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The Effects of Technology on ELL Students Writing Fluency

An Action Research Report
By Aristea Goundouvas
The Effects of Technology on ELL Students Writing Fluency

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Abstract

This action research project explored whether the iPad application ‘Book Creator’ could impact the written fluency of English Language Learners (ELL). It also monitored the impact the application would have on non-ELL students. It was conducted in a public Montessori elementary school with students aged six to eight years old at the beginning of the school year. Out of twenty students, ten were ELL. Data tools included writing rubrics, personal evaluation rubrics and tallies of written output. While results showed some nominal improvement in writing output, it is difficult to assess if the results reflected students settling into the new school year. However, students demonstrated great focus while using ‘Book Creator’ and found the application very engaging. The implications from this research warrant further study into how technology can be used to expedite the written fluency for English Language Learners.

*Keywords*: Montessori Education, primary students, English Language Learners, technology, iPad applications, writing fluency
A new school year begins and with it comes all of the excitement of meeting new students, trying new science experiments and enjoying the year. For students, some of the excitement comes from making new friends and learning more skills and information. However, what if you walk into the classroom and are unable to communicate with those around you? Some children who come into a classroom do not have English as their first language. They face the difficult task of being understood as they make connections with other students and trying to do school work in a language foreign to them. We know as teachers and guides to make students feel welcome and included but the issue of how to help them in their new language skills is extremely important. I have seen some students who could not speak or write in English become frustrated because they were not able to communicate effectively. I remember one very bright student who already spoke Russian and Hebrew now trying to become fluent in English as he came into my classroom. He was a capable student but he just did not have the words he needed to express himself verbally or in written form, and I have often thought what would be the best way to support this child. It was clear he was frustrated at not being able to say and write down ideas that he had. He could not access the new language independently.

Most schools in cities across North America face the issue of how to expedite the English language skills of students arriving from around the world into their classrooms. For this action research project, the term for students acquiring English as an additional language will be ELL, or English Language Learner. Students who are native-born English speakers will be referred to as non-ELL students. It is the term used throughout the province I work in, so I will use it interchangeably throughout this project. In British Columbia, 42 000 new immigrants came to the province, and many of them had school-age children (gov.bc.ca).

As those children enter the school system, one of our first goals as educators will be to
improve the spoken English fluency or reading skills of these new students but what about their written fluency? I have often found there is a reluctance to write and share ideas in a written format amongst ELL students so I want to consider ways to help them become more independent in their writing skills.

The study was conducted in a suburban elementary school in a classroom with twenty students, ten who are English Language Learners and ten who have English as their first language. Students who were ELL came from Mainland Chinese backgrounds and spoke Mandarin as their primary language at home. As students were in the first, second and third grades, they were aged six, seven and eight years old. As a whole, the school has an ELL population of 35% of students and there a greater variety of languages spoken at the school, including Mandarin, Cantonese, Tagalog, Spanish, Korean, Russian, Turkish, Somali and Arabic. It is a dual-track Montessori and neighborhood school, meaning half of the students are on the Montessori side and the other half come from the neighborhood around the school. The school district itself has 4 000 immigrant students out of a total student population of 22 000. Geographically, the school district is located in continues to experience growth in immigration.

There were many techniques and options to explore when looking at how to improve the written fluency of ELL students, as will be further discussed in the literature review below. All of the methods offered their own advantages and disadvantages. However, the technique chosen for this action research project was technology and how it could support English Language Learners become more fluent writers.
Review of Literature

Classrooms are becoming more and more diverse. Many children will enter their new classrooms with little to no English Language skills. The movement of people and families across continents, whether for economic reasons or fleeing war-torn environments, has meant that schools welcome children from all backgrounds and languages. To help students adapt to their new culture, bringing their language skills up to complete fluency helps children feel connected to their new home. It allows them to communicate with their peers and share their ideas.

A sizable number of students in my class are English Language Learners (ELL), mainly Mandarin speakers. Students are at varying stages of becoming fluent in English. My goal was to discover and implement effective strategies that could potentially increase and improve the written fluency of 1st through 3rd grade ELL students, thus facilitating their road to independence in written English. The traditional model in most, if not all, British Columbia schools with ELL students, is pull out and phonics instruction. According to Mohr (2004) teachers need to diversify ELL instruction to help support students. Three strategies are evaluated in this literature review. The first is literature-based instruction, the second is Writers Workshop, and the third will be an increased use of technology.

A. Reading and Literature-based approach to enhance or improve writing

The use of literature to teach writing in English is a common practice. It is considered a popular technique (Hismanoglu, 2005). Students are exposed to a variety of children’s literature based on age or grade and then asked to make writing responses based on what they heard or understood in the story. According to Chen (2014), a
reading- and literature-based approach to enhance or improve writing helps ELL students gain more confidence in their writing skills, especially with the increased exposure they have to a variety of age-appropriate literature and stories. Students begin to identify language patterns, rhyming families and creative ideas within the stories (Chen, 2014).

The process moves away from a phonics-based approach to teaching students English because this is now seen as a static way to teach writing to ELL students and does not engage their imagination with learning new skills (Delli Carpini, 2012). Arya, et al (2005) compared student writing outcomes using a phonics approach and literature one. Although the focus of the study was not exclusively on ELL students, the authors concluded students using a literature-based approach gained a deeper understanding of literature than those who used a phonics-based one. Students in the phonics approach took fewer risks and relied heavily on phonics to decode and write. Students using literature developed multiple strategies to decode and write.

