

## **Hugh Beaton Public School**

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**Research Question:** What impact will implementing differentiated technology opportunities have on our student's achievement and engagement in writing?

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### **Vision**

Our impetus for this study is to improve our students' engagement and achievement in writing and, as a result, their ability to articulate and organize ideas more clearly and completely. Our goal is for our students to have access to technology and use it seamlessly in their learning environment. We welcome the use of technology as an instrument of choice and differentiation, so much so that the use of technology will become embedded into their daily learning, not an isolated event. Students shall be able to access and choose web tools that complement their unique learning needs and strengths, allowing them to bump up their work and emphasize their efforts in a positive light. Our students as twenty-first century learners will learn how to conduct themselves appropriately and respectfully, exhibiting proper digital citizenship.

### **Theory of Action**

If we provide opportunities for students to use a variety of devices and Web 2.0 tools when writing, then our students' engagement and achievement in writing will improve.

### **Context**

Hugh Beaton is a K-8 school located in South Walkerville. Our socio-economic make-up is predominantly middle class, and most students have access to technology at home. It was through the initiative of our Teacher Librarian that a team was selected. The classrooms which participated in the study spanned all three divisions, primary (20 Grade 1's), Junior (30 Grade 4/5's) and intermediate (21 Grade 8's). The Teacher Librarian provided support and guidance throughout this collaborative inquiry project which included; applying for funding, facilitating PD sessions and meetings, training team members on Web 2.0 tools, initiating conversations about BYOD, and on-going technological support. We also had support from our Instructional Coach and Teacher Librarian Instructional Coach. At the beginning of our study, our school had 3 laptop carts and 4 SMART Boards available for student use. During the past two years, our administration has made technology a priority and has purchased a data projector/netbook combination for those classrooms that do not have a SMART Board. At the beginning of this study the laptops were utilized to access board-purchased software and to visit websites for research.

## **Justification**

To formulate our research question we analyzed a variety of data sources (classroom profiles, CASI, DIBELS, DRA, EQAO, ONAP, and CAT scores) to determine our specific area of focus. We determined that there was a strong need to improve our non-fiction writing skills, which also aligns with both our School Improvement Plan for Student Achievement and the Greater Essex County District School Board's Board Improvement Plan for Student Achievement. Although our 2010 / 2011 EQAO scores indicated an increase in writing proficiency, we still had 16% of Grade 3's and 31% of Grade 6's at Level 2 in writing. Our Grade 7 CAT results revealed 50% of students within the "low proficiency" category in writing conventions and 30% scoring within the "low proficiency" category in sentences/phrases/clauses.

## **Methodology**

We applied for various board and public-sector grants to purchase technology; however we did not receive the funding necessary to achieve our original vision for this project. Using the school-based funding, we were able to purchase 4 iPod Touch devices, 2 Livescribe pens, and 1 iPad. For the first time at Hugh Beaton, students were able to "Bring Your Own Device" or BYOD. Professional learning was a vital aspect of this study, as the teachers involved needed time to congregate to learn and explore the technology before introducing it to the students. The GECDSB's Classrooms on the Move PD Project was utilized by all teachers involved in this study to observe how technology has been utilized in other classrooms within the Board. During this study, we introduced the students to Edmodo (a virtual classroom platform), classroom blogs, Twitter, Wikis, and Audioboo (voice recording medium) based on student need and interest. Due to the variation in our divisions, each classroom's use of technology is different.

**This section of our report is represented by Grade. Each teacher has included information about methodology, observation, and findings specific to their classroom.**

### **Grade One**

In Grade One, the Livescribe pen was used by the students to record their voices along with their pen strokes during the writing block. This allowed students the opportunity to replay and revisit their thoughts while writing. Also, once the work was posted on the Wiki, it gave the students and the teacher the ability to reflect on their thinking and to ask questions in order to give descriptive feedback to the author. All students were provided with the opportunity to try a Livescribe pen at least once, and then it was offered as a choice during writing and Daily 5 time. The Livescribe pen was also used by the teacher while modeling writing tasks, and then the lesson was put on the Wiki for future parent and student reference.

Each student in Grade One created their own page on the Wiki where they could add photos, share experiences, and interests. The collaborative aspect of this medium allowed students the opportunity to ask questions and provide feedback to their peers, eliciting discussions about "digital etiquette", and descriptive feedback to improve the written

work. Similar Wiki pages were also created by the teacher which asked students to respond and reflect on literacy tasks and math problem solving questions.

