced, interferes with conscious retrieval process**
  (Bourdin, 1999; Bourdin & Fayol, 1994, 1996, 2002)

Handwriting Impacts Writing

- Students in grades K-3 benefit from direct and explicit handwriting instruction. (Graham, 2009-10)

- Handwriting in students 3rd grade and below (both regular ed and LD) may impede text generation. (Graham, 2009-10)

- "...rapid, legible, and comfortable handwriting facilitates writing production." (Mather et al., 2009)

- Automatized handwriting significantly improves both the quantity and quality of writing. (Berninger 2012; Graham, 2009-10)

Handwriting Impacts Writing

In 2016, Berninger & Wolf found that...

- A method of providing handwriting instruction embedded in other literacy activities, which previously was thought to be needed only for students with specific learning disabilities, has been shown to benefit typically developing writers in the general education classroom as well.

- 2nd grade students (both those continuing with manuscript instruction and those learning cursive) with this embedded handwriting instruction showed advancement in language skills, including alphabet writing, spelling, and composing.

- Handwriting instruction is important for ALL students. (Berninger, Wolf, & Abbott 2016)
Handwriting Impacts Reading

- “Learning to form letters by hand improves perception of letters and contributes to better reading and spelling.” (Berninger, 2012)
- “Writing is essential for developing the networks involved in letter processing.” (James, Jao, & Berninger, 2016)
- “...learning to write and perceive letters during early childhood may affect learning to spell and read words during middle childhood.” (James, Jao, & Berninger, 2016)

Handwriting vs. Keyboarding

- Printing “recruits the letter/reading processing network” better than typing or tracing. (James, Jao, & Berninger, 2016)
- “...there is neuroscientific evidence for a writing route to reading as early as the preschool and kindergarten years. Also, results document the value of forming letters (handwriting) over pressing letters (key touch) in learning to perceive the letters.” (James, Jao, & Berninger, 2016)

Handwriting and Keyboarding

James, Jao, & Berninger suggest that “the goal of writing instruction in the Information Age should be developing hybrid writers who are adept with multiple writing tools including pens and keyboards” (125, 2016).
**Manuscript vs. Cursive**

**Handwriting engages more cognitive skills than keyboarding.**

<table>
<thead>
<tr>
<th>Print in Grades K-2</th>
<th>Cursive in Grade 3 (late 2)-4</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Supports recognition of letter forms for reading</td>
<td>• Continuous flow of cursive activates motor memory</td>
</tr>
<tr>
<td>• Initially, may need as many as 2 weeks to learn and practice but pace will increase</td>
<td>• Useful for struggling spellers</td>
</tr>
<tr>
<td>• Group by form</td>
<td>• Reduces letter reversals</td>
</tr>
<tr>
<td>(Berninger &amp; Wolf, 2009)</td>
<td>• Simplifies connecting the letters to form words, improved spacing</td>
</tr>
<tr>
<td></td>
<td>• Faster</td>
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</tbody>
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**Manuscript vs. Cursive**

- Research is inconclusive regarding teaching manuscript versus cursive in mainstream students who do not struggle. (Graham, 2009-10)

- Research does indicate the following:
  - Students should not be taught both simultaneously.
  - Students need 2 years of instruction to automatize a handwriting process. (Berninger, Wolf, & Abbott, 2016)

- Arguably, then, students could learn manuscript in K-2 and then cursive in late 2-4.

**Handwriting Instruction • Lasting Effects**

- “In grades 4 to 6, handwriting fluency still accounts for 42 percent of the variability in the quality of children’s writing...” (Graham, 2009-10)

- “…students’ handwriting speed continues to increase at least until Grade 9.” (Graham, 2009-10)

- In three separate studies, researchers found that college students who took notes by hand performed better on assessments than their peers who typed their notes. (Heki, 2016)
Teacher Knowledge • What Matters

• 90% of 1st-3rd grade teachers teach handwriting.

• More than half agreed that it is important.

• 39% of teachers said their students' handwriting was adequate.

• Disappointingly, 12% believe they received adequate preparation to teach handwriting in their college education courses.

Graham & colleagues (2009-10)

What to Write On • Tactile Surfaces

• Sand, finger paint in a bag, carpet squares, lap boards, etc.