A study by Cho and Brutt-Griffler (2015) followed a group of South Korean students learning English, focusing on their writing. Their study had students take a pre-test of their writing, then engage in a reading/literature intervention, then followed by a post-test. The study found that students showed improvement in writing as they also developed their reading skills. Cho and Brutt-Griffler (2015) also found that students improved in their ability to identify the main idea of a story with supporting details. Furthermore, they learned that as students could more independently summarize or paraphrase information from a text, they also became better writers. Finally, the authors also found that as students wrote more about a piece of text, the better able they were to understand the information. The authors posited that this would be an avenue of future
Other literature on the topic also found that students became more engaged in their writing when stories are used. Hişmanoğlu (2015) wrote that stories are ‘valuable authentic material.’ They were not written to teach anyone English, so they are written in a pure and accurate form of English. Literature offers real-life examples of how the language is used. Hişmanoğlu also found literature can draw in the learner because the ideas are so engaging. The reader becomes more interested in the story and what is happening. Both Hişmanoğlu (2015) and Chen (2014) wrote about the positive connection between helping children write and using larger themes and ideas. The content of the literature helps identify new ideas and perspectives. Literature can be used to identify grammatical patterns that are linked more to day-to-day language usage, rather than to isolated, exclusively phonics-based lessons. Braz da Silva (2001) agrees with Hişmanoğlu and Chen. He found that literature brings a truthful representation of written language because it was not meant to teach language but rather, to share ideas. Braz da Silva also feels literature broadens children’s points of view. The story can take children to new places and experiences.

Braz da Silva has added to the literature-based approach to teaching ELL students how to write when he identified how learning a new language can be a frustrating process for children. He writes that children may feel reluctant to write or share ideas because they will not get the correct answer. However, by using literature, ELL students will look at the overall meaning of text rather than worrying about smaller details like new vocabulary. Finally, he feels literature will help children build connections to their new environment. The writing skills will improve as ELL students are more engaged in the exploration.
Another benefit to using literature to teach writing to ELL students is that it helps connect many subject areas together. Morrow, Pressley, Jeffrey and Smith (1997) conducted a study which focused on lower socio-economic status students, including ELL learners. The study simply integrated literature into language and science instruction where it had not been before. It then measured students’ literacy and scientific achievements using standardized tests, observations, interviews and written output. The researchers concluded that students had improved reading and writing results from using literature, especially when it was integrated into their science curriculum as well. Morrow et al, found that students showed more interest in the subject matter and found the literature engaging. The authors also note that so much of our cognitive functioning uses narrative to make sense of what is happening around us.

B. Writers Workshop as a strategy to help English Language Learners.

Writer’s Workshop is another commonly used strategy to help ELL students acquire greater fluency in English. Writers Workshop provides a targeted writing time for students. There is a short lesson focusing on a specific idea, writing time and then a sharing of ideas. ELL students will typically experience more scaffolding of their writing to become more independent. The goal is to create students who feel they are themselves writers and authors (Dennis and Votteler, 2013).

Another perspective that came from exploring the literature is while we want ELL students to become more fluent in all aspects of English, Hubbard, Carpenter and Shorey (2003) found it was important for students to maintain their fluency in their first language as well. Fluency in English was hindered if students did not maintain fluency in their first
ELL students benefitted from English instruction if they were secure in their additional language. Many of their ideas come from the language they first spoke and can be developed during Writers Workshop.

Williams and Pilonieta (2012) stated that teachers of kindergarten and 1st grade students should encourage and support the use of the students’ native languages. The key is to build connections between English and the native language. In turn, this will support their writing in English as they get more explicit instruction in written English. Schulz (2009) has a similar recommendation for teaching young ELL students. She also says students should make connections to English in their writing through their native language. Schulz likewise wants to see writing instruction be targeted to the individual learners, a process discussed further below.

Writers Workshop also helps students by giving them direct, targeted instruction. Leer and Runck (2016) say that instruction is differentiated so that students get the lessons they specifically need. The workshop allows teachers to work with students within their skill level rather than asking them to meet a grade level outcome. ELL students are met where they are in ability. One of the outcomes Leer and Runck saw amongst students is that they became more engaged because they were able to write about topics that were specific to their interests which in turn helped improve their writing skills.

One of the other benefits of using Writers Workshop to support ELL students in their writing is the way in which peer groups are utilized in the process. Spence (2003) conducted a small-scale study with ELL students in a classroom environment. She kept observational notes, made tape recordings and interviewed students on their thoughts as
they worked through peer edits in Writers Workshop. Spence found that writing could be a social process that ELL students could take part in. The more students could participate and share, the better their writing became. Spence (2010) also found that ELL students became more engaged writers if they also used more literature in their skill development as well. She describes a process called ‘Generous Reading’ in which there is less critical attention to detail. ELL students then feel more freedom in their writing as they can express themselves without worrying about a formal review of their writing.

A supportive technique for ELL students is to have the content of their writing emphasized before getting into the mechanics of writing. Meier (2013) says teachers should start young ELL learners with sharing their ideas through drawings before more formal written instruction. More of the mechanics of the language can be introduced as students become more confident. Mechanics include processes such as letter formation to grammatical structures. The key here is to emphasize ideas and then scaffold their learning with key concepts in written English.

C. Technology and iPads

The final approach in how to help ELL students in becoming more fluent in written English is the use of technology and specifically, iPad applications. There is a growing change in the way all students are learning now. Prensky (2001) talks about students being ‘digital natives.’ He explains how students are becoming familiar with technology from a young age. It is part of their routine now. Kok (2009) says digital learning can fit within the framework of cognitive learning processes.

Dooley and Dezuanni (2015) talk about the incredible growth of iPad technology and how many more applications on the device are being made for educational purposes.
With this growth, Hoskins Sakamoto (2014) wants to see educators being mindful of the needs of children. She says teachers should be aware of the developmental needs of children and should still place pedagogy before technology, even while she advocates for the use of iPads. Good teaching practices are more important than the technology. Likewise, researchers Ernest, Causey, Newton, Sharkins, Summerlin and Albaiz (2014) also advise caution in using technology. They have found nullifying results, including poor relationships with peers, sleep disturbances and weight gain for students.

Sessions, Kang and Womack (2016) developed a study to look at how iPad applications would affect writing for a class of grade five students. The students were divided into two groups. One group received writing instruction using iPad applications and the other received the same writing instruction but used paper and pencil. Their study found the students who used the iPads had more creative writing output with increased use of descriptive language. The study also found students who were reluctant writers gained more confidence in their writing using the iPads.

