

EXAMINING THE RELATIONSHIP BETWEEN READING COMPREHENSION AND
KEYBOARDING ABILITY

by

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Abstract

In order to help children reach the optimum skill level in typing, this study will examine the relationship between reading skill level and keyboarding abilities of children in kindergarten through second grade. There is a gap in the existing research on the topic of the specific relationship between reading comprehension abilities and keyboarding skill level. Therefore, the results that are found through this study will be imperative to improving and expanding this area of research. In the findings of this research, the interpretation of the kindergarten score's correlation is negligible, possibly due to the small range of the typing test scores. Overall, the second grade results had the strongest correlation between reading comprehension abilities and keyboarding skill level, particularly among the average students. The variance in number of participants for each subgroup of the first and second grade levels possibly impacted the analysis of the data. Though there appears to be a possible relationship between the reading comprehension abilities of the students and their keyboarding skill levels, the correlation is so small and inconsistent across all three age groups that we cannot confidently predict that keyboarding skills are based on reading level.

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Introduction

When students are learning how to type on a computer, they are given passages of writing to transcribe. However, if the reading level of those passage is above what the child can comprehend, it might negatively affect the child's keyboarding abilities. In order to help children, both in the education system and in therapeutic settings, reach the optimum skill level in typing, this study examined the relationship between reading skill level and keyboarding abilities of children in kindergarten through second grade.

Background

There is a gap in the research on the topic of the relationship between reading skill level and keyboarding abilities. Though the existing research does examine related topics to keyboarding and reading, they do not specifically explore the relationship between reading comprehension abilities and typing skill level. A study examining this relationship does not exist. Therefore, the results that are found through this study will be imperative to improving and expanding this area of research.

One study assessed how graduate and undergraduate students from a university in Canada who spoke two languages may struggle with typing in their second language, which was English (Khaled, 2014). This study was the closest research to what our study will be examining. It was conceived under the notion that keyboarding skills may be affected if the test-taker must spend extra energy and time figuring out what they are trying to say and how to say it in a language that does not come naturally to them. The study found that the participant's ability to understand and write in English drastically affected their keyboarding skills and test scores.

Another study was conducted to examine the scores of middle school writing assessments and their relationship with keyboarding abilities (Parker, 2016). Instead of looking at reading comprehension, this study examined how keyboarding abilities affected writing skill. Other studies have been done to examine the most effective way to teach children keyboarding skills, but these studies did not examine the words, letter combinations, and passages that were given to the children to teach them (Blazek, 2015).

Further analysis of the existing research produced studies that examined loosely related topics, such as handwriting versus keyboarding (Bisschop, Morales, Gil, & Jiménez-Suárez, 2016) and ability to comprehend material when thinking aloud versus typing (Muñoz, Magliano, Sheridan, & McNamara, 2006). In the study conducted by Bisschop, Morales, Gil, and Jiménez-Suárez, the keyboarding skill of 1,333 children in grades one through three were assessed in relationship to their spelling and handwriting abilities. The study found that the difficulties of children who had poor handwriting skills were alleviated by using a keyboard, showing that keyboarding can be a great alternative, especially in therapeutic and educational settings, and

that children who have difficulties with spelling performed below average in the typing assessment.

Purpose of the Study

In order to help children, both in the education system and in therapeutic settings, reach the optimum skill level in keyboarding, this study will examine the relationship between reading skill level and keyboarding abilities of students in kindergarten through second grade.

This research can be utilized by occupational therapists and educators who may encounter children who are diagnosed with disabilities. Knowing whether or not their reading skill level impacts their typing abilities is imperative to giving these children the correct tools and treatment that they need in order to succeed.

Research Hypothesis

The keyboarding skill level of a student is directly related to reading ability when asked to copy an existing passage. Therefore, students with lower reading abilities are more likely to have lower keyboarding abilities and children with higher reading abilities are more likely to have higher keyboarding abilities.

Methodology

Instruments

There were three key instruments used in this study to measure outcomes: the Typing Test Pro, STAR Early Literacy assessment and STAR Reading assessment. The Typing Test Pro (TTP) measured keyboarding speed and accuracy by having students type a passage written at a first-grade reading level for sixty seconds (TypingMaster, Inc., 2018). The TTP score was calculated in net words per minute (WPM), which is the number of correct words the student typed per minute.

