TYPING AS A PRACTICAL LIFE SKILL TO IMPROVE WRITING EFFICACY IN THE SECONDARY MONTESSORI CLASSROOM

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Abstract

In a world where typing is still the main form of electronic communication, students at an urban Montessori public middle school do not receive formal typing training. This study was designed to examine the effects of online typing classes as a practical life exercise in the Montessori secondary classroom on writing quality, quantity, and self-efficacy. First the students took a survey to determine their behavior toward writing and their typing speed in Words per Minute (WPM). Then they signed up for an online typing course through which the action researcher could analyze each student's progress. Students were able to practice their typing skills as one of their choices during the work cycle. After 4 weeks, the researcher administered another survey to determine changes in WPM and attitudes toward writing and typing. Results showed that most students improved their writing quantity and displayed positive writing behaviors because of their gained knowledge on the keyboard. Additionally, students who struggled to work without the help or supervision of a teacher showed growth toward independent learning.

Introduction

In our current world today, the ability to use technology is the key to success. One common tool associated with technology is the keyboard. Although keyboards have been in use for almost 150 years, with first the typewriter and then the computer keyboard, the skill of typing is not obsolete. Knowledge of the keyboard and typing is the main source for entering information into a computer, whether one uses a keyboard for their job or for personal use. Therefore, knowing how to type successfully is important in a person's

ability to communicate, both professionally and socially.

Because of the assumption that computers and keyboards are an integral part of the modern world, many schools have eliminated the keyboarding curriculum. Although typing is a skill that is necessary for school, future careers, and socializing, educators cannot assume that students are learning this skill formally at home. Many students lack the ability to communicate effectively or efficiently through typing. This neglected skill would greatly aid in their success in high school, college, and career choice.

As a Montessori educator, I take issue with the assumption that typing should not be taught. According to Montessori philosophy, educators are to help students become proficient operators of integral societal tools. Particularly in the adolescent stage, educators need to teach students how to use tools and practical life skills to navigate the adult world--college, careers, and personal life. The skills that they develop and establish now as teenagers will help them become successful adults.

Because my school does not currently offer a technology course or certified instructor, I thought it would be valuable to examine how teaching formal typing technique on a traditional QWERTY keyboard affects the quality and quantity of writing a student produces. I also wanted to examine the idea that teaching typing as a practical life exercise in the secondary Montessori classroom would foster independence. My hope is that through implementation of formal typing skills in the classroom, students will improve their writing and achieve valorization.

Review of Literature

Adolescents in Montessori

Although Maria Montessori did not give specific curriculum for her adolescent program, she did outline the outcomes of students' education in her "Erdkinder Essay" (2007). According to Montessori, adolescents should achieve "valorization" or a sense of success in their lives by their own efforts and on their own merits (2007, p. 64). Montessori believed achieving valorization is crucial because it gives students confidence to act independently and prepares them to be contributing individuals within society. She also expressed the need for students to have knowledge in a broad range of intellectual and kinesthetic exercises, for "Men with hands and no head, and men with head and no hands are equally out of place in the modern community" (Montessori, 2007, p. 61).

Despite that the "Erdkinder Essay" was written in 1948, secondary Montessori schools continue to attempt to emulate Montessori's vision as best as possible. Educator and administrator Betsy Coe believes that adolescent students should be provided with a special environment that fits the needs of the developing young person (Coe, 2003). In her article "Creating Optimal Environments for Adolescents" (2003), Coe states "that there is a volatile mismatch between the psychological and intellectual needs of the adolescence and the curriculum and structures of schools today" (p. 31). Coe believes that in order to meet the needs of adolescents, Montessori schools should provide curriculum that encourages the valorization of the personality in order to best prepare adolescents for the future (2003). One crucial element of Montessori pedagogy across all levels, infant/toddler through adolescence, is that of practical life. Being able to successfully and independently

attend to the essentials of one's life is indeed, a necessary part of becoming valorized.

Practical Life

Within the list of Key Elements of a Montessori Secondary Program, Coe states that practical life skills are an essential element (2003). Practical life in the elementary years and practical life in the middle school years look very different, yet both have the same purpose—to help the child become independent and prepare students to fine-tune skills and tasks they may need for successful achievement in adulthood.

Joen Betteman (2015) states that in the early childhood and elementary school years, children have the opportunity through practical life exercises to love the environment, develop coordination of movement, develop the will, develop concentration, complete a task, and indirectly prepare for later academic work. These skills help the student "direct the body to perform actions with control" (Betteman, 2015, p. 66) and let them "have a pattern so much in one's repertoire that it becomes a way of living" (p. 67). By participating in practical life exercises, students develop as individuals and independent people.

In the middle school years, practical life exercises should continue to support an adolescent's drive towards independence. However, the tasks are not the same as they were in early childhood and elementary school. Michelle Willard (2003) writes that "the middle school years, in particular, offer so much opportunity for preparing our children to handle the everyday tasks they are capable of doing and will need to hone as they approach adulthood" (p. 37). She discusses in depth how skills for job readiness and respectful

communication are crucial skills to learn, as students often "don't realize they are lacking any of the job readiness a potential employer will expect of them" (Willard, 2003, p. 37). As younger children's practical life exercises helped them become independent functioning human beings, middle school practical life exercises help adolescents become independent functioning adults in society.

Career Readiness

While job readiness is a significant component to practical life exercises in the middle school, Chattin-McNichols (2013) identifies a problem that young people struggle to understand: the concept of work. Presently, young people do not know what adults do at work, as the society has completely separated work of the hands from work of the head, and most jobs now are work of the head (Chattin-McNichols, 2013). Chattin-McNichols (2013) suggests forces have changed society's attitudes toward work, such as "media portrayal of work; the society's devaluing of handwork; the difficulty of explaining our complex, sometimes abstract jobs to children; and the disconnect between what we are evolved to do and what constitutes work now" (p. 20). He sees practical life exercises as pivotal in the development of a young person's understanding of work and their positive work behaviors.

In order to prepare our students for a successful understanding of and preparation for these modern-day jobs, Csikszentmihalyi, Schneider, Shernoff, & Hoogstra (2001) conducted a study in which they tried to determine how teenagers develop attitudes and learn skills necessary to the world of work and what factors best prepare students for the

world of work. They found that learning-by-doing is the most effective way to provide work experiences for young people that are positive and relevant (Csikszentmihalyi et. al., 2001). The positive, engaging work experience can also transform into future careers, promote real learning, realize true self-esteem, and acquire skills pertinent to the job (Csikszentmihalyi et. al., 2001).

