

Malpique, A., Merga, M., Pino-Pasternak, D., Ledger S., & Valcan, D. (August, 2021). *Writing For All: Studying the Development of Handwriting and Keyboarding Skills in Early Education*. Paper presented at the 20th Biennial European Association for Research on Learning and Instruction (EARLI) Conference.

Abstract

In today's digital world, children are expected to produce handwritten and computer-generated work to assess content knowledge across subjects and years. Considering the continuing digital revolution in education and learning, the *Writing for All* project was designed to investigate Year 2 students' abilities, motivation, engagement and self-efficacy in composing texts via handwriting and keyboarding and teaching practices promoting effective writing. This study describes findings from the pilot phase of the project involving 49 children from two primary schools in Western Australia. We assessed children's handwriting and keyboarding performance for composing short stories (i.e., letter writing automaticity; writing quality; text length; and spelling), as well as children's motivation, engagement, and self-efficacy in writing stories using paper and pencil and using a keyboard. Finally, Year 2 teachers were surveyed on the amount and type of writing instruction developed in children's classrooms. We found moderate to strong correlations between the quality and the length of children's handwritten and typed texts, as well as strong associations between spelling outcomes and handwritten and typed texts. Overall, findings showed that children composed longer and higher-quality texts via paper and pencil than via keyboard. Results further indicated that children preferred writing stories using a computer, but they found they were better at writing using paper and pencil. Finally, teachers reported that children spent 80 minutes on average in writing activities in their classrooms each week, with results indicating that the teaching of spelling was prioritised over handwriting and typing. Implications for research and practice will be discussed.

Extended Summary

In the last two decades, the digital revolution brought changes to literacy learning and instruction, and in many classrooms across the globe students are expected to comprehend and produce handwritten and computer-generated texts as early as in kindergarten (Mangen & Balsvik,

2016). In Australia, keyboarding has been replacing handwriting in high-stakes testing, with children's literacy skills being assessed via keyboard as early as in Year 3 (ACARA, 2018). Little is known, however, about children's abilities, self-efficacy and engagement in writing by hand and by keyboard, and research investigating teaching practices to support the development of these transcription skills in Australian primary schools is scarce (Malpique et al., 2020).

Considering the continuing digital revolution in education and learning and the strong body of research showing that transcription skills, such as handwriting and keyboarding, play a fundamental role in effective writing development (see Kent & Wanzek, 2016 for a review), we developed the *Writing for All* project to investigate Year 2 students' abilities, motivation, engagement and self-efficacy in composing stories via handwriting and keyboarding. Thus, in addition to quantitative data collection, the project involves capturing children's voices and perspectives as key informants on their writing practice. Finally, and capitalising on the tenet that writing is shaped and constrained by context (Graham, 2019), classroom-level factors potentially promoting the development of handwriting and keyboarding abilities are also examined.

The current study describes findings from the pilot phase of the project involving 49 children ($M_{age} = 7.19$, $SD = 3.93$; 51% female) recruited at the end of Year 2 and enrolled in three primary classrooms from two primary schools in Western Australia. We addressed the following main questions: (1) Do handwriting and keyboarding differ on their contributions to Year 2's writing performance?; (2) What is Year 2 students' motivation, engagement and self-efficacy toward handwriting and keyboarding?; 3) What writing instruction may Year 2 children experience at the end of Year 2? Handwriting and typing outcomes were assessed (i.e., letter writing automaticity; writing quality; text length; and spelling) as well as children's motivation, self-efficacy and engagement in writing via paper and pencil and via keyboard. Finally, Year 2 teachers (4 female teachers) were surveyed on the amount and type of writing instruction provided.

Findings from this pilot study confirm and extend previous studies by showing how handwriting and keyboarding automaticity are related to the writing performance of Year 2 students. Results showed statistically significant associations between children's handwriting performance and keyboarding performance, indicating that children composed longer and higher-quality texts via paper

and pencil than via keyboard, $t(47) = 9.66, p < .001$ and $t(47) = 9.28, p < .001$, respectively. Current results further showed that the quality and the length of children's handwritten texts was associated with children's ability to automatically and accurately write alphabet letters. These results support a developmental theory of writing (Berninger & Swanson, 1994), in which transcription skills are described as foundational skills for effective writing development. We also found a statistically significant difference between genders in the quality of handwritten texts favouring girls, suggesting that girls were able to write higher-quality handwritten texts when compared to boys, $t(46) = -2.56, p < .05$. Results further suggested that boys wrote longer texts by keyboard than girls, but that girls produce higher quality texts via keyboard than boys. Moreover, we asked children to complete a survey assessing their engagement and self-efficacy in writing by hand and by keyboard. Findings suggested that children engaged in both handwriting and keyboarding equally. Results further indicated that children preferred writing stories using a computer, but they found they were better at writing using paper and pencil.

Finally, we asked Year 2 teachers to complete a survey assessing the amount and type of writing instruction (i.e., teaching basic skills and teaching writing processes) and amount of writing practice in their classrooms. The average time spent in writing-related activities across classrooms was 80 min ($SD = 23.09$) per week. Teachers also seem to prioritise the teaching of spelling ($M = 115.00$ minutes per week, $SD = 30.00$) over handwriting ($M = 45.00$ minutes per week, $SD = 57.45$), spending only about 11 minutes per week teaching keyboarding.

The importance of preparing students to become "hybrid" writers and able to master both handwritten and keyboarding modes is highlighted internationally (e.g., Beers et al., 2017). We will discuss findings from this pilot study, which provide preliminary evidence indicative of Year 2 children's handwriting and keyboarding abilities, self-efficacy and engagement in Australian classrooms.

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