



# PRESS RELEASE

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## HANDWRITING PROMOTES LITERACY DEVELOPMENT

The findings of a study show that writing by hand improves important skills that aid literacy acquisition. As well as training their visuospatial skills, children who learn to write with a pen and paper are also more adept at recognising the letters of the alphabet.

Type, swipe, click: these days, most of our hand movements are in some way connected to computers, screens or smartphones – increasingly so for children. This digital lifestyle raises questions about the extent to which children’s motor skills and cognitive abilities are influenced by digitalization, and whether analogue writing equipment can support the processes of learning, reading and writing.

To investigate this issue, the Nuremberg-based stationary manufacturer STAEDTLER decided to fund a study by the ZNL TransferCenter for Neuroscience and Learning at Ulm University. One of the key findings of this study, which was carried out in the period between April 2016 and May 2019, is that developing reading and writing skills through handwriting also improves visuospatial skills in children.

The study found that compared to typing on a digital keyboard, writing with a pencil and paper is more effective at boosting letter recognition and visuospatial capabilities, two skills that play an important role in literacy development. Writing on the surface of a tablet with a special pen was also found to be beneficial, but not to the same extent as writing on paper.

The study also confirmed scientific insights about how children with good existing visuospatial skills later demonstrate better reading abilities.

### **A study with 145 preschool-aged children**

A total of 145 preschool children aged between four and six years old took part in the study, entitled “How do children learn to read and write better? – The impact of writing medium on cognitive performance and neuronal activation patterns”. For seven weeks, the children were divided into three groups in order to learn letters and words: either with a pencil and paper, with a tablet pen and a screen, or with a keyboard and a monitor.

Britta Olsen, Head of Brand & Communications at STAEDTLER says: “It is astounding to note that the influence of the writing medium and the relationship between good visuospatial skills and better reading performance was already evident over the course of the seven-week study.”

The study required the children to read letters and words, and to write down dictated text. Their recognition of the letters of the alphabet was also assessed. Any existing knowledge was taken into account in the results.

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Regardless of which writing tool used, all the participants in the study improved their knowledge of letters and words. The group of children who had been writing by hand on paper demonstrated a greater improvement in letter recognition than those in the keyboard group.

Dr Petra Arndt, Executive Manager of the ZNL, stresses just how important writing with pencil and paper is for literacy development: “When writing by hand, children have to pay attention to the details of letters and copy them onto the paper with their pencil. This makes them more adept at detecting and recognising the letters of the alphabet.” Her fellow project manager from Ulm University, Professor Markus Kiefer, adds: “This beneficial memory trace associated with handwriting is less pronounced when writing by hand on a tablet screen as opposed to paper. Because the screen is smooth, writing on a tablet does not give the child as much sensory feedback about their movements as paper does.”

The study revealed that the children who had been learning in the “pencil and paper” group were significantly better at recognising and comparing the shared characteristics and spatial position of two figures than the children in the keypad group. “Based on the findings of the study, it would appear that writing by hand at the start of literacy development can help children with weaker visuospatial skills to boost their skills in this area,” says Olsen.

#### **Family input during free time plays a crucial role in children’s achievements**

Children also improved their learning skills through other creative exercises in addition to writing by hand on paper. The study also showed that children who are in the habit of drawing or doing handicrafts with their parents, or children whose parents frequently read to them, tend to perform better when it comes to writing words – regardless of the writing medium used in the study. Children who watch a lot of television (more on average than the recommended 30 minutes a day for preschool-aged children) perform considerably worse than their peers.

#### **About STAEDTLER**

STAEDTLER is one of Germany’s oldest industrial companies. The group ranks among the world’s leading manufacturers and suppliers of writing, colouring, drawing and creative products. With its products, STAEDTLER inspires the creativity of its customers throughout their life: from their first attempts at colouring in early childhood to products for creative work. The writing and creative goods manufacturer offers a wide range of high-quality products for all ages and demands, constantly developing new approaches to connect analogue tradition and digital innovation. STAEDTLER headquarters are located in Nuremberg. It employs 3,000 people in 26 countries worldwide – of which 1,200 work in STAEDTLER’S domestic market. For production the company stays true to its roots and counts on quality “Made in Germany”: nearly two-thirds of all STAEDTLER products are manufactured in Germany. [www.staedtler.com](http://www.staedtler.com)

#### **About the ZNL TransferCenter for Neuroscience and Learning**

Founded in April 2004 by Professor Manfred Spitzer, the ZNL TransferCenter for Neuroscience and Learning at Ulm University has been concentrating on the findings of fundamental neuroscience research, educational science, psychology and related disciplines, exploring beneficial practical applications of these findings, particularly for educational purposes. This knowledge is transferred to practice by means of application-oriented projects in cooperation with nurseries, schools and vocational training institutions, as well as through CPD, training and advisory services. The ZNL carries out its mission in cooperation with a number of partners from the fields of educational practice, policy, business and science. [www.znl-ulm.de](http://www.znl-ulm.de)