Typing and Keyboarding

In the modern adolescent Montessori middle school, it is crucial that students begin to learn skills that will prepare them for future work as adults. In our current world, the understanding and application of technology is a critical skill that students must learn how to use efficiently and effectively. In the classroom, one way teachers expose their students to technology is through writing and typing. In 2007, Sternberg, Kaplan, and Borck noted that typing through a word processor allows students "to be more efficient, organized, accurate, and thoughtful in their writing" (p. 418). Additionally, they argue that "these tools only increase students' written language skills" (Sternberg et. al., 2007, p. 418).

Over twenty years ago, Muldrow spoke positively about her own experience implementing computers with word processors in her ninth grade classroom (1986). She found that word processing helped students communicate more efficiently, develop more positive and sophisticated writing behaviors, and mainstream struggling writers. She said, "Students moved from a segmented, heavily sequenced view of writing toward a holistic understanding" (Muldrow, 1986, p. 84). The word processor allowed students to work efficiently and receive meaningful feedback in a timely manner. Muldrow gave an example

of a student who had many organizational issues that made writing unbearable for him. With the word processor, he was able to have access to "a conveniently organized journal, easy manipulation of his resources, and the ability to publish in style," which motivated him to write more and express himself clearly (Muldrow, 1986, p. 84).

Computer-based word processing also helped writing behaviors through the editing software, as software would catch writer errors in grammar, spelling, and punctuation. Muldrow stated that "The printed format made students more conscious of spelling errors, and the search capability of the processor encouraged attention to correction" (1986, p. 85).

Presently, many schools have moved to 1:1 iPads rather than sending students to a computer lab to gain experience with technology. Wickramasinghe (2016) found that integrating iPads in the classroom has significantly improved engagement and motivation in the Montessori classroom (Wickramasinghe, 2016). He found 1:1 iPad technology was able to meet more students' needs and interests, leading him to believe that the iPad will make a lasting impact in classroom learning (Wickramasinghe, 2016).

Maich and Hall (2016) also speak to the benefits of including iPads in the classroom. They conclude that teachers can use iPads as practical supports within inclusive classroom settings (Maich & Hall, 2016). They also recommend to educators that "Teaching keyboarding skills may be a necessity," because even though iPads have a virtual QWERTY keyboard, "they differ in sensory 'feel' and may take some adaptation" (Maich & Hall, 2016, 148).

Despite the currently published literature that claims typing is a necessity and word

processors help students, there is research that warns about teaching typing over handwriting. Mangen and Balsvik (2016) compare the benefits in using pen as opposed to keyboard in early writing instruction for young children, and they describe how each approach impacts a young learner's embodied cognition such as bodily movement and motor activities. They argue that handwriting is more effective for learning letters of a variety of fonts and sizes, sounds, and sound combinations; thus keyboarding skills should wait at least until after children have a foundation of reading and writing skills (Mangen & Balsvik, 2016).

Conclusion of Literature Review

The art of handwriting is what Montessori regards as the most important way students learn to read and write. Because of Montessori's method of teaching handwriting, students connect phonetics and phonemic awareness through the work of the hand. Although typing is certainly connected with literacy, typing demonstrates a different type of work of the hand. Learning to type influences literacy by promoting focus and concentration. Additionally, having adolescents learn to type is developmentally age appropriate. Students at the adolescent level should be preparing for careers. In our technology-filled world, it is important that students posses typing skills. Typing does not render the art of handwriting obsolete. However, adolescents in Montessori programs need tools for the modern society and need the skills to use those tools.

Teaching typing to middle school students is a valuable skill. Because typing is so closely connected to expressing thoughts and ideas, learning to type helps students develop

an effective and efficient way to communicate. The skill of typing is currently required for many jobs and knowing how to type correctly and effectively will help students become college and career ready. The inclusion of typing lessons in a Montessori classroom gives students the opportunity to achieve valorization through working independently, gaining confidence in their abilities, and providing them with a realistic responsibility of adulthood in the twenty-first century.

Research Questions

Research Question

- What are the effects of teaching students how to type QWERTY on writing quality?

Subsidiary Questions

- Does teaching students how to type QWERTY foster positive writing behaviors?
- Does teaching students how to type QWERTY foster positive work behaviors?
- Does teaching typing foster independence in students?

Research Design and Methodology

Participants, Timeline, and Setting

This action research took place at an urban, public Montessori middle school in the upper midwest. The school serves both as a Montessori magnet school for the district as well as the area's community middle school for families who want to send their students to their neighborhood school. Participants ranged from 12 to 14 years of age and were enrolled in seventh or eighth grade. The school's demographics are reported as 1.4%

American Indian, 31.3% Asian American, 31% African American, 13.5% Hispanic American, and 22.8% Caucasian American. Additionally, 23.9% of students use special education services, 77.5% use free and reduced lunch prices, and 31% use English Language Learner services.

Data collected for this action research was collected over a period of 4 weeks. Parent consent forms were distributed and collected prior to data collection. Students were first asked to take a survey prior to accessing any of the typing curriculum. Then students signed up for student accounts on the online typing curriculum site, typing.com, and joined their online classroom with a class code provided by the instructor. After 4 weeks of taking typing lessons at students' own pace, they were asked to reflect on the experience through closing survey.

Materials

This action research utilized three functioning components: QWERTY keyboards, iPads, and internet access. QWERTY is the name of the standard-English keyboard, and it stands for the six keys on the top row of the keyboard when read left to right. At the school in which the research took place, all keyboards were QWERTY keyboards. Students were able to access the QWERTY keyboard through their district-issued iPad, school laptops, or the classroom's desktop computer. Although the iPad has its own touchscreen keyboard, the layout of the onscreen keyboard is not exactly the same as a computer's keyboard. Therefore, the keyboards that students used during this research project were separate tools that hooked into the iPad's charging port. These hook-in keyboards were standard QWERTY keyboards. Access to the internet was crucial to learning how to type, as students

used an online program to learn how to type.

Data Collection Procedure

Students participated in the action research project by first answering an online questionnaire about their knowledge of QWERTY, previous typing experience, and attitudes and beliefs about writing (See Appendix A, *Initial Survey: Beginning Keyboarding*). Students then signed up for a username and password on a website called typing.com, which provides free multi-grade typing curriculum to teachers and students. Students enrolled into the author's online typing.com classroom using a class code provided by the author. Each class period had a corresponding online classroom on typing.com.

Students were able to use their independent worktime to practice typing. Students could choose when they desired to type during worktime. They were limited to 60% of the worktime to spend on typing; thus, a student could not use the entire worktime to practice solely on typing. Curriculum on typing.com is self-paced and leveled. Each level adds more letters on the QWERTY keyboard to learn. Students can move from level to level if they meet 90% accuracy. Students met with the teacher in small groups or individually to account for correct form. After a period of 4 weeks, students were given another online questionnaire to assess their attitudes and behaviors toward writing and typing (See Appendix A, *Keyboarding Post Survey*).

