**Research Support for Ohio HB 58**

Research shows the importance of systematically teaching handwriting and using it to spell words and express ideas in written language, beginning in kindergarten and continuing to fifth grade, and periodic handwriting tune-ups in the upper grades. Important lessons from research for educational policy follow:

1. Teach manuscript first because most of the writing children read in books or on electronic media is in manuscript format. Research showed that teaching manuscript handwriting to first graders improved their word reading even though reading was not taught in that study. Assess whether children have developed hand dominance and adapt handwriting instruction to whether they are right or left handed.

2. Beginning in third grade teach cursive. Research showed that cursive contributes to improved spelling and composing in upper elementary and middle school grades. The connecting strokes in cursive may help link letters into word units for spelling and improve handwriting speed so it is easier to get thoughts into writing.

3. Beginning in fifth grade, teach touch typing. If children just use the index finger to press and hunt and peck, research has shown they don’t write as many words or write as quickly or express as many ideas. Touch typing will also prepare them for completing written assignments at home during middle school and at school if technology is well integrated with the curriculum. Touch typing requires use of both hands, and all fingers in each hand, and alternating between both hands. Each hand sends signals to the opposite side of the brain. By fifth grade the brain structures that support communication between both sides of the brain for coordinating incoming motor processes from both hands are maturing or matured sufficiently to support learning to touch type.

4. Research has identified the developmental steppingstones for teaching handwriting and linking it to spelling and composing. At all grade levels what matters is not how much time is spent on handwriting instruction but rather the nature of the instruction and student learning activities and linking handwriting to spelling and composing (idea expression in written language).

a. In kindergarten teach children to name lower case letters, copy lower case letters, and write named lower case letters from memory. Teach lower case letters first because they are used the most often. Once children learn those introduce naming, copying, and writing from memory the capital letters but from the beginning link capital letters to the first letter in a sentence.

b. In first grade continue formal instruction in both lower case and upper case letters with a systematic classroom program of handwriting instruction. Letters with common strokes or features can be taught in the same lesson so that children learn how they are similar and how they are different, for example, n with one hump and m with two humps. Emphasize relative sizing (l is a longer, higher i, and h has a longer left stroke than n) and placing on lined paper (o rests on the line but p goes below it). The goal is legible letter formation others can recognize. Use arrows as visual cues to indicate the direction of component strokes to help children form the letters. Name letters during instruction and encourage children to name them. Once all the letters are introduced, practice each of the 26 letters once in writers’ warm up at the beginning of each writing lesson that also includes spelling and composing.

c. In second grade continue to practice writing letters in manuscript. Begin each writing lesson with writers’ warm up and practice with each of the 26 letters once. Provide practice in writing letters from memory not just copying letters. The goal is to become automatic so that the child can think about word spelling and idea expression instead of letter formation. After warm up move on to systematic spelling instruction and composing activities to apply handwriting and spelling to idea expression. Also teach formation of capital letters and their application to signaling the beginning of a sentence and names of people, places, and things.

d. In third grade introduce formation of cursive letters using a systematic classroom program of handwriting instruction. The goal is to teach formation of legible letters others can recognize. Encourage children to use the cursive writing in their spelling and composing.

e. In fourth grade continue to review cursive handwriting with activities in a classroom handwriting program designed for students at this grade level, but also begin writing lessons with writers’ warm up followed by systematic spelling and composing activities. Writers’ warm-up can be adapted to include the before and after game. Children are asked to write letters that come before or that come after other letters. This activity helps them find letters in memory during writing and reading.

f. In fifth grade children benefit from periodic brief tune ups for manuscript and cursive handwriting. These might include writing the whole alphabet from memory—on some days in manuscript and on other days in cursive—or the before and after game. Children also benefit from exchanging their compositions with each other and circling the letters they cannot recognize so they can be fixed to be made legible.

5. Not only systematic handwriting instruction but also systematic spelling instruction is being left behind in the computer era. However, considerable research shows the critical importance of systematic spelling instruction, beginning in first grade and continuing through fifth grade, for developing writing skills needed to complete written assignments and tests related to standards. Research has shown that word spelling leads to improved reading as well. Spelling requires the integration of letter writing (handwriting) with the vocabulary, sounds, and prefixes and suffixes and supports expression and refinement of thought and thinking, the ultimate goal of education.