Zawilinski (2016) used the app ‘Book Creator’ in her research and also saw students with improved writing results. Her focus has been on increasing the use of digital tools in the classroom with diverse learners. She found that multiple forms of literacy instruction worked well with the iPad application ‘Book Creator’. Zawilinski’s experience showed students were able to integrate the picture and text features of ‘Book Creator’ to create more expressive written product.

Regarding support for ELL students, Wells, Rowe and Miller (2016) designed a two-year study following young, bilingual children and their use of iPad applications to measure the effect the technology would have on emerging abilities to write and share
ideas. The authors identified how students were able to share their ideas using several applications, including ‘Book Creator.’ Their study found many children used both their native language and English to create written passages using the iPads, which integrated the use of sounds and digital photos. In turn, this increased teaching opportunities for the ELL students. Foulger and Jimenez-Silva (2007) found similar results for ELL students. Their study concluded that teachers should continue to follow specific teaching practices for ELL students and with the addition of technology writing output for the learners was increased. The authors cautioned, however, that more writing did not always mean better writing but that the technology did enhance the writing process for ELL students.

There are many strategies to help ELL students improve their writing skills, whether through literature, Writers Workshop or the use of digital tools. However, there is also the growing role technology now plays in the lives of children (Prensky, 2001). Based on my research of the literature, I find using an iPad application called ‘Book Creator’, to be an appropriate strategy to help ELL students become better writers. The research indicates (Zawilinski, 2016, Wells, Rowe and Miller, 2016) that using the app ‘Book Creator’ helps ELL, and non-ELL, students increase and improve their writing performance. Students can also become more fluent and independent writers (Sessions, Kang and Womack, 2016) by using technology.

There has been an increase in the use of technology in schools and in British Columbia, a greater push to use more of it. The education ministry has been actively engaging teachers to include more technology in the classroom. It seemed efficient to integrate technology not just with supporting ELL students, but also supporting the writing fluency of non-ELL students, especially since all students would be using the
iPads as part of the research. As another consideration, being in a Montessori setting brings its own issues using technology as well. Some practitioners feel technology should be limited as the founder of the philosophy, Maria Montessori, did not include computers or technology in her pedagogy. However, others feel she was revolutionary in her approach and she would have welcomed the new devices. In order to bring together this diverse set of research, the research question became: what effect will the use of the iPad app ‘Book Creator’ have on first, second and third grade students' reluctance to write, and specifically on the acquisition of written fluency in English for the ELL students in a Montessori classroom?

**Methodology**

Multiple steps were involved in the methodology of this project. The project was conducted over a five-week period. Since all students took part in the research, data was collected from all of them, even though the primary focus was on ELL students. The information from each group was recorded separately. The purpose was to see what impact the iPad application ‘Book Creator’ would have on the writing fluency of ELL and non-ELL students. Fluency in this action research report would mean an overall increase in the number of words, sentences and descriptive sentences used in student writing. All data tools will be briefly described here and attached in an appendix to this action research report. Some of the data tools came from the school district in which the research took place; others came from the provincial Ministry of Education. I created the remaining data gathering tools.
A writing sample with paper and pencil was taken from all students at the beginning of the year and measured against a rubric which was designed for either ELL or non-ELL students. It was necessary to form a baseline of where students were in their writing fluency. The rubric for ELL students would look at the amount of descriptive language used, verbs used in the appropriate tense and ability to develop an idea with supporting information. My school district has a rubric for grade one ELL students (Appendix A) and a combined grade two/three rubric for ELL students (Appendix B). Grade-specific rubrics were used for the non-ELL students (Appendices C, D, E) and came from the Ministry of Education. Rubrics looked at whether a writing piece had a beginning, middle, and end and if the writer connected experiences and feelings. Many more writing features were contained within all of these rubrics.

I also taught students about the proper way to use the iPad, such as how to carry and set it on their desks. Students then needed some experience using the iPad application ‘Book Creator’. As well, students were given clear expectations about how to use the internet feature of the app. Boundaries were set around appropriate behavior, such as searching for images needed for their writing but not in searches that were inappropriate for school. After several lessons, I got a baseline of a story or writing sample they created in the app and marked it with a rubric depending on ELL or non-ELL status, as discussed above.

Part of the interest in researching the impact ‘Book Creator’ would have on student writing would also be their attitudinal approach. Would using the app make ELL students feel more positive about their writing skills and make them more confident in sharing their ideas? To find out if there would be any changes, I had a student-teacher discussion
about attitudes towards writing (Appendix F). Questions explored independence in writing or needing support, and feeling a sense of pride in written output. The questions were the same for ELL and non-ELL students.

Students had an opportunity to complete a personal rubric about their attitude towards their writing skills (Appendix G). The personal rubric was the same for ELL and non-ELL students. Students filled in the box they felt best answered the question about their writing. Answers were on a sliding scale from an unhappy face to a very happy face. The purpose here was to gage ELL and non-ELL student’s feelings about their writing without the influence of their teacher.

Observations of students during writing activities were made throughout the research process (Appendix H). The goal was to see if all students, but especially ELL students, would choose writing and language activities throughout the day. Montessori students can make choices about the learning activities they engage in at school. The choices may range from mathematics, geography, science to language. Typically, students will have a presentation on how to use the materials specific to the curriculum stream and then be free to choose. I maintained observations of student choices on an ongoing basis during the project to assess if ‘Book Creator’ was making students choose more writing-based activities. In particular, were ELL students feeling more confident making language material choices to learn more English?

Since the student-teacher discussion and the personal rubric was the subjective view of the students work, it was important to have a diagnostic tool which was objective. I included a tally of their writing samples (Appendix J). Tallies would be of the number of
words used, number of sentences used, if there are pictures only, words only or if a combination of words and pictures.