The students in Grade One also experimented with tools such as Twitter and Audioboo on an iPod Touch. Tweeting activities included using sight words in a sentence, making connections to science topics, recording math problem solving solutions and writing their “daily news”. Often, for the sake of time and to minimize student frustration with typing, tweets were a result of the “shared writing” model, in consultation with the students, with the teacher most often acting as typist. Twitter was used for students to summarize class activities in a brief and engaging manner, allowing parents to “follow” our learning, making it more visible.

The students also used Audioboo to “publish” their independent written work. Often the recordings included the child receiving descriptive feedback from a teacher or a peer and the student was then asked to reflect on how the descriptive feedback could be used in their work. Twitter was also used as a medium for posting Audioboo recordings for parents and students to share.

Our most recent exploration in Web 2.0 tools was our use of Edmodo. Edmodo is a virtual classroom that was used to assign cross-curricular writing prompts which encouraged the students to write their thoughts and ideas (e.g., listing rhyming words, reviewing a web-based game, explaining how energy is used at home). Students independently logged on and completed assignments with minimal assistance. Through Edmodo, we assigned projects on Voki and Bitstrips, which the students continue to revisit and explore.

### **Observations**

The Grade One students approached this project with enthusiasm. The students demonstrated great concentration and stamina whenever technology was presented as a writing choice. The students usually logged on independently and were able to navigate to different websites with greater ease compared to my previous years of teaching computers to Grade Ones.

Overall, the students enjoyed the social aspect of the Wiki, often adding writing pieces of personal interest on their own page and checking in on classmates’ pages. Students were initially taught about the “rules” of behaviour on the Wiki, and moreover, of their responsibility to leave meaningful comments that provoke thoughtful responses beyond just one word answers. After additional modeling, comments became lengthier and included a few more questions to elicit peer responses.

Some students who received Learning Support chose the Livescribe pen or Audioboo more often than the Wiki or Edmodo during free choice time. The quantity and quality of the work produced exceeded that of traditional paper and pencil written tasks for these students.

## Findings

As a part of our study, students completed a pre-and post survey of their attitudes towards writing and preferences of technology. At the beginning of this study, we surveyed the students regarding their exposure to technology. We found that while most of the students had used the internet with a parent, most had little experience with alternate technologies apart from 15% having sent a text message. At the conclusion of this study, the students had learned to tweet, to comment on a blog, to record audio pieces and to independently navigate to a virtual classroom and complete short written assignments. The learning involved in achieving these tasks was great, not only for the students, but for the teacher as well. Our excitement about the successes we witnessed and our commitment to setting high standards allowed us to make great gains.

Before beginning our study, the Grade Ones had a classroom discussion regarding technology. When the students were asked for pros and cons regarding the use of technology to write, the students responded with remarks such as “our writing would be neater”, “we can correct mistakes quickly”, and “we can write more”. We had a chart paper full of wonderful responses, but to my surprise, no one had remarked that computers and technology could be fun. During our post-study Audioboo interviews, 89% (17 out of 19) indicated that they liked using technology to write at school and 40% (7 students out of 19) indicated that it was “fun.” To students in this age group, it is essential that all learning be “fun” and engaging in order to “hook” and motivate these beginning learners. In Grade One, fun is the greatest motivator, especially when practicing a difficult skill such as writing. We found that the students looked forward to writing with technology and started their assignments quickly.

Due to the developmental nature of writing in Grade One, we did not see an overwhelming increase in quantity of writing because of the added time needed for new typists to express themselves. However, with practice students became more comfortable with seeing themselves as writers, and did less worrying about making mistakes and being “correct” all the time. This type of confidence and risk taking is essential for all new learning to take place. The students commented that technology, “is kind of fun and it helps you learn,” and that “You don’t need an eraser. Don’t have to make finger spaces, you can just use the button.” So often, the “mechanics” of printing get in the way of a young child’s expression of ideas. As one student commented, “I like writing on the computer because it is not always messy. You don’t have to erase it if it is messy and you don’t have to take a long time to erase a letter. You just have to press the backspace.”

Technology allows students to make their ideas legible, thereby lowering frustration and anxiety levels. In particular, the ability to “replay” their think alouds while using the Livescribe pen allowed students who have difficulty remembering and rereading their inventive spellings to avoid this embarrassment during teacher and peer conferences.

Also, the students found that the technology reaffirmed their ability to write and as one student commented, “My favourite is Voki because you get your own guy and can make him say whatever you want.” In this case, the technology is able to take the phonetic, approximated spellings and read them as if they were conventionally written, giving the students a confidence boost as writers.