6. Beginning in grade 4 need to teach integration of handwriting with reading and with listening.

7. In an era of limited financial resources, it is important to keep in mind that systematic handwriting AND spelling instruction can reduce the number of children needing special education services. With appropriate, systematic, and sustained handwriting and spelling instruction K to 5 many specific learning disabilities involving some aspect of writing (estimated one in five students) can be prevented, reducing costs for more expensive special education services.

Examples follow of research or dissemination of research resulting from NICH-funded research on writing, beginning in 1989 and continuing to the present, which supports these recommendations regarding policy for writing instruction.

**EDUCATIONAL POLICY**

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#644747: NIHMS644747 [NCBI tracking system #16689920]

**MANUSCRIPT**

Berninger, V. (2009). Highlights of programmatic, interdisciplinary research on writing. *Learning Disabilities. Research and Practice, 24,* 68-79*.* Invited.

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**COMPARISON OF LETTER PRODUCTION MODES (manuscript, cursive, keyboard)**

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**HANDWRITING INSTRUCTION AND ITS LINKS TO SPELLING/COMPOSING**

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**ASSESSMENT AND INSTRUCTION FOR SPECIFIC LEARNING DISABILITIES INTERFERING WITH WRITING**

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**RECENT BOOKS**

Berninger, V. W.(2015).*Interdisciplinary frameworks for schools: Best professional practices for serving the needs of all students.* Washington, DC: American Psychological Association. http://[dx.doi.org/10.1037/14437-002](http://dx.doi.org/10.1037/14437-002) Short Title: *Interdisciplinary Frameworks for Schools*. Companion Websites with Readings and Resources and Advisory Board. All royalties go to Division 16 to support these websites and develop future editions. For developmental stepping stones in handwriting and related skills, see Chapter 4 (early childhood), Chapter 5 (middle childhood), and Chapter 6 (adolescence).

Berninger, V., & Wolf, B. (in press, 2015). *Teaching students with dyslexia, dysgraphia, OWL LD, and dyscalculia: Lessons from teaching and science, Second Edition.* Baltimore: Paul H. Brookes. Also available as e-book.

Arfé, B., Dockrell, J., & Berninger, V. (Eds.) (2015). *Writing development in children with hearing loss, dyslexia, or oral language problems: Implications for assessment and instruction*. NY: Oxford University Press. Also available as an ebook.

**BOOK CHAPTERS**

James, K., Jao, J. R., & Berninger, V. (in press). The development of multi-leveled writing systems of the brain: Brain lessons for writing instruction. MacArthur, C., Graham, S., & Fitzgerald, J. (Eds.), *Handbook of Writing Research*. New York: Guilford.

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**ON LINE ENTRIES (control click to activate)**

**1. ON-LINE ENCYCLOPEDIA OF LANGUAGE AND LITERACY DEVELOPMENT**

National Centres for Excellence Canadian Language and Literacy Research Network   
(CLLRNet) **Published online:** Berninger, V., & Fayol, M. (2008). Why spelling is important and how to teach it effectively. Encyclopedia of Language and Literacy Development (pp. 1-13). London,ON: Canadian Language and Literacy Research Network.

<http://www.literacyencyclopedia.ca/pdfs/topic.php?topId=234>

**2. ON LINE JUST THE FACTS for INTERNATIONAL DYSLEXIA ASSOCIATION**

Understanding Dysgraphia 2008 (Berninger) Revised 2012 (Berninger & Wolf)

Website: <http://www.interdys.org> Click on Fact Sheets What is Dysgraphia?

**DISSEMINATION OF RESEARCH TO PARENTS, TEACHERS, AND/OR PSYCHOLOGISTS**

Berninger, V., & Richards, T. (2015, May). Research confirms what many teachers know: Learning disabilities is a plural word. *Examiner,* International Dyslexia Association. Invited.

Wolf, B., & Berninger, V. (2015, March 20). Specific learning disabilities: Plural, definable, diagnosable, and treatable. *Dyslexia Connections*, International Dyslexia Association Newsletter for Parents. Invited.