Combined, these data tools formed the baseline of where both ELL and non-ELL students writing skills were at with the school year starting. Language instruction continued as usual. All students received presentations appropriate to their grade and interest level and were expected to work on parts of speech, word patterns, and phonemic awareness, plus other language-based activities.

The purpose of the action research though would be to see what effect the iPad application ‘Book Creator’ had on students writing fluency. Students would continue to receive language instruction as per usual, plus additional instruction in using iPads. ‘Book Creator’ allows students to write by either using their fingers on a screen, using a typing pad on the screen or with a dictation tool. It works by scribing the student’s spoken words and turning them into typed words. Students were also able to add pictures to their work by either using a drawing tool in the app or by using images taken from the internet or the camera roll on the iPad. Again, lessons about digital safety were reinforced when it came time to use the internet or even the camera on the iPad. For example, did students ask permission to take photos, especially if it was of another classmate or person in the school? IPads were used twice a week during the afternoon, for half hour sessions.

At the midpoint of the study, paper and pencil and ‘Book Creator’ samples were taken and assessed on the appropriate rubrics (Appendices A-E). I made tallies of the written work (Appendix J), especially to see if there were any changes from the beginning of the year. Of key interest would be to see if student written output had
increased. The class continued with writing and language instruction, along with iPad
instruction.

In concluding the study, I collected final writing samples from students. I assessed
the paper and pencil sample against the writing rubric appropriate to the ELL status of the
student (Appendices A-E). I did the same for the writing sample gathered from the app
(Appendices A-E). Students were called to meet for a one-on-one discussion (Appendix
F) and they colored in their feelings about their writing (Appendix G). I made a tally of
written output from the paper and pencil writing and the ‘Book Creator’ app (Appendix
J). Finally, I summarized the observations of student writing choices made throughout the
research project, with a particular focus on how often an ELL student, or non-ELL
student, would choose writing-based activities (Appendix H).

**Data Analysis**

I collected data to see what impact the iPad application ‘Book Creator’ would
have on the writing fluency of ELL students but also on my class as a whole, including
the non-ELL students. I wanted to see if the ELL students would increase their writing
output and become more independent in their writing after using the application. I also
wanted to see if students would feel more confident in their writing skills. So often in
primary classes, the focus is on reading skills but I feel we need to improve students
written output as well. Writing is a tool for communication and it allows students to share
their ideas and creativity. Children can express themselves in quiet, reflective ways using
a variety of tools. Students can use pencils, crayons, markers and for this action research
project, an iPad application.
The school year started out in an unusual way. We would normally have our classes by the Friday of the first week of September but due to a teacher shortage, we were not able to start until the second week of the month. Establishing classroom rules and routines became a priority then I was ready to collect data. I was able to begin by the end of the second week of September. While the primary focus was the writing skills of ELL students, I recorded data from all students and kept it separate. In this data analysis section, I will begin with the impact seen on ELL students, the non-ELL students, a comparison between the two groups and finally conclusions from the data.

I needed a baseline to see where ELL students writing skills were at for starting the year. I took a paper and pencil written sample and marked it on the district rubric for ELL students (Appendices A and B). My school district has a significant population of ELL students, so it created rubrics and other writing tools to help support teachers. The rubric measures use of tenses, ability to identify basic sight word vocabulary and use of punctuation and are designed specifically for ELL students only. The rubric measures students from level 1 to 5 (emerging to consolidating). A level 1 student has little to no English and a level 5 student is fully fluent with few to no errors in writing. As seen in figure 1, 50% of the ELL students were at level 3, or developing level, of their written output, 30% were at the expanding level and 20% were at the beginning level. None of the ELL students were at the emerging or at the consolidating level. Figure 1 shows how all ten of the ELL students were working towards grade level work.
Another tool I needed to gather baseline data would be how ELL students wrote and created stories using the application ‘Book Creator’. Since my district is pursuing the integration of technology into classrooms, I was able to use the paid version of the application as the district had already purchased it. The purchased version meant we could save all of our stories and create as many as we wanted. In addition, I was able to use the airdrop feature on my MacBook Air to get all of the students work from the iPads to my laptop. Airdrop helped immensely in gathering samples of work.

Using the application for the first time, I again gathered samples of their work and marked them again the writing rubric for ELL students. This time, there was quite a difference in the skill level from their paper and pencil output (see figure 2). Most of the ELL students declined in their written output, with 50% showing a lower output and skill level with the application.
Students struggled to use both the written and picture features of the application and were not able to fully represent their skill level. The decline was mostly seen in students who were around the level 3 area (students 4, 5, 8 and 10). However, even one of the stronger ELL student’s at the level 4 area came out at a lower level using the application (student 1).

One of the challenges of the application is that it took time learning to use some its key features. Some of the ELL students found using the features difficult and could only focus on the picture drawing feature to represent a story. Figure 3 shows an ELL student’s first time using the application.
It took several lessons to show students how to use ‘Book Creator’ and engage all of its’ features to become more familiar with them. The application allows students to type text, write using their fingers on the screen or even to dictate their story into the iPad’s microphone. I found the class needed more time to explore the application after being instruction on how to use the various features.

Also included in the baseline measurement was a tally of written output in both paper and the application (Appendix J). A tally of the number of words and sentences gave me more quantitative data which I could also measure over the course of the research. Figures 4 and 5 below shows the output of students depending on the writing format.
One of the striking features is how in both formats, all students were able to include a picture whether using paper or the application. However, using the application, students had a much lower word output than they did using paper and pencil.
One other key feature I was exploring how ‘Book Creator’ would impact student writing was how they felt about their stories and their ability to write overall. I have found in the past as ELL students start the journey of learning English, writing can be a difficult process. I was looking to see if gaining more confidence in writing through the application would translate into more positive feelings about writing as a whole. The chart in Figure 6 shows that 20% of students felt a positive increase in their story writing. Data for Figure 6 was gathered from the personal writing survey students were asked to complete at the beginning and end of the action research.