• Vertical surface (cinder block wall, wall-mounted whiteboard)

What to Write On

Getting into Position • Pencil Grip

• Pencil grips, rubber bands, rubber balls, tissue, and more

• Short pencils, #2 pencils, pencil flips, and the triangular grip

Wikihow has great visuals with some animation of these suggestions:
http://www.wikihow.com/Hold-a-Pencil

Here's a YouTube video showing the tripod grip as well:
http://www.youtube.com/watch?v=ZiXtwO29r8
Getting into Position • Body & Paper

Sit upright, both elbows on table

• Manuscript: paper slanted slightly to dominant hand
• Cursive: paper slanted 45º to dominant hand

Hand & Eye Dominance

A good diagnostician tests not only hand dominance but also eye dominance.

• Right-handed/right-eyed children will write with a pronounced right-hand slant. Left-handed/left-eyed children will write with a pronounced left-hand slant.
• With proper paper position and pencil grip, a cross dominant child (left eye/right hand or right eye/left hand) will have handwriting with a less-pronounced slant.

Before You Form Letters • Getting Ready to Print

• tall and short grass
  Important – orientation for most starting strokes
• zigzags (separated or not)
• circles
• mountains (separated or not)
• waves (separated or not)
• dashes
Before You Form Letters • Getting Ready to Write in Cursive

- windshield wipers
  Important – activates hand/arm
- mountains
- waves
- circles
- c-stroke waves

These practice strokes warm up the arm. RELAX. Precision writing, writing within the lines, and so on are NOT important and will most likely detract from the usefulness of the task.

Instructional Sequence

Order of instruction will vary by handwriting method. If your focus is on letter formation, then letters should be clustered and ordered by motor-stroke family.

- For example, in manuscript b, h, k, l, and t are grouped together because they all begin with a top-to-bottom tall grass stroke. d would be grouped with c and a because, though it is tall, its beginning stroke is identical to the beginning stroke in a and c.
- For example, in cursive a, c, d, g, and q would be grouped together, once again because they all begin with the same stroke – in this case a c-stroke wave.

Explicit Instruction ► Introduction of Letter Form

I do it.

- Model the letter formation
- Stress orientation to the lines. (Hair line, Belt line, Foot line)
- Model letter formation a number of times. Use verbal prompts.

Explicit Instruction ► Introduction of Letter Form

**We do it.**

- Using the verbal prompts (e.g., touch down, touch around), guide the students in forming the letter.
- Monitor the student's letter formation

*(Archer, 2009)*

**You do it.**

- Have the students continue writing the letter as they say the letter name or its sound (depending on goal). *(Archer, 2009)*
- Continue until the letters are consistently formed correctly.
- Note: Research does NOT support the student verbalizing the stroke. *(Graham, 2010)*
- Research supports identifying a student's best letter and asking her identify her own as well.

Why Cursive for LD Students

- It cuts down on reversals (cursive b/d, m/w, etc.).
- In a proper lowercase alphabet, all letters begin on baseline.
- Spelling is better reinforced in the mind if continuous movement of cursive is used.
- It forces appropriate clustering of letters to create words and spacing between words.
A Useful Approach • T.C.C.C.

Follow a T.C.C.C. model, for both manuscript and cursive:

• Trace: Trace the provided letter, naming it as you trace.
• Copy: Underneath a provided model, copy the letter, naming it as you copy.
• Cover: Cover all written examples, and write from memory, naming the letter as you copy.
• Closed: With eyes closed or averted, write the letter, once again naming it as you write it.
• Remember that handwriting is a motor-language skill rather than a visual one.

Say the Sound or Name the Letter

Ask Yourself These Two Questions:

1. Why speak at all?:

S.O.S. (or simultaneous oral spelling), a procedure discussed by Anna Gillingham in *The Gillingham Manual* and widely adopted in multi-sensory structured language approaches, adds two senses to the process of forming letters as the student must use kinesthetic speech as she forms the sound or letter and the auditory as she hears what she says.
Say the Sound or Name the Letter

Ask Yourself These Two Questions:

2. What is the goal of the handwriting activity?

- If you’re working on letter formation, naming the letter makes sense. You are creating a letter, and naming it will help cue it.
- If you’re working on spelling and reading, current research supports saying the sound. You are creating a written version of a phonologically sequenced word, and pronouncing it will help to cue the correct spelling. Spelling (orthography) become bonded to pronunciations (phonemes) and to meaning (semantics) in memory (Ehri).

Handwriting Recommendations

- Is handwriting currently taught?
- Is there a consistent and pervasive understanding of the importance of handwriting as it relates to the development and improvement of writing skills?
- How much time is allocated to handwriting instruction?
- Is there appropriate professional development in the teaching of handwriting?
- Does our district/LEA include handwriting in its written ELA curriculum?

Citations & Resources


