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Pen Mightier Than Keyboard for Making Imprint on Brain

The act of handwriting activates brain regions that help boost recall, researchers find

MONDAY, Jan. 24 (HealthDay News) -- As keyboards increasingly replace pens, new research cautions that the switch may come with an unforeseen price: the loss of critical brain activity central to learning that is uniquely tied to the old-fashioned act of handwriting.

The concern stems from the results of a number of experiments recently reviewed by a pair of researchers in France and Norway, who concluded that writing by hand is actually a very different sensory experience than typing on a keyboard, with each activating distinctly different parts of the brain.

"Our bodies are designed to interact with the world which surrounds us," co-author associate professor Anne Mangen from the University of Stavangers Reading Centre in Stavanger, Norway, said in a university news release. "We are living creatures, geared toward using physical objects -- be it a book, a keyboard or a pen -- to perform certain tasks."

This is evidenced, she said, in tests that reveal that the act of handwriting -- literally the feeling of touching a pen to paper -- appears to imprint a "motor memory" in the sensorimotor region of the brain.

In turn, this process promotes the visual recognition of letters and words, suggesting that the two seemingly separate acts of reading and writing are, in fact, linked, Mangen explained.

Mangen and colleague Jean-Luc Velay of the University of Marseille together reported their observations in the journal *Advances in Haptics*.

Haptics, the team explained, is a term that references the sense of touch and the integral role it plays in aiding people's ability to communicate and explore their surroundings, both actively and passively, particularly with regards to the use of the fingers and hands.

Focusing on the role haptics plays in the ergonomics of both reading and writing, the authors discuss the findings of a study in which two groups of adults were asked to learn a previously unknown alphabet.

Those who studied the alphabet by writing the letters out by hand performed better on all subsequent recall tests than those who studied solely on computers, the investigators found.

What's more, brain scans revealed that while learning by handwriting prompted activity in a particular part of the brain known as Broca's area, learning by keyboarding prompted little or no such activity.

The authors also pointed to another basic reason why writing may facilitate learning more readily than keyboarding: handwriting simply takes more time.

More information

For more on brain function, visit the U.S. National Library of Medicine.

-- Alan Mozes

SOURCE: University of Stavanger, news release, Jan. 19, 2011