

Introduction

- School-aged children across grade levels perform below proficiency on written assessments (National Center for Educational Statistics, 2012).
- To further exacerbate students' inadequate writing skills, Common Core State Standards (CCSS; 2018) now require students to proficiently use technology when writing compositions.
- Based on theory (Berninger et al., 2002), research (White et al., 2015), and previous suggestions (Balajthy, 1988), it is apparent that younger students and students with limited typing skills are at a disadvantage when their writing is evaluated using a computer-based format.

Purpose

- Researchers aim to describe two studies that examined the impact of technology use on student writing outcomes.
- Study 1 examined differences between students' handwritten and typed story production in a rural population.
- Study 2 extended findings to a suburban population and investigated the impact of typing speed on story quality.

Methods

Study 1

- **Participants:** 96 third- through fifth-grade students from a southern, rural elementary school.
- Participants completed a handwritten and typed curriculum-based measure (CBM) – both prompts were obtained from Aimsweb. Students were then given one minute to plan and five minutes to type or write.

Study 2

- **Participants:** 134 fourth- through seventh-grade students from a southern, suburban elementary school.
- Participants completed a writing CBM to type (1-min to plan and 5-min to type), a writing CBM to handwrite (1-min to plan and 5-min to type) and a 1-min typing test.

References

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The Impact of Typing Skills on Student Writing Performance

J. Brooke Killion, B.A., Jessica Kotik, B.S., Stephanie Daniels, M.S., & Merilee McCurdy, Ph.D.

University of Tennessee at Knoxville

Results

Study 1

- A within-subjects design was used to examine differences between typed and handwritten writing performance. Students produced significantly more words on the handwritten CBM ($M=38$) than on the typed CBM ($M=32$).

Study 2

- Results indicated that participants had significantly higher writing quality on the typed CBM ($M=76$) than on the handwritten CBM ($M=55$), $t(126) = -7.23, p < .001$.
- Examination of the relationship between typing speed and typed writing quality revealed a strong positive relationship, $r(122) = .75, p < .001$. Thus, a regression model was created; when controlling for grade level and writing ability, typing speed significantly predicted typed writing quality, $F(3,117) = 106.28, p < .001, r = .86, r^2 = .73$. Typing speed, grade level, and writing ability accounted for 73% of the variance in typed story quality.

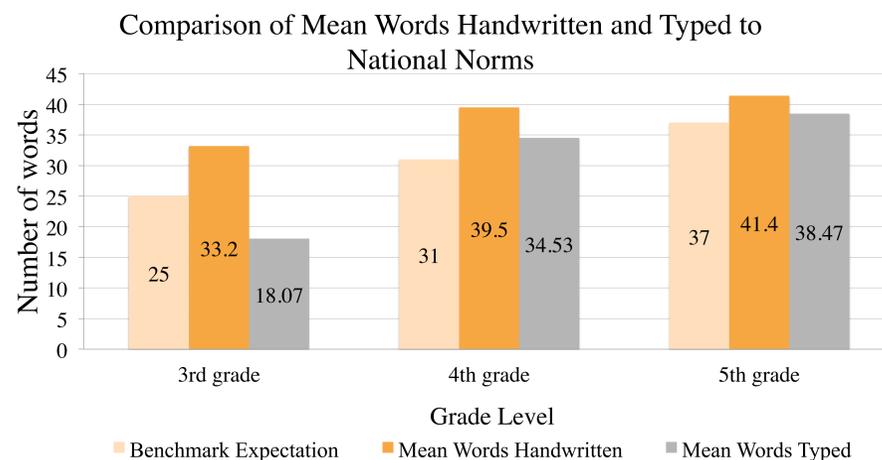


Figure 1. Comparison of Mean Words Handwritten and Typed to National Norms. Results from Study 1 indicate that students handwrote significantly more words than they typed.
Note: Benchmark expectation from AIMS web national writing norms.