Student data was collected by the author through online forms, handwritten assignments turned in by students, and through the typing.com online teacher account. First, both the pre- and post-questionnaires were distributed through Google Forms. The

information was then recorded automatically onto a Google Spreadsheet. The initial Words Per Minute (WPM) score was calculated by taking the word count of the paragraph students wrote in the first survey and dividing it by 5, as students were to write as much as they could for 5 minutes. Additionally, for some students, the online questionnaires were unavailable on the days of distribution; thus, these students hand wrote their answers using a paper copy of the online questionnaire. Finally, the online course collects and tracks student progress. The researcher was able to search and monitor class by class how frequently and proficiently students engaged in the keyboarding lessons. The final WPM score was available to the researcher using the "Beginner Review 1" test score on typing.com. The researcher also wrote personal observations and notes about student progress (See Appendix C, *Teacher Observations*).

Data Analysis Procedures

After conducting the surveys and implementing the typing course with all students, the researcher pulled a random selection of participants from each class to examine the effects of the typing course more closely. The researcher examined the data and first selected participants that had 1) participated in the first survey--*Initial Survey: Beginning Keyboarding*, 2) completed 100% of the first 5 lessons on typing.com (used beginner review score), and 3) participated in the final survey--*Keyboarding Post Survey*. Each eligible student was assigned a number, and numbers were randomly selected using a random drawing application on the computer. A total of 30 students were selected. Students were then organized by the change in Word Per Minute (WPM) scores. The

change in WPM scores was calculated by subtracting the *Initial Survey: Beginning Keyboarding* WPM score from the final WPM score of typing.com's Beginner Review. The researcher then organized the participants into 3 groups--No Change (negative WPM score), Low Change (single-digit WPM increase), High Change (double-digit WPM score).

Analysis and Results

The researcher collected data to determine if learning typing on a QWERTY keyboard would improve the quality and quantity of writing by students. She also wanted to see if learning keyboarding would promote positive writing behaviors among students. The researcher collected data through the surveys, online course progress, and personal observations, and through this data. She implemented the *Keyboarding Post Survey* 4 weeks after she had implemented the *Initial Survey: Beginning Keyboarding*. Although she administered the surveys and courses to all students, the following data are from a randomly selected group of 30 out of 65 students who were able to fully complete all components of the project. The results of both surveys were analyzed and graphed using only the data from the randomly selected group of participants.

Figure 1: "Initial Survey--Beginning Keyboarding"--Have you ever learned how to type before in school?

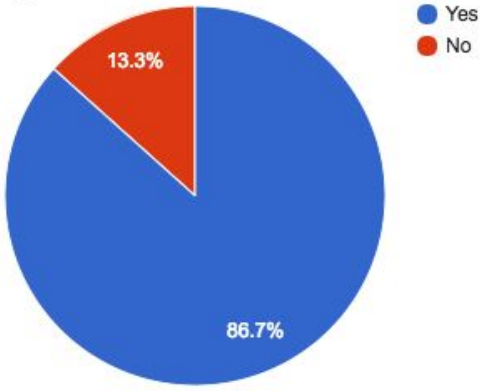
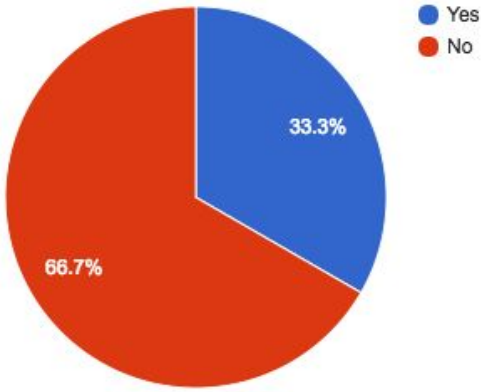


Figure 2: "Initial Survey: Beginning Keyboarding"--Do you know what QWERTY is?

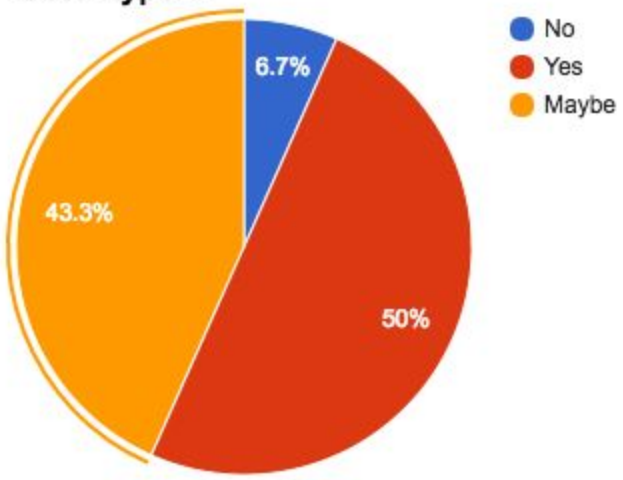


The graphs in Figures 1 and 2 show the prior knowledge of students before taking the typing course. Although 86.7% of students say they have learned typing before in school, Figure 2 shows that only 33.3% actually know what QWERTY keyboarding is. This demonstrates that most students are unfamiliar with the formal vocabulary of typing and

may not have had formal training in this type of keyboarding, even if introduced to a standard QWERTY keyboard in a school setting.

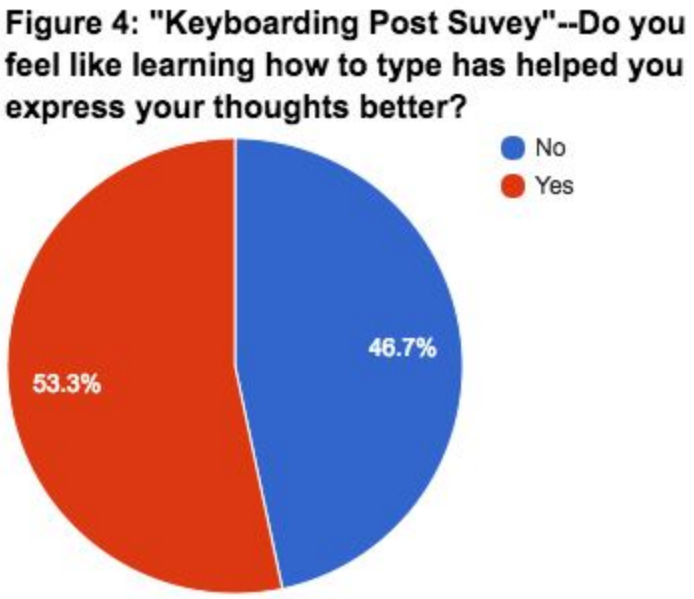
The *Keyboarding Post Survey* was a survey that had opportunities for both quantitative and qualitative data collection. In Figures 3-7, the researcher examined the effects of the keyboarding survey on positive writing and typing behaviors. The researcher connected speed, thought process, and proper technique as indicators of positive writing behavior.