The STAR Early Literacy and STAR Reading assessments are the standard reading measures used by the school (Renaissance Learning, Inc., 2018). Each student completed only one of these assessments, according to their grade level. The STAR Early Literacy assessment was administered to all of the kindergarten students, and the STAR Reading assessment was administered to all of the first and second grade students. The teachers administered these assessments in their typical manner as determined by the school administration. With these assessments, the students answer questions in different content areas. A scaled score was then

used to measure the results. To make the scores comparable, each question was scaled according to its difficulty and then the final score was compiled based on the number of questions and their respective difficulties.

Participants

The data that was used to achieve this study's purpose included the standardized reading test scores from...and keyboarding net WPM from Typing Test Pro of 421 children in kindergarten through second grade, collected on all students in these grades from one lower elementary school in rural Mississippi.

Data Analysis

Outcome data was entered into SPSS version 24 file that also included demographics, grade levels, and classroom assignments of the students. A Pearson correlation coefficient was calculated between TTP net WPM and reading test scaled scores to analyze the data. Data was also coded by achievement level according to reading assessment and sorted into below average, average, and above average levels to visually compare differences between groups.

Procedure

This study examined the relationship between students' standardized reading scores (STAR Early Literacy for kindergarten and STAR Reading for first and second grade) and their keyboarding skills (as measured in correct words per minute) to determine whether or not there is a relationship between the student's reading level and keyboarding ability.

TTP was administered by occupational therapy faculty and researchers as part of a larger study the week of May 8-12, 2017. Students completed the TTP in a large group setting by class with help of researchers, assistants, and teachers to progress through the TTP correctly. STAR Reading assessments were administered by school teachers approximately the same time of year. The Kindergarten tests were administered April 10-13 of 2017. The first and second grade tests were administered May 1-10 of 2017.

Results

Demographics

The ratio of boys to girls was approximately 1:1 across all three grade levels. The majority of the participants were White, the largest minority was Black, and the smallest minority was American Indian. The majority of students did not receive Special Education. Refer to Table 1 for more detailed demographic data.

Results

Refer to Table 3 and Figure 1 to see the correlation between the reading scaled scores and the net WPM. As the range of scores for the net WPM increased, figures 4, 5, and 6 further indicated that there might be a possible correlation between the reading scaled scores and the net WPM. The second-grade scores, with the widest range of typing scores, had two low positive correlations.

Discussion

The interpretation of the kindergarten score's correlation is negligible, possibly due to the small range of the typing test scores. Overall, the second-grade results had the strongest correlation, and the strongest correlation within the second graders was with the average students. The variance in number of participants for each subgroup of the first and second grade levels could have an impact on the analysis of the data. Though there appears to be a possible relationship between the reading level of the students and their keyboarding abilities, the correlation is so small and inconsistent across all three age groups that we cannot predict that keyboarding skills are based on reading level. Therefore, our hypothesis that the keyboarding skill level of a student is directly related to reading ability when asked to cope an existing passage was not clearly proven to be true.

As the age of the students tested increased, the range of the results for the typing test also increased. We believe that this is because as the children grow older, their typing skills improve, and therefore offer the opportunity for a wider variety of results. This variety allows for the children's reading score results to be spread out more, making it possible to more clearly see the possible relationship between reading comprehension and typing abilities.

Limitations

The range of the net WPM scores limited the possibility of analyzing the correlation between the reading comprehension and net WPM scores. These tests were also only conducted with children in Kindergarten through the second grade. We believe that if the tests were conducted with children through the fifth grade, we might have a better idea of the relationship between the two values.

Significance to Occupational Therapy

This research can be utilized by occupational therapists who may encounter children who are diagnosed with disabilities. Knowing whether or not their reading skill level impacts their typing abilities is imperative to giving these children the correct tools and treatment that they need in order to succeed.

Typing has become an alternative to writing. Many pediatric occupational therapy patients experience difficulties with handwriting. Therefore, typing can serve as an alternative for them when they to do work in school until they have the ability to write properly and efficiently.