![My writing tells a story](chart)

*Figure 6. Change in personal views on ‘My writing tells a story’.*

Likewise, a similar outcome was seen in students’ personal views about their ability to add new details to their stories, as seen in Figure 7. Here again, 20% of students felt more confident about improving their writing output.
Figure 7. Change in personal views on adding new details to their stories.

Another aspect to how student writing would change would be to see if ELL students chose more writing activities over the course of the research. I carried out observations every day and maintained a regular schedule noting student work choices for 15 minutes during worktime before lunch. Since so much effort had gone into showing students how to use ‘Book Creator’, as well as the usual language lessons in a Montessori classroom, I was wondering if students would choose to write more. Every student in the class had a blank writing book they could use at their own discretion. I recorded my observations over a five-week period. Figure 8 shows the results.
Figure 8. ELL student writing and language choices during a specific period during the day. Results are shown in weekly graph.

An interesting observation is how ELL students preferred using the Montessori language materials more than using their writing book. While independent writing was chosen 10 times in the given time period, Montessori language materials were chosen 13 times.

A critical piece in the research was to see what changes, if any, would happen for students over the course of the project. I added the columns for the ELL rubrics (Appendices A and B) for both the paper and pencil and the application, then created the average, all using Excel. Results are shown in Figure 9. ELL student writing had been marked with a rubric at the beginning, midpoint, and end of the study. The graph shows an incremental increase in student performance of 0.24 points, as some students demonstrated a marginal increase in either punctuation use, use of a more descriptive word or verb tense.
Changes in ELL student output were also seen in the tallies from both paper and pencil and ‘Book Creator’. Over time, it is clear that there was an increase in the number of words students used, as well as the number of sentences used to express ideas. Here again, an average was created from the ELL student’s output at the beginning, midpoint, and end of the research. Results are seen in Figures 10 and 11. Figure 10 shows an average increase of 3.1 words being used with paper and pencil and an average increase of 3.3 words in the application. An increase in the number of sentences being used is also seen in Figure 11. Paper and pencil sentences increase from 1.9 sentences on average to 2.3 sentences. Application sentences increase from 1 sentence to 1.7 sentences.
Figure 10. Change in word output for ELL students, paper and application.

Figure 11. Change in the number of sentences for ELL students, paper and application.
While the majority of this action research project was to observe what impact the use of technology would have on ELL students, the non-ELL students participated in the study. Students in this category also saw some improvement in writing skills based on the rubric used for them (Appendices C, D, E). Figure 12 shows 20% of students had a marginal increase in their written work (student’s B and E). The primary source of improvement here was in seeing a few more descriptive words being used in their writing, particularly in ‘Book Creator’.

![Non-ELL Students Writing Rubric](image)

*Figure 12. Non-ELL students writing measured on rubric.*

Figure 13 also shows some improvement for the non-ELL students but it is marginal. I created the average of words used from the beginning, midpoint, and end of the study to create the line graph in Figure 13. It shows a nominal increase in word usage, from 21.7 to 22.4 words and a slightly larger increase for the application, going from 13.9
to 16.4 words. Here students became far more comfortable using the application and its features, especially the dictation device to create writing.

Figure 13. Non-ELL students word output for paper and pencil and application.

In comparing ELL students and non-ELL students’ word output and usage, there is a distinct upward trend for the number of words being used. Both groups of students started including more words in their writing. Figure 14 below shows the change. I placed great emphasis on doing ‘your best work’, especially when it came time for me to gather samples for this project. As well, all students were finally settling into the new year. The initial writing samples I had gathered earlier in the year were far more rushed because of our delayed start. Also visible in the chart, is the distinct difference between the ELL and non-ELL students.
Conclusions

Reviewing the results of student work, I can make several conclusions. The growth and changes were positive but also marginal. Both groups had improvements in the number of words used as well as the number of sentences they were writing. Part of the issue, I feel, is that project was at the beginning of the year and time was dedicated to establishing routines again. It was a challenge to jump into new writing expectations without regular classroom structures in place. We also had a later start than normal in our district.
An unexpected result came when looking at the observation data (see Figure 8). More ELL students chose to use Montessori language materials rather than participate in more unstructured writing. Students may have been going back to familiar materials rather than taking time to explore new writing opportunities. On the few times where the iPads were available without specific instructions about using ‘Book Creator’, students preferred using the math or coding applications.

One impressive feature I noticed while students were using ‘Book Creator’ was how focused they became during the worktime. As we first began, there was so much excitement in exploring what the app could do and students were eager to show what they created. Over time though, the work became more thoughtful and purposeful. I gave more direct and targeted instruction on what the expectations were in using the app and what I was expecting as the outcome. It was around the mid-point when the afternoon time using ‘Book Creator’ became a time of greater student concentration. It was almost silent in the classroom. I wonder if the project were started later in the year, would the focus and energy of students settled down sooner into the project.

**Action Plan**

In exploring the findings at this time, I can conclude the results were minor but they were positive. A few students did in fact, write more and use more descriptive writing. The timing of the research was not at an optimal time of year. A more accurate time to study the influence of technology on ELL students writing would have been later in the year, once all routines had become established. Some of the improvement may have been due to taking a writing sample so early in the year, meaning students were not yet ready. However, while acknowledging the timing was not ideal, 20 percent of
students did show increased writing output. It demonstrates the growing role technology can play in students learning. Electronic devices can be used in new ways to help students. They can address the fact that not all students learn the same way. Technology can offer some alternatives to help a variety of learners, especially struggling ones.

Another result I found came in exploring how students felt about their writing, whether ELL or non-ELL. Several questions asked students how they perceived themselves as writers. Some students did indicate an improved sense of their writing abilities from the beginning of the study to the end. I would theorize here ‘Book Creator’ gave some of those students more ways to demonstrate and share the ideas they already had. Prince (2017) found ELL students could use the visual functions of iPad applications to enhance their understanding of language. She also found the keyboard with multiple language functions could help students translate their ideas. As students feel confident about their writing, they can engage in more language and writing activities. In turn, they become better writers and more fluent in English.