Figure 3: "Keyboarding Post Survey"--Do you feel like learning keyboarding has made you a faster typer?



In Figure 3, 50% of students felt like learning keyboarding made them faster at typing. 43.3% of students felt they were unsure if keyboarding made them faster typers, and 6.7% of students felt that the keyboarding lessons had no effect on their typing speed. Appendix A gives students' explanations of answers for the *Keyboarding Post Survey*. Students' comments regarding acquired keyboarding speed skills generally reflected a

positive change in their typing speed because of the use of typing.com curriculum. Even though a few students who were unsure of the increase of speed in their typing skills mentioned that learning proper technique has slowed them down a bit, they also mention in the comments that they see a little improvement. The only negative comments came from 2 students, who said that learning the typing has made them slower, and 1 of the 2 said that she "type[s] 10x faster the way I do."

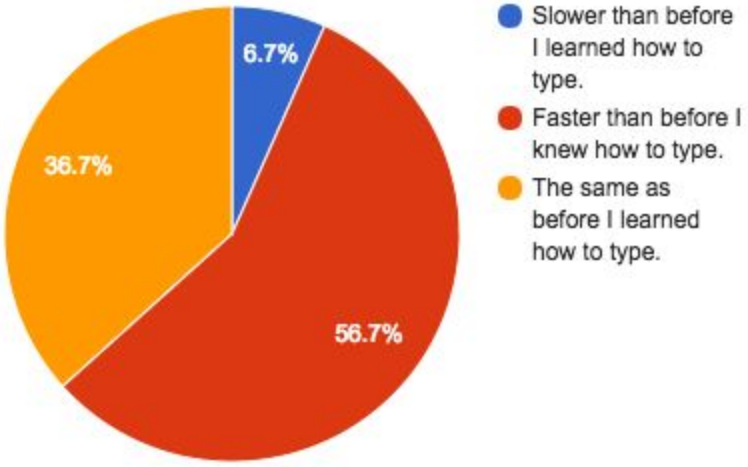


In Figure 4, the number of students who felt that learning how to type helped them express their thoughts better was split with 53.3% who said it helped, and 46.7% who said it did not help them. Of those students who said yes, many felt that speed of typing helped them express their thoughts better. One student said, "I think yes because it could help me type in a faster paste [sic] and when I type and write in a faster paste [sic] it makes more

thoughts come in." Another student who believed typing helped express thoughts better said, "I type a lot faster now when I try to explain things."

Many students who said that learning how to type did not help them express their thoughts better did not see how learning typing and expressing ideas are connected. Students' negative comments included, "Because learning how to type didn't affect my thoughts," "What does typing have to do with expressing feelings," and "No not really because it's only typing not writing." Another student even mentioned that learning how to type impeded her thought process "Because IM TOO BUSY FOCUSING ON WHERE TO PLACE MY FINGERS AND USING THE CORRECT FINGER TO TYPE WHEN I COULD BE THINKING ABOUT WHAT I WANT TO TYPE ABOUT" [sic].

Figure 5: "Keyboarding Post Survey"--Now I believe that my typing is...

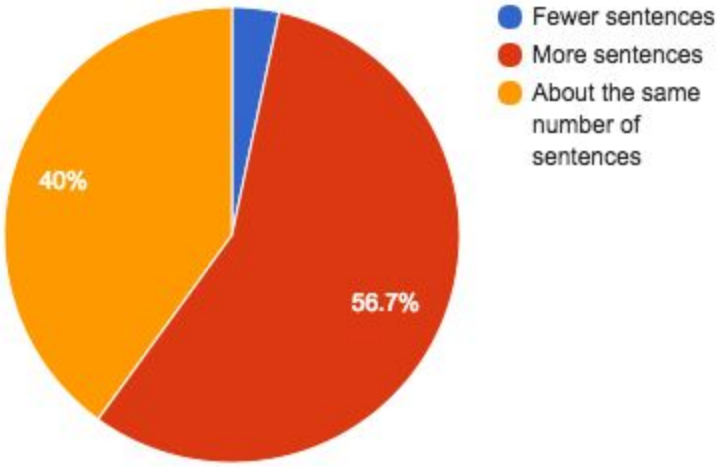


To reiterate, the researcher chose speed in typing as a factor in growing positive writing behaviors. Question 5 of the *Keyboarding Post Survey* assesses students'

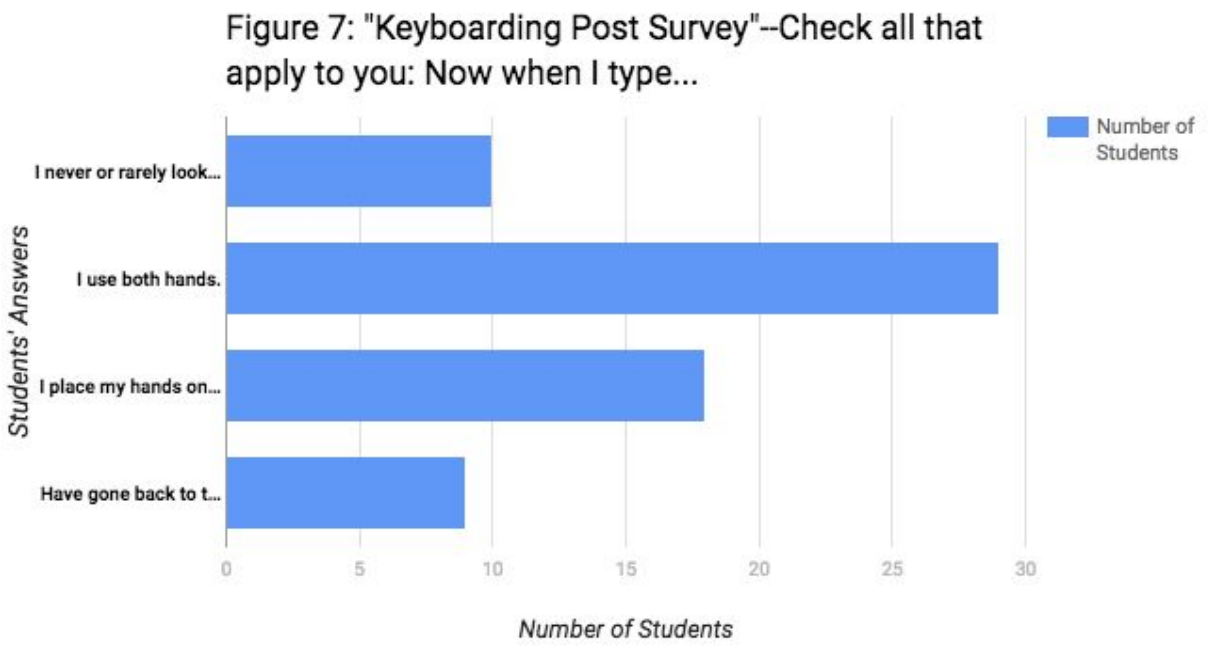
perceptions of their own ability to type words and sentences quickly. In Figure 5, 56.7%, or 17 out of the 30 students, believe that their ability to type quickly was improved by learning typing. 36.7%, or eleven students, believe that their typing speed is the same as before they learned how to type. 6.7%, or two students, believe that their typing speed has decreased since learning how to type formally. Of the students who believed they wrote more sentences, two believed it was because they were able to memorize or identify the keyboard. Two indicated that they just feel faster and know more words.