It is also possible that children are being referred to occupational therapists because of poor school work and test scores, when the issue is actually with the functionality of computer-based assignments and examinations. If there is a correlation between reading ability and typing skills, children with poor reading comprehension may struggle with computer-based exams and not have a need for occupational therapy.

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Appendix

Table 1

Demographic Information of Participants

Grade Level	Gender		Ethnicity					Special Education	
	Boy n (%)	Girl n (%)	White n (%)	Black n (%)	Hispanic n (%)	Asian n (%)	American Indian n (%)	Yes n (%)	No n (%)
Kindergarten	78 (52.0)	72 (48.0)	112 (74.4)	18 (12.0)	3 (2.0)	5 (3.3)	0 (0.0)	26 (17.3)	112 (74.7)
First	73 (48.0)	77 (50.7)	114 (75.0)	16 (10.5)	4 (2.6)	8 (5.3)	1 (0.7)	30 (19.7)	113 (74.3)
Second	90 (56.6)	67 (42.1)	104 (65.4)	19 (11.9)	9 (5.7)	10 (6.3)	0 (0.0)	18 (11.3)	122 (76.7)

Table 2

Distribution of Scores by Grade

Grade Level	Reading Scaled Score					Net Words Per Minute				
	N	Min	Max	Mean	Std. Dev.	N	Min	Max	Mean	Std. Dev.
Kindergarten	150	401	884	719.29	100.040	146	0	2	.40	.506
First	152	65	669	309.25	127.570	149	0	15	2.02	2.081
Second	159	87	1041	458.60	173.875	155	0	19	3.90	2.958

Table 3

Correlation Between Reading Scaled Score and Net Words Per Minute

Grade Level	N	Pearson Correlation	Significance	Interpretation
Kindergarten	146	.300	.000	Low Positive
Emergent	45	.008	.956	Negligible
Transitional	49	.152	.296	Negligible
Probable	52	.162	.250	Negligible
First	149	.213	.009	Negligible
Below Average	7	-.236	.611	Negligible
Average	38	.165	.323	Negligible
Above Average	104	.089	.371	Negligible
Second	155	.351	.000	Low Positive
Below Average	13	.064	.835	Negligible
Average	53	.301	.028	Low Positive
Above Average	89	.263	.013	Negligible

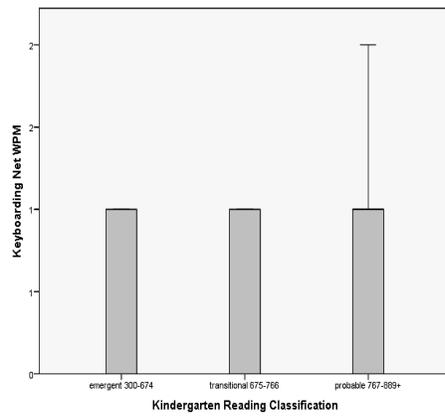


Figure 1. Kindergarten typing net words per minute grouped by reading level.

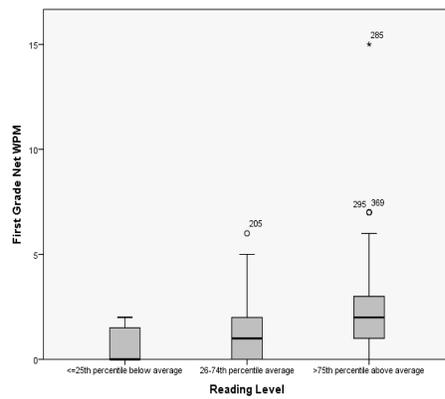


Figure 2. First grade typing net words per minute grouped by reading level.

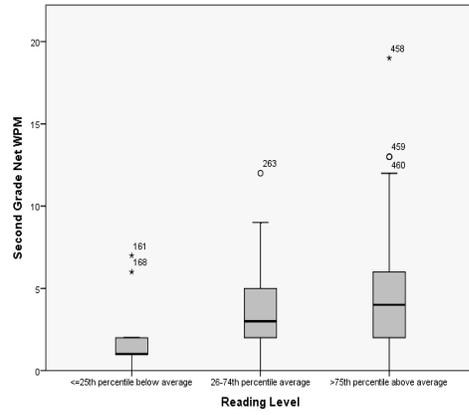


Figure 3. Second grade typing net words per minute grouped by reading level.