**Technology Grant Proposal for School Improvement Initiatives**

**Assessment of Current Technology at Yorkson Creek Middle School**

Yorkson Creek Middle School (YCMS) opened in the fall of 2014. In 2014, it had 9 divisions of Grades 6 and 7 and 9 divisions of Grade 8. Currently, it has 15 divisions of Grade 6, 12 divisions of grade 7, and 13 divisions of Grade 8. When the school was opened, it was outfitted with new Apple MacBooks, iPads, and iPad minis for teachers and students. In the spring of 2018, all the technology was recalled from teaching staff and added back into circulation for student use, to help supplement technology for students and to replace broken machines. Currently, YCMS has 105 Apple MacBooks (all purchased in 2014) for student use divided into 7 carts of 15. In addition, 21 Apple MacBooks have been designated for use by the resource room. The MacBooks regularly have issues connecting to the network and the internet. Many are damaged with missing keys, there is no current plan to replace them in the future. There are currently 84 - 4th generation iPads divided into three carts for classroom use (28, 28, 30) and 90 iPad Mini 2’s divided into 3 carts of 30 for classroom use. Teacher’s have been given either a basic Dell or iPad 5 for teacher and classroom use. There is a total of 50 projectors at YCMS, and all classrooms, including the learning commons and both gymnasiums, have a projector, with most projectors are mounted from the ceiling. There are 27 apple TV’s in the school, being utilized by teachers who chose iPad’s as their teacher technology. In the learning commons there are 8 iMac desktop computers, and an iPad5. There are 4 photocopier / printers in the building for general use, and the one in the learning commons is a colour photocopier. As stated before, the resource room has 21 MacBooks, in addition to these, they have 22 4th generation iPads, 5 iPad Minis, and 21 Dell laptops. All this technology is only accessible by resource students. In the woodshop, there are 13 Dell laptops typically used with the vinyl cutter and only used in the woodshop. In the school’s Makerspace, there are 20 spheros and a 3D printer. 30 Lego Mindstorms are also stored in the Makerspace but are accessible to any interested staff to sign out; unfortunately, they are about 3 years old and are already missing many parts and are not well looked after. At present time, there is high demand for all the technology in the school, because our current numbers are so high; however, next year, there will be half as many students, thus alleviating the stress on the current technology.

**Research and Proposal**

After an assessment of the current technology at YCMS, I have identified that there are three key areas that need improvement. First, the MacBook laptops are not going to last much longer, so a viable plan for replacement will be needed eventually; however, I do not see this as the most significant gap. Second, there is the possibility for purchasing a laser cutter to support student projects and ADST opportunities in the woodshop and in the Makerspace; however, this will not be a schoolwide initiative, therefore, not the best use of this money at this time. Ultimately, I see the greatest area of need is in supporting a school-wide coding/robotics initiative in the school. I know that providing students with the opportunities to develop these skills are not being explored enough in the school, because of a lack of resources and opportunities.

In Langley School District’s vision statement, the goal is to create an “innovative, inspiring, and unified learning community” where learners are “knowledgeable, skilled and innovative”; therefore, implementing a coding program at YCMS directly aligns with Langley’s vision for student learning. Furthermore, a coding program integrated the core competencies, particularly engaging students in meaningful opportunities to think creatively and critically, while collaborating with their peers.

Through my research, I believe the best way to deliver a coding/robotics program at YCMS would be through the learning commons. The purpose of the YCMS learning commons is to support literacy and curricular initiatives in our school. There is a full-time teacher librarian in our school learning commons whose job is to support teachers in literacy, research, and ADST initiatives. Leveraging this resource appropriately can allow opportunities for teaches to comfortably implement coding literacy into their practice. Martin (2017) in her article *Libraries as Facilitators of Coding for All* found in her research that librarians with no prior coding experience were able to effectively facilitate coding. Furthermore, she concluded that,

the librarians need well written facilitators’ guides providing support for novice coders, to be comfortable not being the expert, and to be flexible in facilitating. Relying on peer-to-peer learning and problem solving as issues arise are also important strategies.(Martin, 2017, p. 53)

Other research in this area has also concluded that school librarians have always traditionally been called upon to provide students with access to information in innovative and inclusive ways, making libraries an excellent place to implement a school’s coding program. (Smith, 2018) Librarians can be viewed as facilitators of problem-solving and collaborative learning; therefore, school libraries are the perfect place to implement coding initiatives. (Martin, 2017)

Based on the above research, I believe that the best place to implement a coding program at YCMS is in the learning commons. The $75,000 will be used towards purchasing materials to properly implement coding opportunities at YCMS.