Of the students who felt they typed about the same speed as before they learned how to type, there seemed to be three different attitudes toward their neutral change in progress. One group of students gave neutral answers--"Not much has changed in the way I type." One group gave almost defeatist answers--"It's helping me but not much." Finally, one group gave optimistic answers--"I'm still slow but I can remember the keys." These attitudes are found in at least 9 out of 11 of the students who answered they feel they typed about the same speed.

Figure 6: "Keyboarding Post Survey"--When I am performing writing tasks using the keyboard, I think I am able to write...



In Figure 6, 96.7% of students believe that they are now able to write more or about the same number of sentences during writing tasks because of the keyboarding lessons. Only one person, or 3.3% of the group, believed that she now wrote fewer sentences during writing tasks because of formal typing techniques learned through the typing curriculum. This data is well-aligned with the data for typing speed in Figure 5, as 56.7% of students felt that they were able to both write more sentences and type faster after learning typing. One student believed that although he felt he was typing slower after learning typing, he still felt he was able to type about the same number of sentences.



The researcher wanted to know if using formal technique in typing would affect students' writing behavior, as the use of formal technique could influence speed and thought process in writing. Figure 7 demonstrates how students have established the techniques of formal typing in their own practice. Students could choose more than one answer. As the researcher examined this set of data, she saw that only 9 students have gone back to the "Hunt and Peck" method, which is technically the slower method of typing. However, she also noticed that many students who "hunt and peck" also said that now they use two hands instead of just one. The items that demonstrated the most growth were the practice of using two hands to type instead of just one and the use of "home row" when typing.

Figure 8: *Randomly Selected Participants' Change in Words Per Minute (WPM) from Initial Survey to Review 1 Score*

Random Student Number	Initial Survey WPM	Beginner's Review 1 WPM Score	Change in WPM
Student 24	31	61.6	-30.6
Student 20	29	47	-18
Student 8	22	37.8	-15.8
Student 11	32	47.2	-15.2
Student 16	22	37.2	-15.2
Student 26	19	33.2	-14.2
Student 4	22	31.6	-9.6
Student 22	24	33.6	-9.6
Student 29	28	36	-8
Student 28	27	30.6	-3.6
Student 9	31	32.4	-1.4
Student 1	32	31.4	0.6
Student 25	31	29.6	1.4
Student 15	30	27.4	2.6
Student 3	26	22.8	3.2
Student 17	33	28.8	4.2
Student 13	16	9.8	6.2
Student 2	27	20	7
Student 7	22	14.6	7.4
Student 12	19	10.8	8.2
Student 19	17	8.4	8.6
Student 23	32	22.2	9.8
Student 30	16	6.2	9.8
Student 21	32	21.4	10.6
Student 18	17	6.2	10.8
Student 10	31	18.4	12.6
Student 6	33	19.6	13.4
Student 27	19	3	16
Student 14	29	12	17
Student 5	24	6.4	17.6

In Figure 8, the researcher charted the initial Words Per Minute (WPM) with the concluding WPM score and calculated the change in WPM score from start to finish. This chart is significantly different from the data of how students perceived their growth and speed in typing. 11 students (36.7%) showed a decrease in WPM score, while 19 of the other students showed an increase in WPM from 0.6 WPM to 17.6 WPM. 12 of the 19 students who increased WPM(40%) showed a single-digit increase, while 7 of the 19 students (23.3%) showed a double-digit increase in WPM. This demonstrates that students' perceptions of their speed and quantity of typing and writing is more positive than their actual speed and quantity.

Interpretations and Discussion

As the researcher and teacher, I hypothesized that students would become better writers and want to write more because of learning how to type properly on keyboards. I hoped that the students would also become more interested in doing work and become independent as learners. A positive relationship was demonstrated between the keyboarding lessons and positive writing behaviors because students showed that they were able to write more and felt confident about how quickly they were writing/typing. A positive relationship also formed between typing and student work behavior, as many students became independent workers through the typing course. Typing also had a positive impact on students who have Special Education or English Language Learner labels.

Changes in Quality of Writing

I initially hypothesized that students writing would improve in quality because of learning QWERTY keyboarding. However, I saw very few gains in regards to this aspect during my period of research. I noticed that errors in spelling, punctuation, and grammar continued to stay about the same. I also noticed that quantity of writing continued to be the same. For example, students who answered homework questions with few details before the typing lessons started maintained brevity in their answers after they had learned typing.

The possible reasons for their unchanging writing quality levels could be twofold: knowledge of punctuation buttons and use of proper typing technique. Firstly, although the students examined in the study had completed the first third of lessons, some of the lessons they had not yet completed had to do with learning punctuation keys on the keyboard. Therefore, it would be difficult for them to know how to use a period or exclamation point or question mark with proper keyboarding technique without practicing it many times through the curriculum provided by the online typing course. Additionally, many of the punctuation keys require the use of the "Shift" key. I observed that over half of the students in total did not use or understand the use of the "Shift" key. They liked to touch the "Caps Lock" key briefly for a capital letter and then untap it to switch back to lowercase.

Secondly, students who used to have a high quality and quantity of writing using improper keyboarding techniques were motivated to use the proper keyboarding techniques. Although this was the point of the study, it did make some students produce

less, because they were focused on doing it correctly. The student who said, "Because IM TOO BUSY FOCUSING ON WHERE TO PLACE MY FINGERS AND USING THE CORRECT FINGER TO TYPE WHEN I COULD BE THINKING ABOUT WHAT I WANT TO TYPE ABOUT" [sic] exemplifies this particular issue, as she concentrated more on technicalities rather than the content of her thoughts when she typed an assignment.

