

Back to Basics: The Enduring Value of Handwriting

November 2, 2025 / Essentials in Education



In an age when most students can type faster than they can write, it's easy to wonder whether learning handwriting and cursive is still relevant. Yet a growing body of neuroscience suggests these "old-fashioned" skills are anything but obsolete. Writing by hand activates neurons and varying areas of the brain in ways that typing simply does not.

What Handwriting Does in the Brain

When a student writes by hand, sensory, motor, and cognitive regions of the brain work together and activate far more neural pathways than typing, leading to deeper learning and stronger memory formation.

A [2024 study in *Frontiers in Psychology*](#) used high-density EEG to compare brain activity during handwriting and typing. The results: handwriting produced "far more elaborate and widespread connectivity," engaging networks associated with attention, language, and memory. Existing literature indicates that connectivity patterns in these brain areas are crucial for memory formation and for encoding new information and, therefore, are beneficial for learning. The authors concluded that handwriting supports the very neural foundations of learning and therefore should remain central in education.

This deeper cognitive processing is echoed across other studies including a Japanese study that looked at adult foreign language learning and semantic encoding of new words. The [2021 study published on PubMed Central](#) confirmed that handwriting with either a traditional pen, or a digital pen on a tablet, builds stronger memory traces and more robust language comprehension than keyboarding.

Perhaps the most well cited study is not about neural activity and EEG results, but about how student's brains engage the material itself when writing by hand. In a landmark series of experiments, [Mueller & Oppenheimer \(2014\)](#) found that college students who took notes longhand outperformed laptop note-takers on conceptual questions related to the lecture. While typing allowed for more words to be written, it led to shallow processing because students could quickly transcribe lectures verbatim. Writing by hand, however, required students to engage the material more deeply as they digested, rephrased, and summarized ideas.

No matter the age of the learner, the evidence points to the same conclusion: handwriting improves how we think.

Handwriting Builds Literacy

When learning to write, the act of writing letters, rather than merely recognizing or typing them, helps the brain develop the circuitry needed for fluent reading. Handwriting is a complex visual-motor skill supported by a widespread neural system comprising ventral-temporal, parietal, and frontal motor regions. Young children learning to read and write are developing these neural pathways.

Two different studies link early literacy development to neural systems developed through handwriting. Both [Wiley & Rapp \(2021\)](#) and [Vinci-Booher & James \(2021\)](#) found that handwriting experience accelerates literacy learning and engages the visual-motor areas critical for reading.

Students who engaged in literacy learning that included handwriting compared with those learning through nonmotor practice, showed faster learning and greater generalization capabilities. Researchers believe this is because handwriting practice leads to learning “both motor and amodal symbolic letter representations.” This means that writing by hand (and only writing by hand) helps the brain connect letter formations with word meaning.

Earlier work by [James & Engelhardt \(2012\)](#) also found that when young children practiced writing letters by hand, their brains later activated the reading network automatically when those letters were viewed. Typing or tracing did not produce the same effect.

In a similar vein of deciphering symbols and forms, [Pegado et al. \(2014\)](#) showed that handwriting experience helps the brain distinguish mirror-image letters like *b* and *d*. Each of these findings reinforces the idea that forming letters by hand literally shapes the brain to read them.

All of these studies indicate that handwriting helps create the brain’s architecture for more efficient and comprehensive reading and literacy.

Cursive Writing: Flow, Focus, and Fluency

Cursive writing, once a standard part of schooling, has been quietly disappearing from many curricula. Yet research and experience suggest that this script offers unique cognitive and developmental advantages.

Because cursive involves continuous motion, it requires sustained attention and coordination, reinforcing fine-motor control and rhythm. Neuroimaging studies show that writing by hand in continuous motion fosters synchronization across brain regions responsible for motor planning and language.

According to this research out of Norway looking at EEG's of 12-year-olds [Ose Askvik E, van der Weel FR and van der Meer ALH \(2020\)](#), the strengthened connections between the hand and the brain improve letter recognition, spelling, and even reading fluency.

Cursive also serves a cultural and historical function. As [Smithsonian Magazine \(2023\)](#) noted, the ability to read and write in cursive connects students to centuries of handwritten history — from personal letters to founding documents. Losing cursive literacy risks cutting future generations off from their own past.

Handwriting in the Future

Handwriting and cursive deeply connect areas of the brain tied to motor, memory, processing, and comprehension. Relegating these skills to a nostalgic practice is short-sighted at best and detrimental at worst. In a world of endless keyboard typing, handwriting is an essential tool for building thoughtful, connected, and capable learners. Waldorf education's commitment to educate the whole child, and maintain lessons using handwriting and cursive, aligns with current cognitive research.

<https://www.waldorfeducation.org/back-to-basics-the-enduring-value-of-handwriting/>