Another positive aspect to using technology is the social component. One student remarked, "I like the Wiki because you can write on it and people see what you write to them". The Wiki allows them to be not only writers, but readers; not only an author, but also an audience. With technology, the two skills are intertwined, as they are in the adult world. The excitement of publishing, being in the "spotlight" with their peers is extremely motivating. I found that the Grade One students worked more diligently on written assignments when there was an opportunity for them to "publish" through Audioboo and Twitter. The students were more likely to follow the success criteria, to seek descriptive feedback from peers and to implement the suggestions when they could see a favourable end result (immediate web publishing). The students preferred Audioboo, as they could use their strengths in oral language and the familiarity of using pen and paper to create rough drafts before publishing immediately by reading their work to the class.

While the students initially enjoyed using the Livescribe, it was one of the first technologies to be introduced. It was popular because it took the familiar mode of writing (with pen and paper) and added the dimension of voice recording. However, due to the short attention span of Grade One students, they seem to enjoy the "flavour of the month", meaning they preferred the latest technology introduced (also evident in the following graph with regards to Bitstrips).

In addition, the Livescribe was more labour intensive as there was a time lag between completing the writing and plugging the Livescribe into the computer and uploading the pages to the Wiki. With Audioboo, a recording can be uploaded to Twitter by the iPod Touch within seconds without the use of additional technology. The following post-study graph demonstrates the student's preferences for technology. The students enjoyed how engaging and user-friendly the iPod Touch was to use. Laptops were popular due to the number of different uses the technology was able to support. The Livescribe pens were chosen as a favourite more often by students currently receiving Learning Support.

This study also had an element of parent engagement. Many of the parents who had expressed interest or discussed the study with the teacher tended to have students who made more effective use of the technology. These students visited the Wiki more often and produced writing of greater length and quality.

### **Grade Four/Five**

The Grade 4/5 students began the school year with basic understanding and use of the Wiki, which was limited mainly to creating and editing individual pages. The desire to experiment with new technological tools, in conjunction with our collaborative inquiry focus, brought us to our first new digital learning experience, our classroom blog.

Students were introduced to the blog in an attempt to create a classroom that extended far beyond the confines of the school yard. The blog, which was set up like a conventional website, provided an easy and effective tool for communication with students. It served

as a portal to foster a community of active learners, with accessibility via classroom laptops or computers at home. Updated regularly, it was a very convenient way to further manage the classroom, informing students of class requirements, posting handouts, notices, and homework assignments. Our blog became a space that acted as a question and answer board and was quickly embraced as an opportunity for students to further develop their writing skills with the advantage of having an “instant” audience. Descriptive feedback was easily given to students from both teacher and peers. Much time was spent on discussing clear expectations regarding tone, respect, consequences and as importantly, elements of appropriate blog-style feedback that would be encouraging and constructive in nature to all students. Students were often given specific blog assignments (both literacy and math based) that provided them the opportunity to discuss topics further outside of the classroom. Modeling appropriate strategies by use of the blog also gave students a form of reference after a regular school day as well as provided students with a natural opportunity to “peer review,” by observing the alternative approaches/strategies of their classmates. Many opportunities for the students to collaborate were available by having them relay research findings, ideas, or suggestions to one another.

Twitter was also introduced as a teaching tool, with the introduction of a 4/5 classroom account. The idea was to both make learning visible and to provide parents (and our followers) with a brief recount of what we were currently learning about. It gave students an opportunity to further practice their writing and summarizing skills while publishing their daily posts. The overall goal of using Twitter as an educational tool was to enrich the learning experience by allowing students and teachers to connect and interact in new, exciting ways. We are currently exploring other ways in which to integrate this type of social media into our program.

The daily use of a data projector has also been new to the Grade 4/5 students. Whether we are exploring a particular concept/topic on Brain Pop or working together to solve a problem, our projector was used regularly for a variety of curriculum-specific applications. In Language Arts, we linked to an author's website to provide greater insight and impact to a reading assignment. In social studies, students created a PowerPoint presentation to demonstrate the ways in which life was different during medieval times while in science, we developed a presentation on how sound waves are created for increased audio and visual impact. During math class, our projector has been used for such activities as teaching students how to calculate various formulas, and how to utilize charts and graphs.

iPod Touch devices and iPads were used frequently in our classroom. Students were permitted to bring in their own devices for the first time. As well, 3 iPod touch devices were purchased for the classroom to share. Applications were downloaded for the students as a convenient way of integrating technology into our classroom. Depending on the area of study, we were able to search out and download a related application. We experimented with various applications that ranged anywhere from helping students to study word lists, reviewing their multiplication tables to learning about the human body. Students most commonly used our school's Wi-Fi connection to look up information on

the iPod Touch devices without having to use a computer.