Changes in Positive Writing and Work Behaviors

I found that the greatest gains for students occurred in the area of positive writing and work behaviors. Students' self-efficacy about writing and work grew. In most cases, students believed that they were improving their writing and typing, and their Words Per Minute (WPM) typing scores accurately reflected this mindset. From the randomly selected participant group, 19 students had a positive increase in the WPM score, and 10 out of the 19 responded "Yes" when asked if learning how to type made them faster at typing. I see this as a positive attitude toward writing because students feel as if they can communicate their ideas and thoughts onto the screen as fast as the ideas pop into their mind.

One peculiar thing I noticed was that students' ideas of how well they are performing on the keyboard is stronger than how well they actually did. Of the students who saw a negative change in WPM, 5 out of 11 students said that they felt like faster typers after learning the QWERTY keyboarding technique. Even if their WPM typing scores did not match their feeling of growth, they felt positively about the work they accomplished. The student whose WPM was -8 said he felt like a faster typer because,

"Keyboarding made me type a lot faster and made me use more fingers than just 1-2 fingers." He also said that, "[Keyboarding] helps me clear my head when I'm not in a good mood" when asked if typing helps him express his thoughts better. Despite the fact that the student showed a decrease in quantity of writing, he formed a positive association with typing and work because typing and expressing himself through typing made him feel good.

Another student recognized that learning to type with proper technique on a QWERTY keyboard negatively affected her written quantity and quality. At the end of data collection, this student had a WPM change of -30.6. She came to dislike the typing assignments and did not want to do them because of how it made her feel. This student stated that she "hates typing the way I'm learning it" and that she "type[s] 10x faster the way I do… It's useless… I'll just continue to type the way I do." Because of the typing assignments, she formed negative writing and work behaviors. Her confidence in her abilities to communicate effectively plummeted, and she had the self-awareness to recognize how frustrated typing QWERTY made her feel. She may not have experienced what she had expected from the typing course, but she did recognize what works for her own learning, and that is the more valuable aspect of this whole experience. She was able to move toward valorization by acknowledging a challenge, thinking critically about why it frustrated her, and moving toward a resolution of her issue in a way that works best for her.

Negative Changes in Words Per Minute

Although 19 of the 30 students showed growth in WPM, there were 11 students who showed a negative change in WPM ranging from -30.6 to -1.4. The one student I addressed earlier experienced frustration with improper versus proper typing technique and how although she originally typed improperly, it was the more effective way for her to express her written ideas. As for the other students who experienced this negative change in WPM, there might be another reason why they did not demonstrate growth. 7 out of the 11 students (including the student who hated the course) have the label of "Gifted and Talented." These students usually understand academic material and demonstrate proficiency in state standardized tests. They earn good grades, and at the time of data collection already did not have problems with work ethic or writing or typing. Being academically gifted and talented helped these students in their success at school.

At the time of data collection, many of them thought they already typed quickly using the method they already knew. They had already trained their brains to type and effectively communicate without proper technique. When asked if the typing courses helped them express him or herself better, one student responded, "I've been able to express myself in typing before this class. In writing and typing, so not really." Another student recognized how some but not all aspects of the typing course were beneficial when she said, "I can type fast with just my index fingers but actually using the home keys and stuff has gotten better because of typing.com." For these gifted and talented students, entirely changing the technique in which they type felt unnecessary and possibly even depressing, because they knew they were already competent and capable of writing and

typing before they were introduced to the techniques of QWERTY keyboarding.

Fostering Independence

I hypothesized that this action research project would help foster independence and confidence in students, thus guiding the student toward valorization. Through this project, I noticed an increase in interest and engagement in learning how to type, and an increase in motivation for students to work on daily assignments and practice typing skills as evidenced by student responses to the question "do you feel like learning how to type has helped you express your thoughts better?"

Yes because I don't usually show my feelings so typing makes me express things.

It's more fun than just using a regular paper and pencil.

Practicing typing seemed to help some students cultivate independence in performing other academic tasks and instilled confidence in finding success in typing and writing.

I saw students who never want to work actually attempt something that interested them and motivated them. From my personal observations, there was one particular student who relied on a teacher to prompt him to start working. As he learned keyboarding, he became more engaged in the process of typing and became more interested in academic tasks for which he could use the keyboard to express his ideas. He felt he was learning a skill for the future, and it seemed more relevant to him. One time, he was so engaged in typing that when I asked him to switch to completing an assignment for social studies, he refused at first because he did not want to stop typing. When I told him

he could type out his assignment, he realized the typing did not have to end and that it could help him with the task at hand. He made the connection then that typing really could transfer over to other assignments. He now asks to borrow a keyboard for English class, and his English teacher has noticed an increase in engagement in writing tasks in her class as well.

That student's story is not unique. I noticed that many other students in my class enjoyed practicing a skill that they believed to be useful for the future. Students wanted to learn, and their intrinsic motivation drove them to work on this practical life skill. Students who participated in this action research project understood that this was a skill to help them succeed in writing tasks in high school, college, and their future career.

Benefits for Students with Special Education or English Learner Labels

Students who may be positively impacted greatly by typing lessons are students with Special Education (SPED) or English Language Learner (ELL) labels. In my class, students' disabilities range from specific learning disabilities to ADD/ADHD to emotional behavioral disorders. Additionally, the ELL students' skills range from Level 2 (beginning) to Level 5 (bridging) on the *ACCESS for ELLs* standardized test (*Assessing Comprehension and Communication in English State-to-State for English Language Learners*). In other words, this action research featured a range of ability in academic achievement for SPED and ELL students.

From the randomly selected participants, 12 out of the 19 students who saw an increase in WPM have SPED or ELL labels. Even if students did not have huge jumps in

WPM, they still felt positively toward gaining typing skills. One ELL student said, "I still learning like slow but I'm slowing memorizing the keyboard" [sic]. Especially with continued practice, typing could help increase ELL students' written language skills--a language domain on which they are evaluated through the ACCESS test. Typing lessons as practical life exercises might promote independence in those learners who need extra support in written academic tasks.

Additionally, students were able to get instant feedback through the typing course on which keys they accurately pressed and how many words they were able to accurately type. An ELL student whose score was an increase of 16 WPM felt he had found success in accurate typing because now "I don't really have to look at my my fingers" to type quickly. Through the received instant feedback, students can quickly improve the speed and accuracy of their typing and find success through their own efforts in practicing.

