
Handwriting: Beneficial to reading and often misunderstood

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Handwriting can be an effective way for students to learn important early reading and writing skills. As noted in a recent systematic review, handwriting instruction during kindergarten can improve both writing and reading outcomes, such as knowledge of letter names and sounds, spelling and word reading ([Ray et al., 2022](#)). Indeed, research suggests a close link between writing and reading overall, including a strong relationship between the development of early writing and reading skills, such as spelling and word reading ([Kim et al., 2024](#)). In spite of these ties, handwriting is rarely mentioned in the national conversation on how to improve the reading performance of elementary students.

There are several likely reasons why handwriting is an often-forgotten aspect of reading instruction. One reason is that academic standards used by most states quickly pivot from emphasising printing and handwriting by the end of first grade to use of technology (e.g. digital tools or keyboarding) in subsequent grades ([National Governors Association & Council of Chief State School Officers, 2010](#)). Despite rapid advances in computer technology, handwriting with a pencil and paper is likely here to stay. Put simply, handwriting is portable and practical. A pencil or pen can be easily carried and used, and they are much less expensive than high-technology devices, such as laptops or tablets. If a pencil tip breaks, then students just need access to a pencil sharpener. If a laptop or tablet breaks? That is a more complicated problem.

Another reason handwriting is often forgotten is because it can be easy to confuse handwriting as more closely associated with drawing than reading. In its most basic form, handwriting occurs when students use a pencil, or any writing utensil (e.g. crayons or marker), to form letters of the alphabet. Similar to drawing, handwriting relies on physical and visual actions – see [Datchuk \(2015\)](#) for brief descriptions of the processes. When kindergarteners draw pictures of their families or write the letter ‘b’ they use fine motor movement to make subtle adjustments to their pencils and visual-motor coordination to adjust lines and shapes based on visual feedback (e.g. staying within the margins of a paper).

What distinguishes drawing from handwriting is knowledge of the alphabet – specifically skills related to letter identification (e.g. name or sound of each letter) and formation (e.g. appropriate shape, size and slant of letters). To handwrite letters of the alphabet, students use orthographic and phonologic information or memories of each letter shape, formation and name ([Datchuk & Kubina, 2013](#)). This knowledge, needed for proficient handwriting, also contributes to proficient reading. For example, when students read or write the letter ‘b,’ they draw upon their memorised representation of the letter shape, formation and name or sound of ‘b’. Because dyslexia, a common reading disability, affects one’s ability to connect speech sounds with the symbols that represent them, it is not surprising that students with dyslexia and other reading disabilities often have difficulty with handwriting ([Alamargot et al., 2020](#)).



Cognition of early reading and writing

The interplay between working and long-term memory plays a central role in explaining the benefits of handwriting to overall literacy development (e.g. [Graham, 2018](#)). Working memory allows for the temporary storage of information for immediate use, such as remembering a sequence of numbers as you dial a phone number, whereas long-term memory stores information relatively permanently. Engaging in writing and reading are cognitively demanding tasks. The numerous skills involved in writing (e.g. text generation of multiple sentences on a topic) and reading (e.g. decoding and interpreting vocabulary) all compete for a limited amount of working memory resources. Put simply, it is hard to juggle all the skills, content and processes involved in reading and writing at the same time.

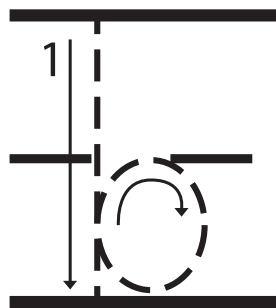
One of the ways to make it easier for students to read and write is to develop fluency – accuracy and efficiency – with foundational skills. When skills are fluent, they are stored in long-term memory, thereby freeing up cognitive resources to attend to other aspects of a composition or passage. The shifting of letter knowledge (e.g. letter identification and formation) from working memory to long-term memory is likely one of the key reasons handwriting instruction improves reading. Specifically, handwriting helps facilitate the storage of alphabetic knowledge – shape, formation, name and sound of letters – that can also be used to learn how to read.

What can primary teachers do?

During instruction focused on early literacy skills (e.g. phonemic awareness and phonics), schedule specific time for handwriting instruction. For efficient

lessons, when students are learning letter identification, also engage them in learning how to form the letter: appropriate shape, size and slant. Research suggests there are several effective instructional techniques to help students acquire handwriting, including:

- showing visual cues of letter shape and formation (e.g. using materials in which letters appear as dotted lines to be connected, along with arrows and numbers showing suggested shape and sequence, as shown below)



- providing students with practice retrieving letters from memory (e.g. activities like ‘cover-copy-compare’, in which students look at a letter, say the letter aloud, cover it, write it on their own and then uncover the original letter and compare it to what they wrote)
- using systematic and explicit instruction techniques (e.g. lessons featuring scaffolding in which teachers model letter identification and formation, guide independent practice, and test for student independence).

Incorporating these three elements of research-based handwriting instruction, the Iowa Reading Research Center

has developed an online tool that allows teachers to create customisable handwriting materials that align to their reading instruction. The tool is called the [Literacy LIFTER](#) – Letter Identification and Formation for Transcription and Early Reading. The materials include visual cues (e.g. arrows and numbers) showing legible letter shape and formation, practice activities where students gradually recall more letters from memory, and instructional scripts that structure each lesson in a systematic and explicit manner.

Handwriting is an often forgotten and misunderstood element of early literacy instruction. It deserves more attention, however, as the knowledge and skills related to handwriting underpin not only writing development but also reading. The IRRC’s [Literacy LIFTER](#) aims to demystify the instruction of handwriting. When incorporated into reading instruction, this tool helps reinforce the foundational skills that underlie reading.

This article originally appeared on the [Iowa Reading Research Centre blog](#).

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