To implement the program, we will need to purchase 60 Dell computers – specifically dedicated towards coding literacy through the learning commons. These computers will be divided evenly into 3 carts which will allow teachers with the flexibility to continue working on coding projects in their classrooms after the teacher librarian initially works with class. Dell products have been chosen, because in Langley’s technology plan, Dell is one of its partner companies; therefore, it is an affordable, supported platform in Langley. Langley’s technology team will be able to support these devices with assistance from Dell Education. I have proposed purchasing the Latitude 3390 2 in 1, because the touch screen, plus keyboarding options will allow for greater access for a wider variety of students.

In addition, I propose that a variety of micro: bit materials be purchased to help students engage in coding activities that are interactive, creative, and collaborative. Ultimately, being able to use coding to create instruments, games, and cars that move will increase engagement in the process. micro: bit programming is online based and user friendly. It has well-written facilitators guides as well as videos and tutorials to support both teachers and students build their coding confidence. Please visit <https://microbit.org/> for more information. The implementation would be progressive, with skills taught in Grade 6 then being built on in Grades 7 and 8. In year one all grades will work on the same basic coding opportunities, and by year three the Grade 6’s will have progressed to more advanced coding opportunities.

To initially implement the program, I have budgeted for the teacher librarian and 3 teacher leaders (one from each grade) to be given 3 release days to work together and play and explore the materials when they first arrive. This time will be spent with the district Digital Coach whose area of expertise is in coding and robotics. The goal would be for this team to work together and create learning opportunities for students and teachers. In addition, the plan would call for a school implementation team that will be composed of the teacher librarian as the team leader and then three additional teachers, one from each grade, to support the teacher librarian in this initiative. I have built three days of initial release time into the schedule for this team of four to work together to play with and explore the materials. As a group, they can determine an implementation plan, that engages as many students and teachers as possible. By utilizing the librarian, the hope will be that the entire student body with have an opportunity to work with the coding materials each year. An addition three days of release time has been budgeted to allow for the team to have follow-up sessions to troubleshoot and reassess the direction of the program. There will be around $7000 of remaining money labelled miscellaneous that will be utilized to purchase more materials and provide further teacher release time as needed. I believe that rollout can begin immediately in year-one, with a vision to build capacity and confidence in the school over the subsequent four years. By the end of the four years, we will be sending our second group of students, who will have participated in this coding initiative since Grade 6 off to high school. A complete financial breakdown is outlined on the next page.

Thank you for your consideration of my proposal to make YCMS a leader in technology in Langley and British Columbia.

**References**

Martin, C. (2017). Libraries as facilitators of coding for all. *Knowledge Quest*, *45*(3), 46–53.

Smith, D. L. (2018). Coding for success. *Teacher Librarian*, *45*(5), 13–16.

**Financial Breakdown**

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| **Materials / Expense Items** | **Unit Price** | **Total Cost** |
| 60 - Dell Latitude 3390 2in1 laptop computers  \*Shipping is free  \* 3-year warranties / protection plans | $761. 60 (including tax) | $45,679.00 |
| 3 - Dell Charging Carts | $2,833.59 (including tax) | $8,500.77 |
| 6 BBC micro: bit Club Set  (10 micro: bits per box, as well as 10 adapters and 10 battery holder) | $267.95 | $1,607.70 |
| 60 - BBC micro: bit Protective Case | $6.95 | $417.00 |
| 6 micros: bit Experiment Kits  (includes materials to support electronic circuits) | $42.95 | $257.70 |
| 6 SparkFun Inventor’s Kit for micro: bit  (includes materials to read sensors and move motors) | $73.95 | $443.70 |
| 30 SparkFun micro: bot Kit | $89.95 | $2,698.50 |
| 30 SparkFun gamer: bit | $13.95 | $418.50 |
| Taxes for micro: bit materials  Note, shipping is Free |  | $701.17 |
| 3 initial days of TTOC coverage for 4 teachers | $300 | $3,600 |
| 3 follow-up days of TTOC coverage for 4 teachers | $300 | $3,600 |
| Miscellaneous possible supplies, possible training and follow-up |  | $7075.96 |
| **Grand Total:** | | 75,000.00 |

\*Micro: bit technology and parts will be purchased from bc-robotics.com

\*\*Dell laptops and carts will be purchased through Dell Canada, solutions for Education department