Limitations

Although this action research has provided some preliminary findings, there were a number of limitations to this study. The main shortcoming of the action research was students' consistency in the use of the typing curriculum, which affected the data collection and analysis of the project. First, it was difficult to gain consistency in my social studies class, where students engaged in the typing lessons, because it is only offered every other day. This type of class schedule is atypical for middle school scheduling. Because students were not exposed to this curriculum every day, they found that balancing this practical life exercise with the demands of the learning the social studies content was challenging. One student mentioned in the *Keyboarding Post Survey*, "I only have Ms. Anne every other day

and I have to keep up with the shelfwork." I gathered from her quote that she felt concerned that our class meets only half as much as other classes that meet every day. She wanted to focus on solely the content material rather than balance the content material with the practical life material.

Along the same vein, students could choose to engage in this practical life exercise. Some students who did not engage consistently in the typing curriculum stated that they "were focused on other work" and "needed to complete my school work before I did typing." Despite the fact that the typing project was to be considered a Montessori practical life exercise with equal weight in importance, many students found that the content work for social studies class was more important and chose not to participate in lessons with consistency.

Second, I found inconsistency with the frequency in which students actually signed into the online curriculum course. On typing.com, anyone can participate in the typing curriculum, even if the potential student is not aligned with a teacher's account. In other words, students are able to access the typing.com curriculum without signing in. This aspect caused a great deal of frustration for me because students would often practice typing without signing in. Because they did not sign in, I was not be able to track their progress. When I asked students to go back in and re-do the lessons they had already done, they became frustrated, and once-positive work behaviors turned sour. They did not like to take time, of which we already had very little, repeating lessons they had already shown proficiency in, even though it would be easy to complete them over again. Because of these factors, the data pool from which I randomly selected participants was more limited than I

would have liked.

Finally, with regards to WPM calculations, different pre and post measures were used to calculate student WPM typing scores. This presents a limitation with respect to how students were grouped relative to change in WPM (negative change, low change, high change). For future research, consistent measures to calculate pre and post WPM scores would be useful.

Future Action Plan

I see great potential in cultivating a strong writing/typing curriculum within the social studies curriculum. I think it would be beneficial to continue typing lessons. In the future, I would like to begin typing lessons at the beginning of the school year. I think I will be able to better track progress over a longer period of time, and I will be able to emphasize the importance of practical life exercises along with social studies content.

Another way to improve the typing lessons would be to invest in a more exclusive typing curriculum program, so that students would automatically be tracked to a teacher's account. Also, it would be interesting to have students write an essay at the beginning of the typing project and an essay at the end of the typing project so that the teacher can compare the two and notice areas where students showed growth and development.

Of particular interest to me is how typing instruction might connect with a grassroots micro economy that is beginning to take shape in our school. Students who are part of the school's "Genius Squad"--a technology group that helps students and staff manage and troubleshoot the iPads--offer fee-for-service website creation and content management to teachers. It would be beneficial to provide Genius Squad students typing

instruction alongside an authentic application and hopefully, drive further interest in developing the skill of typing.

Finally, I would like to speak with curriculum directors for my school district to see where and how keyboarding is implemented into the curriculum during primary and secondary years. Next year students will receive new iPads with keyboards attached to the case. Everyone will have access to a keyboard with their iPads at all times. Everyone can do the lessons. I want to know how students are expected to know how to use the newly attached keyboard cases and what teachers can do to help students use the new tool effectively.

Conclusion

I hypothesized that learning formal typing techniques on a QWERTY keyboard would improve the quality and quantity of written work students produced. I hoped that I would see positive writing behaviors and positive attitudes toward work form in students. I also hoped that the implementation of typing as a practical life skill would foster independence in students and encourage the development of valorization in students.

This action research demonstrated a positive relationship between typing and word quantity. Two-thirds of students saw a positive gain in WPM. Additionally, even though some students did not gain WPM by the end of the study, they felt a sense of confidence about their abilities to type quickly and wanted to practice to keep improving. Based on the comments the students made (see Appendix B), I concluded that learning how to type was an overall positive experience for these learners that guided them toward valorization.

I believe that the greatest benefit for students was that this course helped students

understand that formal typing was a tool that enhanced their education. Based on the data, many students thought that it helped them type faster and that these particular skills would actually help them in the future. Additionally, even if students did not find success in WPM or think that the course was useful, they still were able to test out a tool and determine which way was most successful for them to use it. Practical life exercises should help students focus their attention on how to master a particular skill, and how to best refine the skill in a way that works for the individual. Maria Montessori says in her Erdkinder essay that "success in life depends in every case on self-confidence and the knowledge of one's own capacity…" (2007, p. 64) Students who participated in this typing course had the self-confidence to try something that could enhance their learning. By experimenting with tools to enhance one's education, students showed faith in themselves to succeed.

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Appendix A
Initial Survey: Beginning Keyboarding Questions

Initial Survey: Beginning Keyboarding

* Required

Email address *

_____

Have you ever learned how to type before in school? *

- ❑ Yes
- ❑ No

Do you know what QWERTY is? *

- ❑ Yes
- ❑ No

Write as much as you can for 5 minutes. Type in full, complete sentences. Use the prompts to help you expand your answers. I like to write because... When I write, I prefer (keyboard, pencil/paper, other) because... I like to write about... Learning typing will help me because... When I type, I use (number of) fingers because... Typing on the iPad is great because... Typing on the iPad could be improved by... *

_____

_____

_____

Keyboarding Post Survey Questions

Keyboarding Post Survey

Please take a moment to think about your keyboarding course and how it has helped you enhance your skills.

*** Required**

Email address *

_____

Did you consistently participate in the keyboarding lessons and curriculum through typing.com? *

- ❑ **Yes**
- ❑ **No**

If not, why?

_____

Do you feel like learning keyboarding has made you a faster typer? *

- ❑ **Yes**
- ❑ **No**
- ❑ **Maybe**

Explain why or why not. *

_____

Do you feel like learning how to type has helped you express your thoughts better? *

- ❑ **Yes**
- ❑ **No**

Explain why or why not. *

_____

Check all that apply to you: Now when I type... *

- ❑ **I never or rarely look at my fingers/hands.**
- ❑ **I use both hands.**

- ❑ I place my hands on "Home Row," or "ASDF JKL:" keys.
- ❑ Have gone back to the "hunt and peck" method, using just two fingers.

Now I believe that my typing is... *

- ❑ Faster than before I knew how to type.
- ❑ The same as before I learned how to type.
- ❑ Slower than before I learned how to type.