Based on the complete silence I heard amongst students during the latter part of the research, I would like to pursue more technology in my practice. In my own experience, I rarely found such total concentration. Sounds and discussions between students are frequently found within a classroom. Observing such intense focus in the students because they were engaged in using ‘Book Creator’ was not something I expected to find. I want to explore more ways for students to become as engaged again. It is not that the technology can replace proper teaching practice and instruction but rather be added as a tool to the classroom work already happening. Much like a pencil is used to write or draw, a technological device can similarly be used as a tool.
‘Book Creator’ was easy and intuitive to use, even for ELL students. The application allows students to type out their script, use their fingers to write it and to dictate their ideas into the microphone. Students can also make videos to embed in their ‘books,’ which could open up more creative ways for students to demonstrate their learning. For example, students could show how well they have learned to regroup for addition by taping themselves using the Stamp Game, a Montessori math material. Likewise, students could also take pictures of science experiments they were designing and add text or audio to explain what they are doing. Technological devices can help all students with their learning rather than just be used as toys or gadgets.

Looking at the impact of the research on student learning shows nominal changes in writing output. Two out of ten students showed some growth in their writing by adding some more words and being better able to use punctuation to create more sentences. However, it was a short time period in which to see any more significant changes or growth. The impact would be to look at opportunities to expand ways for students to share and represent their learning. Using the application could help struggling writers, whether ELL or not, a chance to use new approaches to show their creativity. I have found for some students, a paper and pencil is just too overwhelming. Something like the dictation tool on ‘Book Creator’ could help foster greater independence and more positive attitudes towards writing.

Since the Ministry of Education has mandated using more technology in schools, I will continue to explore ways to use technology in a Montessori environment. One possibility would be to continue the same research protocols but later in the school year. This particular school year had an unusual later start than other years. It meant we were
late establishing routines and behavior expectations. Now that our routines are back in place, would student’s results have been higher?

Having more positive attitudes towards writing was not something I anticipated from my research but a few students did have improved feelings towards writing. As a future possibility, I would consider exploring how technology improves a student’s approach to learning. An exploration of the impact of technology has on learner’s attitudes towards education would also be a consideration.

One of the other areas to be thought of for the future would the use technology to help students across other subject areas and to help students with special needs. Kaur, Koval and Chaney (2017) researched the impact of using iPads on students with learning disabilities and other special needs. In this case, the researchers looked specifically at math applications to support and teach the students. The researchers found students had positive results with a greater understanding of mathematical concepts.

Considerable money is being spent to use more technology in my district. In fact, many parents want to see more technology being added to the curriculum. However, we need to do it the right way to be authentic and meaningful. Research has shown technology can have negative impacts on student learning (Ernest, Causey, Newton, Sharkins, Summerlin and Albaiz, 2014). More considered research about how to implement technology into Montessori classrooms, whether it be for all students or ELL students, needs to be done. My approach is to integrate the technology as another tool to be used by students. It is not meant to replace or take away from fundamental materials already used in classrooms, but rather to enhance learning to meet the needs of our future.
References


## Appendix A
### Grade One ELL Rubric

<table>
<thead>
<tr>
<th>Style &amp; Organization</th>
<th>Conventions</th>
<th>Verbs</th>
<th>Vocabulary</th>
</tr>
</thead>
<tbody>
<tr>
<td>- usually learning with teacher's writing as a model</td>
<td>- may show correct initial phonics use</td>
<td>- not in issue at this level</td>
<td>- limited vocabulary</td>
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<tr>
<td>- usually forming written words</td>
<td>- occasional correct spelling</td>
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<td></td>
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<tr>
<td>- simple words of string of words</td>
<td>- a few words well spelled</td>
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<td></td>
</tr>
<tr>
<td>- uses simple sentences</td>
<td>- some frequent use of simple tenses</td>
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<td></td>
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<tr>
<td>- some related descriptive details</td>
<td>- consistent use of simple tenses</td>
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<td></td>
</tr>
<tr>
<td>- logical connected &amp; sequenced</td>
<td>- use of a variety of sentence types</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Level 1</th>
<th>Level 2</th>
<th>Level 3</th>
<th>Level 4</th>
<th>Level 5</th>
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</table>

Name: ____________________________

Support Level: ____________________

Date: ____________________

# GRADE ONE WRITTEN LANGUAGE MATRIX

(Spring - Writing About an Experience)
<table>
<thead>
<tr>
<th>Category</th>
<th>Rubric Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Organization</strong></td>
<td>- Clear introduction and conclusion.&lt;br&gt;- Logical and coherent structure.&lt;br&gt;- Relevant and specific details.</td>
</tr>
<tr>
<td><strong>Vocabulary</strong></td>
<td>- Appropriate and varied use of vocabulary.&lt;br&gt;- Correct spelling and usage of vocabulary.</td>
</tr>
<tr>
<td><strong>Syntax</strong></td>
<td>- Proper use of sentence structures.&lt;br&gt;- Correct use of punctuation and capitalization.</td>
</tr>
<tr>
<td><strong>Conventions</strong></td>
<td>- Correct use of capitalization and punctuation.&lt;br&gt;- Proper use of spelling and grammar rules.</td>
</tr>
<tr>
<td><strong>Credit</strong></td>
<td>- Use of all elements of the rubric.&lt;br&gt;- Exceptional use of language skills.</td>
</tr>
</tbody>
</table>

**Next Step Support Level**

**Name**

**Date of Assessment**
Quick Scale: Grade 1 Writing Stories

The Quick Scale is a summary of the Rating Scale that follows. Both describe student achievement in March–April of the school year.