### **Observations**

Students were eager to begin using our classroom blog. This was evident in both the amount of time spent on the blog as well as the quality of the work posted there. Students constantly asked for blog assignments and actively participated in giving descriptive feedback to their peers. Students used the blog as an avenue for completing assignments and managing their 'school life' activities. We used the blog to showcase our writing and when given the choice, almost all students opted to do an assignment on the blog rather than using pencil and paper. The most important aspect of the blog, was the way in which it served to present, organize, and protect student work as digital portfolios. Developing skills and progress were easily analyzed and conferencing advice is always available for future reference. The blog was easily monitored and controlled while students published posts and participated in discussions, all within a secure blogging classroom community.

The introduction of Twitter proved to be exciting for both the students and parents. There was a lot of interest in what we were going to be posting and how we would be using it in our program. Students enjoyed summarizing our daily activities and actually spoke openly about wanting their writing to be perceived as quality work by their peers and their parents. There was an increase of student's dictionary use during these tasks as well.

Using the projector in class proved to be something that the students looked forward to. Students participated actively in the assignments given or taught on the projector. Our classroom dynamic is composed of mostly visual learners so the projector use introduced an added visual component while also providing diverse content to all students in the classroom at once.

The students thoroughly enjoyed bringing their iPods and iPads into our classroom. The fact that they were using something that they were so comfortable using outside of the classroom proved to add some excitement to whatever we were studying. From a teacher's perspective, the iPods allow you to seamlessly integrate audio into the curriculum. Some student uses were to research topics, expand upon mathematical concepts and tweet.

### **Findings**

Studies have shown that the effective use of technology to support teaching and learning across the curriculum has the potential to transform the learning environment. The data that was collected during this study period absolutely confirmed that students were more interested in completing writing tasks using technology and web tools. When asked what method they used to write with, 92.6% reported that they use a computer most often. When given the choice to write on paper or use a computer, 94% of students chose to use a computer all of the time. When interviewed using Audioboo, and asked 'How do you feel about writing at school when you are able to use technology and web tools?', 86% indicated that they preferred writing at school when given the opportunity to use technological devices and web tools. Students were quoted as saying "It makes it a lot easier than writing it because I am a really fast at typing. It is fun to go on the blog."

Most student responses addressed the fact that it was fun and much faster using computers. It is important to note that the students who did not choose technology as a preferred method of writing indicated that they were not “very fast” at typing. The fact that students lacked any sort of formal computer/keyboarding training is an area that may be looked at more closely.

When assessing student writing, there was an improvement in quality of 79% of the Grade 4/5 writing. This was measured during a daily writing exercise where students were challenged to write 5 perfect sentences (structure, spelling, grammar considered). The improvement was seen equally in both structure and conventions. The grade 4/5 students exhibited much enthusiasm while completing writing tasks using technology. Their attitudes and written work suggest that technology is indeed a key component in improved writing, as well as motivating their interest in all other areas in which it was used.

### **Grade 8:**

The Grade 8 students have welcomed the new technology in our classroom. They enjoy using the iPad with the Splashtop Remote to help co-create learning goals and success criteria as a class. They have had great success in creating Public Service Announcements using the “Audioboo” application on the classroom iPad.

Students enjoyed having the accessibility throughout the day with the laptops to research information on the internet for projects and assignments. The students enjoy tweeting about what is going on throughout the day in our class. Parents now have the opportunity to follow us throughout the day. Students enjoy using Edmodo to complete diagnostic and formative quizzes and assignments. They enjoy the fact that they have the ability to ask questions not only to their teacher, but their project groups as well to help them along the way.

Students in our Grade 8 Class have created their own Edmodo account. Through this site, they are able to work on assignments and projects and submit them electronically to their teachers. This provides the opportunity for the teacher to provide appropriate feedback to the students that they are able to revisit in the future.

### **Observations**

When the Grade 8 students discovered that our class was going to receive additional technology, they were very excited and eager to put it to use. I found that the technology helped create a classroom environment where the students were more engaged in the writing process. Not only were the students demonstrating higher engagement levels, but the outcome of their writing showed an increased level of quality.

I also found that parents have become more involved in their intermediate students’ work when provided with the opportunity for technology related resources such as Edmodo. The parents appreciate the ability to check the classroom calendar on Edmodo to see any upcoming events or assignments that will soon be due. The Edmodo program allowed for students and parents to receive descriptive feedback relating to their completed work in

order to make the necessary adjustments and to prepare for their summative tasks. Parents now have the means to be aware of the assignments, tests and projects and can be better informed as to what is being taught in the classroom.