I chose that last answer because... *

_____

When I am performing writing tasks using the keyboard, I think I am able to write... *

- ❑ More sentences
- ❑ About the same number of sentences
- ❑ Fewer sentences

Appendix B
Student Comments from Post Survey

Explanations for Figure 3

Do you feel like learning keyboarding has made you a faster typer?	Explain why or why not.
No	Because I don't like it and I type 10x faster the way I do. And I've been practicing for along time. It's useless. I good. I'll just continue to type the way I do
Yes	I type a lot more sentences.
Maybe	I mean, kinda. Not really, I still type the same way and it's hard to change the way I type. Sometimes I might change it, but it's harder that way.
Maybe	I don't think I'm actively paying attention to if I'm typing after or not. I probably should but I wasn't really paying attention before we started.
Maybe	I was a pretty decent typer in the first place

Yes	I just know
Maybe	I can type fast with just my index fingers but actually using the home keys and stuff has gotten better because of typing.com
Yes	I can type fast now
Yes	Keyboarding made me type a lot faster and made me use more fingers than just 1-2 fingers
Maybe	I have been using it more often, allowing me to get more used to typing.
Yes	Yes because it helped me because I can now write easier without looking at my hands.
Yes	It gives me more practice and more persistent accuracy.
Maybe	Because I wasn't a really fast typer before but now I see a little improvement.
Yes	Learn where and how the keyboard his typed
Yes	I chose yes because, it has made me memorized the key board more and type faster then before.
Yes	Because I'm able to look at the screen and actually type a couple words.
Maybe	It just improves my typing speed.
Maybe	I remember where the keys are but I press the wrong keys sometimes
Yes	Because I got more words
Yes	I still learning like slow but I'm slowing memorizing the keyboard.
Maybe	I said maybe because idk
Maybe	I said maybe, because I was already a fast typed, and I'm not exactly sure if it made me faster.
Maybe	Because I am able to type faster
No	No, because I noticed that I seem a bit slower.
Yes	It made me a faster type because I know how to do it
Maybe	I time a bit faster from time to time.
Yes	I did type faster
Maybe	I said yes becuase I dont really have to look at my my fingers
Yes	Because when you practice something you get better at it
Yes	Because I know where the keys are

Explanations for Figure 4

Do you feel like learning how to type has helped	**Explain why or why not.**

you express your thoughts better?	
No	Because IM TOO BUSY FOCUSING ON WHERE TO PLACE MY FINGERS AND USING THE CORRECT FINGER TO TYPE WHEN I COULD BE THINKING ABOUT WHAT I WANT TO TYPE ABOUT.
Yes	I type a lot faster now when I try to explain things.
No	I've been able to express myself in typing before this class. In writing and typing, so not really
No	I was able to explain pretty well before. But I do like the exercises, they're fun.
Yes	It's easier and faster
No	I could express my thoughts the same
No	I express my thoughts through my mouth not through typing
Yes	Yes
Yes	It helps me clear my head when I'm not in a good mood
No	I am able to express myself regularly, typing hasn't affected my ability to express myself.
Yes	I think yes because it could help me type in a faster paste and when I type and write in a faster paste it makes more thoughts come in
No	The typing hasn't made my thoughts better. Nothing has changed really, typing really fast just makes me hesitate a little knowing I'm supposed to go at a fast pace.
No	Because learning how to type didn't affect my thoughts
Yes	Yes because you know where most of the keyboard are
Yes	Yes because I don't usually show my feelings so typing makes me express things.
No	What does typing have to do with expressing feelings
Yes	Yes, because it helped me express my thoughts
No	I learned where the letters are, and typed the words with the letters that I learned, but I didn't write any sentences
Yes	Because I type faster than I did last time.
No	I think it'll be useful in the future.
Yes	Yes I am learning
Yes	I've always expressed my thoughts through typing.
Yes	Idk
No	I don't see why it can

Yes	Because it's easy
Yes	It's just sort of like writing by hand. It's more fun than just using a regular paper and pencil.
No	I can't express my thought
No	No not really because it's only typing not writing
Yes	Because it's not that different than writing
Yes	Yes because I can look at the screen and type faster

Explanations for Figure 6

Now I believe that my typing is...	I chose that last answer because...
Slower than before I learned how to type.	I hate typing the way I'm learning it.
Faster than before I knew how to type.	I've improved on placing my hands on the keys
The same as before I learned how to type.	Not much has changed in the way I type
The same as before I learned how to type.	I wasn't paying attention to how fast I was typing before.
The same as before I learned how to type.	I feel like I've always typed fast and still do.
The same as before I learned how to type.	It's helping but not that much
Faster than before I knew how to type.	Typing.com helped me be faster
Faster than before I knew how to type.	I'll say I am faster but still slow
Faster than before I knew how to type.	It has helped me out a lot when I try to help my parents on the computer
Faster than before I knew how to type.	I feel more used to typing.

The same as before I learned how to type.	I chose that because I don't really have the time to do that much typing so I think it's still the same but faster by a bit.
Faster than before I knew how to type.	I am more skilled to go faster.
Faster than before I knew how to type.	While I was on typing.com, I noticed that when ever I typed words, I typed them faster than before
The same as before I learned how to type.	I don't mind being slow just as long as I can type
Faster than before I knew how to type.	I can memorize the keys much more better then I usually did.
Faster than before I knew how to type.	I did it choose the last answer
The same as before I learned how to type.	My typing is still the same speed.
The same as before I learned how to type.	My typing is still the same from how it was but I'm okay with it
Faster than before I knew how to type.	I can type more and learn more words.
The same as before I learned how to type.	Because I'm still slow but I can remember the keyboard keys.
The same as before I learned how to type.	It the same as before
The same as before I learned how to type.	I have always been a fast typer.
Faster than before I knew how to type.	I did not choose the last answer

Slower than before I learned how to type.	When I type I use two fingers and when I use all of my fingers I'm way slower
Faster than before I knew how to type.	I didn't choose the last answer
Faster than before I knew how to type.	I gained a bit of speed during the keyboarding lessons.
Faster than before I knew how to type.	I type faster than before
Faster than before I knew how to type.	Because I practice typing
Faster than before I knew how to type.	It's true
Faster than before I knew how to type.	I can identify the keys

Appendix C
Teacher Observations

- Students enjoy taking out the keyboards to type.
- Had to do more mini lessons on home row hand placement.
- Home row hand placement an issue.
- [Student] really enjoying typing--helps him focus for a long period of time on the task at hand. Actually doing work.
- Mini-lesson on mirroring what they do on typing.com. “Follow the hand placement. If the typing.com hand shows you which finger, you should also use that finger.”
- 12/33 students independently typing today during Block 4.
- Most students listen to 60% rule for use of time. Had to redirect 3 students today to move on to content work.
- 8/22 students today started out with typing during Block 2
- Vocabulary assignments typed = 57 out of 138 received.
- Saw a student today use home row on the iPad touch screen--Good Luck!
- Students asking to borrow keyboards for their English class--using for writing prompts in English says English teacher.
- Fewer students doing typing class after spring break. Must encourage.
- Students take good care of the keyboards. It’s nice.