<table>
<thead>
<tr>
<th>Aspect</th>
<th>Not Yet Written Expectations</th>
<th>Meets Expectations (Minimal Level)</th>
<th>Fully Meets Expectations</th>
<th>Exceeds Expectations</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SNAPSHOT</strong></td>
<td>The story may consist of a string of letters or be dictated for someone else to write down. The student needs a great deal of help.</td>
<td>The story is recognizable as conventional writing and has some elements of a story. The student often needs some help.</td>
<td>The story is readable and makes sense. The student is able to write independently with occasional help.</td>
<td>The story has some description and detail. The student is able to write independently.</td>
</tr>
<tr>
<td><strong>MEANING</strong></td>
<td>• may be able to “read” own writing but meaning often changes each time</td>
<td>• often retells another story • recognizable story situation • little development, few details</td>
<td>• some individuality • begins with characters and situation • has a problem and solution/few details</td>
<td>• some individuality • begins with characters and situation • has a problem and related solution; details add “colour”</td>
</tr>
<tr>
<td>• clarity and information • details</td>
<td><strong>STYLE</strong></td>
<td>• simple words • when “reading” or dictating, may be one long, rambling sentence or a series of short, stilted sentences</td>
<td>• conversational • repeats simple patterns/favourite words</td>
<td>• mostly conversational; may include some “story language” • repeats simple patterns; some simple description</td>
</tr>
<tr>
<td><strong>DESCRIPTION</strong></td>
<td>* style and variety of language</td>
<td>* description</td>
<td>* takes risks, experiments; shows awareness of the effects of interesting language; often has dialogue, description</td>
<td>* includes beginning, middle, and end • events are in logical sequence • uses a variety of connecting words • writing can stand alone</td>
</tr>
<tr>
<td>• usually a drawing with a string of letters or one or two dictated sentences</td>
<td><strong>FORM</strong></td>
<td>• may be very brief • string of loosely related events—mostly “middle” • uses and connects ideas • drawing may tell much of the story</td>
<td>• includes beginning, middle, and end • most events are in logical sequence • repeats the same connecting words • writing can stand alone</td>
<td>* includes beginning, middle, and end • events are in logical sequence • uses a variety of connecting words • writing can stand alone</td>
</tr>
<tr>
<td><strong>CONVENTIONS</strong></td>
<td>* strings of capital letters</td>
<td>* mostly capital letters • some words spelled conventionally • many words spelled phonetically • may experiment with punctuation • parts are legible</td>
<td>• both capitals and small letters • spells many familiar words correctly • uses phonics to spell new words • some punctuation • legible</td>
<td>* uses both capitals and small letters • most familiar words spelled conventionally • phonics and word patterns used to solve spelling problems • generally written in sentences; uses punctuation • legible</td>
</tr>
<tr>
<td>• capitals and small letters • spelling • use of phonics • punctuation • spacing • legibility</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## Appendix D

### Grade Two Non-ELL Writing Rubric

#### Quick Scale: Grade 2 Personal Writing

The Quick Scale is a summary of the Rating Scale that follows. Both describe student achievement in March–April of the school year. *Personal writing* is usually expected to be checked for errors but not revised or edited.

<table>
<thead>
<tr>
<th>Aspect</th>
<th>Not Yet Within Expectations</th>
<th>Meets Expectations (Minimal Level)</th>
<th>Fully Meets Expectations</th>
<th>Exceeds Expectations</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SNAPSHOT</strong></td>
<td>The writing may be an attempt to recount experiences or ideas, but problems with logic, organization, and conventions obscure meaning. Often very short.</td>
<td>The writing offers some logical ideas and reactions, but connections are not always clear. May be difficult to follow in places.</td>
<td>The writing is clear and easy to follow. It offers a series of loosely connected ideas and experiences with some detail.</td>
<td>The writing has a clear topic and focus, with related supporting details, reasons, or examples.</td>
</tr>
<tr>
<td><strong>MEANING</strong></td>
<td>• topic may be hard to determine&lt;br&gt;• often very short&lt;br&gt;• little logical detail or description</td>
<td>• some connections to experiences, dislikes, likes&lt;br&gt;• offers some ideas and opinions&lt;br&gt;• some details, often irrelevant or repetitious</td>
<td>• makes connections to personal experiences, likes and dislikes&lt;br&gt;• a series of loosely related ideas and opinions&lt;br&gt;• some relevant details or examples</td>
<td>• offers opinions and observations with some development&lt;br&gt;• sense of purpose; ideas are related and often focus on a central theme&lt;br&gt;• relevant details, reasons, or examples</td>
</tr>
<tr>
<td><strong>STYLE</strong></td>
<td>• language is often unclear; may make errors in word choice&lt;br&gt;• relies on short, simple sentence frames that have been provided</td>
<td>• simple, basic language; often repetitive&lt;br&gt;• tends to rely on short, simple sentences or one or more long, rambling sentences</td>
<td>• conversational language; may include some description&lt;br&gt;• some variety in sentence length; often short and abrupt; some long and run-on</td>
<td>• simple descriptive language; some variety&lt;br&gt;• beginning to show some control of sentence structure; some variety in length and pattern</td>
</tr>
<tr>
<td><strong>FORM</strong></td>
<td>• topic is not clear&lt;br&gt;• sequence is illogical&lt;br&gt;• omits connecting words</td>
<td>• often has no beginning (starts in the middle)&lt;br&gt;• may ramble without clear sequence or connections&lt;br&gt;• seldom uses connecting words</td>
<td>• opening sentence may signal the topic&lt;br&gt;• ideas are loosely connected; often by time (e.g., same day)&lt;br&gt;• repeats a few simple connecting words</td>
<td>• a title or opening sentence signals the topic (or time period—e.g., “yesterday”)&lt;br&gt;• logically sequenced and connected&lt;br&gt;• beginning to use a variety of connecting words</td>
</tr>
<tr>
<td><strong>CONVENTIONS</strong></td>
<td>• errors make the writing difficult to read&lt;br&gt;• not written in sentences&lt;br&gt;• may omit letters and sounds&lt;br&gt;• often omits or uses punctuation and capital letters inconsistently&lt;br&gt;• frequent errors in pronouns and verbs</td>
<td>• frequent errors may interfere with meaning in places&lt;br&gt;• some complete sentences&lt;br&gt;• frequent spelling errors (but all sounds are represented)&lt;br&gt;• inconsistent use of capitals and punctuation&lt;br&gt;• some errors in pronouns and verbs</td>
<td>• several errors, but these do not obscure meaning&lt;br&gt;• most sentences are complete&lt;br&gt;• most common words are spelled correctly&lt;br&gt;• occasional errors in end punctuation; uses capital letters for names, places, first word in sentence&lt;br&gt;• most pronouns and verb forms are correct</td>
<td>• may include errors (particularly in more complex language); these do not affect meaning&lt;br&gt;• written in complete sentences&lt;br&gt;• most spelling is correct&lt;br&gt;• uses correct pronouns and verb forms; may make occasional errors</td>
</tr>
</tbody>
</table>
Appendix E
Grade Three Non-ELL Writing