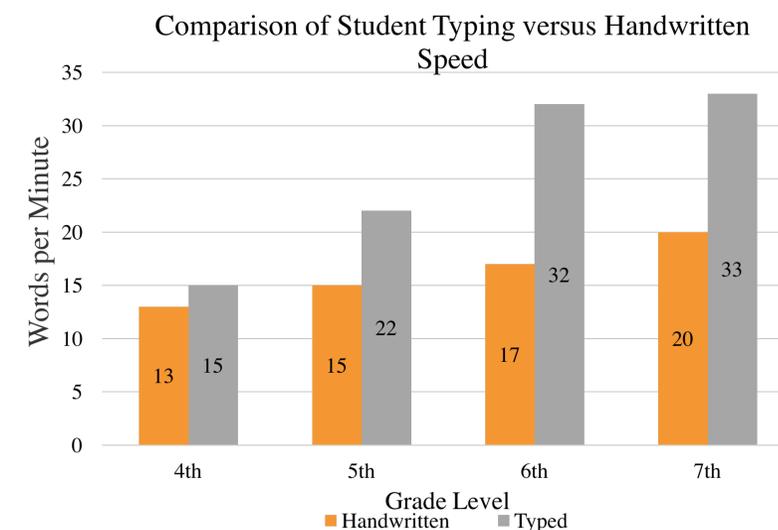


Figure 2. Comparison of Student Typing versus Handwritten Speed. Results from Study 2 indicated that on average, students' typing speed (WPM) was greater than previous reports of handwriting speed

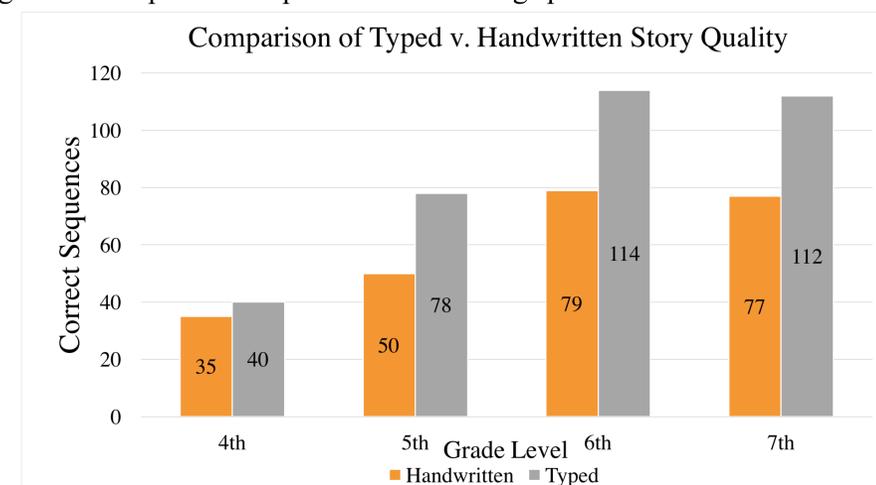


Figure 3. Comparison of Typed v. Handwritten Story Quality. Results from Study 2 indicated that on average, students across grade levels had higher quality typed stories than handwritten stories.

Discussion

- Results indicate a difference between handwritten and typed story quality. Differences emerged by grade level and school location.
- Results from Study 1 suggest that some students may not be able to demonstrate their writing ability in a computer-based format.
- Results from Study 2 reveal that typing speed significantly predicts typed story quality.
- Results may provide teachers and policy-makers with important information about the appropriateness of using computer-based assessments to assess elementary school students' writing skills.
- The use of technology and computer-based assessments in the area of writing may be further exacerbating young students' already inadequate writing skills by requiring keyboarding for compositions

Future Directions

- Interventions to improve typing speed are needed in order to allow students' to convey their writing quality through the use of technology.
- Further investigation into the differences in technology use abilities in students from rural versus urban areas