### **Findings**

In order to track some of the changes that technology had on writing in our classroom, we conducted a pre and post technology survey. When having discussions with the Grade 8 class, it was evident that when given the opportunity, students have more motivation to write when technology is available.

When asked the question in the survey; “Do you like writing (stories, reports, journals, etc) at school?” there was a 15% increase in interest level when technology was readily available. Through my observations, not only did a higher percentage of the students become more interested in writing, but there was also an increase in the quality of their writing.

When asked the question “What methods do you use to write?”, “Word Processing Programs” had an increase in percentage from 69% to 83% when comparing their pre and post surveys. Now that students have more access to computer technologies, they are being used frequently and, most importantly, having a positive affect on their overall achievement levels.

When the option is given, 90% of students in our class prefer to use the computer over paper and pencil when completing an assignment, compared to 75% at the beginning of the year.

In one of our survey questions, there was a 13% increase in the use of computers when writing in class. Through observation, there is also an increase in motivation while writing when there are computers involved.

Our Grade 8 class conducted post-study interviews using the Audioboo application. After analyzing the student responses to the question “How do you feel about writing at school?”, 60% (12 out of 20) indicated that they prefer using technology when writing. This response was eye opening in the fact that the question did not lead students to a “technology” related response. This helps to prove that technology is an important component when determining interest levels in student writing. Some of the quotes from students relating to technology include;

- “It would be nice to use more technology.”
- “I like typing because it is faster.”
- “It (technology) is neater and quicker.”
- “I find it easier to use the laptops (rather than write) because you can research as you are going. Also, if you have to use books they might be outdated or something.”

### **Team Conclusions / Recommendations**

Overall, the use of technology has had a positive impact on writing in our classrooms. We have noticed an increase in not only the quality of writing in our classes, but also the motivation and willingness to write when technology is readily available. As the document, Together For Learning suggests, it is our responsibility to ready our students for the digital age in which we live. We must challenge the effectiveness of our old, “tried and true” methods in order to create a learning environment that better suits our students as learners and as individuals. Our tech-savvy students desire and deserve to be taught in the way that interests them and challenges them. Schools need to take advantage of the opportunity to teach the students about digital etiquette and digital citizenship at a young age before poor habits develop. Web 2.0 tools can be used to expand on ideas instead of abbreviating them, expressing ideas in a multi-media way that was never before possible. Web 2.0 tools has bridged the gap between home and school, allowing for up to the second communication with Twitter, Wiki and Edmodo use. The technology enables the students to interact with others, giving them the confidence to see themselves as published writers, encouraging them to set their standards higher now as a global citizen. Students learn to be critical thinkers, giving others meaningful feedback, thus, also learning together!

We recommend that more in-service be held for staff to become comfortable with technology and see Web 2.0 tools in use in other classrooms (e.g. Classrooms on the Move). We would recommend every classroom have access to laptop carts on a regular basis or better yet, a centre in each classroom of 4 laptops that make using technology less of an event that happens once or twice a week, but a regular feature of how we operate at school, utilizing small group instruction. The use of data projectors/SMART Boards is essential, along with either iPads or iPod Touch devices. We found that the iPad was very user-friendly, allowing the students to write more easily due to its bigger screen. In an ideal world, our students would be well-equipped with laptops, iPads, iPod Touch devices and Livescribe pens.

The feedback from the students, as well as teacher observations, fully supported the idea that the engagement and achievement of our students increased, and student writing improved with the integration of various technologies. These conclusions have also helped the Hugh Beaton staff refine the culture of school thinking around technology, resulting in the development of new BYOD posters for full implementation in September.

### **References**

Blackwell, G. & Chalifour, F. (March 2012). Tech Class - meet four teachers who are using computers, social media, webcams and other tools to help launch learning to a whole new level. Professionally Speaking.

Foxman, S. (December 2011). Tricks for Tweets - Using social media in the classroom. Professionally Speaking.

Ontario School Library Association. (2010). Together for Learning: School libraries and the emergence of the learning commons – a vision for the 21st century. Toronto, ON: Ontario School Library Association.

Richardson, W. (2010). Blogs, Wikis, Podcasts, and Other Powerful Web Tools for Classrooms (Third Edition). Thousand Oaks, CA: Corwin.

Rosenfeld, E. (Eds) & Loertscher, D.V. (Eds.) (2007). Toward a 21st Century School Library Media Program. Toronto, ON: The Scarecrow Press, Inc.