Quick Scale: Grade 3 Personal Writing

The Quick Scale is a summary of the Rating Scale that follows. Both describe student achievement in March-April of the school year. Personal writing is usually expected to be checked for errors, but not revised or edited.

<table>
<thead>
<tr>
<th>Aspect</th>
<th>Not Yet Within Expectations</th>
<th>Meets Expectations (Minimal Level)</th>
<th>Fully Meets Expectations</th>
<th>Exceeds Expectations</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SNAPSHOT</strong></td>
<td>The writing offers few ideas, and these are often disjointed, illogical, and hard to understand. The student needs ongoing support.</td>
<td>The writing presents loosely connected ideas; may be vague or hard to follow in places or flawed by frequent basic errors.</td>
<td>The writing is clear and easy to follow, with relevant and logical ideas about the topic or issue.</td>
<td>The writing flows smoothly, offers detail and elaboration, and shows some insight.</td>
</tr>
<tr>
<td><strong>MEANING</strong></td>
<td>• often very brief—a statement of opinion without support</td>
<td>• opinion or reaction tends to be vague or unsupported</td>
<td>• connects to opinions, experiences, feelings</td>
<td>• connects to experiences and feelings; writer's perspective comes through</td>
</tr>
<tr>
<td></td>
<td>• details may be irrelevant, vague, or inaccurate</td>
<td>• relies on retelling or offering factual details without explanation or analysis</td>
<td>• some explanations, details, examples</td>
<td>• supports and elaborates ideas; may make companions</td>
</tr>
<tr>
<td><strong>STYLE</strong></td>
<td>• basic language</td>
<td>• language may be vague, repetitive</td>
<td>• language is clear and shows some variety</td>
<td>• language is clear and varied; some precision</td>
</tr>
<tr>
<td></td>
<td>• sentences are often long and rambling or short and stilted</td>
<td>• tends to rely on simple and compound sentences; may include run-on sentences</td>
<td>• some variety in sentence length and pattern</td>
<td>• flows smoothly</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• variety of sentence patterns and lengths</td>
</tr>
<tr>
<td><strong>FORM</strong></td>
<td>• may be very brief</td>
<td>• some sequence; connections among ideas may be unclear</td>
<td>• logically sequenced</td>
<td>• logically sequenced and connected</td>
</tr>
<tr>
<td></td>
<td>• no introduction; tends to ramble</td>
<td>• introduces topic, but often loses focus</td>
<td>• introduces and generally sticks to topic; conclusion may be abrupt</td>
<td>• clear beginning, middle, and end; sticks to topic</td>
</tr>
<tr>
<td></td>
<td>• repeats a few basic connecting words (e.g., and then)</td>
<td>• some transitions may be abrupt</td>
<td>• variety of connecting words</td>
<td>• smooth transitions</td>
</tr>
<tr>
<td><strong>CONVENTIONS</strong></td>
<td>• frequent, repeated errors in grammar, spelling, punctuation, and sentence structure often make the writing hard to understand</td>
<td>• basic spelling and sentence punctuation is correct; errors do not interfere with meaning although some parts may be hard to read</td>
<td>• basic grammar, spelling, punctuation, and sentence structure are generally correct; minor errors do not interfere with meaning</td>
<td>• few errors; these are usually caused by taking risks with newly acquired or complex language</td>
</tr>
<tr>
<td></td>
<td>• capitals often omitted or misused</td>
<td>• may include run-on or incomplete sentences, may overuse pronouns</td>
<td>• may include errors with commas, quotation marks, or agreement</td>
<td>• may overscore some punctuation marks or make occasional errors in agreement</td>
</tr>
</tbody>
</table>
Appendix F
Student Teacher Discussion Questions

My Writing

1. How I feel about my writing?

Circle/colour feeling

2. I am proud of my writing.

Circle/colour feeling

3. I need little/some/no help with my writing (circle response).

4. Name
Appendix G
Personal Rubric for Students

<table>
<thead>
<tr>
<th><strong>My Writing Reflection</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Name</strong></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>My writing tells a story.</td>
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<tr>
<td></td>
</tr>
<tr>
<td>I wrote from left to write and top to bottom.</td>
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<tr>
<td></td>
</tr>
<tr>
<td>My story has a beginning, middle and ending.</td>
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<td></td>
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<tr>
<td>I used sequencing and feeling words to add details.</td>
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<td></td>
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<tr>
<td>I used my best handwriting and wrote complete sentences.</td>
</tr>
</tbody>
</table>

*Colour in your feelings about your writing.*
*You can use words as well.*

Source: Teachers Pay Teachers
### Appendix II

**Student Observation Sheet**

<table>
<thead>
<tr>
<th>Name</th>
<th>Date</th>
<th>Observation</th>
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<tbody>
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</table>
Appendix J
Tally of Student Work

Tally of written output: Paper or App (circle one)
Grade

<table>
<thead>
<tr>
<th>Name</th>
<th>Number of words</th>
<th>Number of sentences</th>
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<tbody>
<tr>
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<table>
<thead>
<tr>
<th>Name</th>
<th>Words used</th>
<th>Pictures only</th>
<th>Combination words and pictures</th>
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<tr>
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