Aspen View
PUBLIC SCHOOLS

Learning and Technology Report 2017-2018

April 2018

1. Scope and Purpose of Report

The purpose of the *Aspen View Learning and Technology Report* is to provide the Board of Trustees with information that will help them understand how educators in Aspen View use technologies to empower innovation and discovery in their classrooms.

The report contains information regarding operations of the technology department during the 2017-2018 school year and outlines tasks undertaken to help support instructional programming for students and administrative functions of the Division in meeting the needs of staff, students, and the school community.

Information shared in this report includes:

1) the condition of the Division's educational technology status in regards to quality, quantity and purpose;

2) the Return on Learning of the technologies currently in place within the Division;

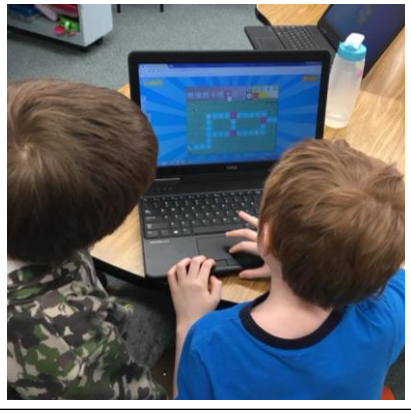
3) the Return on Learning data collection tool for future technology decision making and purchasing;

4) Aspen View's Learning and Technology Plan for 2017/2018 – 2019/2020.

Rationale

Today's generation has seen the rise of knowledge as a key resource in the world's economy. In the future, Alberta's economy will be even more knowledge-based, diverse and grounded in value-added industries. As never before, this generation will need to be innovative, creative and skilled in managing knowledge as a resource. To truly transform education to prepare this generation for an increasingly competitive, knowledge-based world, our classrooms must be equipped with the proper tools, such as current and leading-edge technologies, that empower innovation and discovery. Planned and purposeful use of these technologies is key.

Mission Statement



Aspen View Public School Division believes that technology needs to be a significant part of the learning experience for all students. Technology has the potential to provide significant tools for both teachers and students to more efficiently, effectively, and creatively solve problems, to develop critical thinking skills, to organize and process information, to communicate ideas, to learn new information, to reinforce learning, and to apply knowledge to future life situations.

The Aspen View Technology Department's mission is to provide reliable, leading-edge and integrated technology to support and facilitate teaching, learning, and the delivery of services to the

students and staff of Aspen View. The Technology Department is committed to the values of:

- Reliability;
- Professionalism and integrity;
- Efficiency and effectiveness;
- Innovation;
- Excellence;
- Accountability;
- Continuous improvement; and
- Collaboration and teamwork.

Vision

Aspen View Public Schools envisions that technology is accessible and supported for all staff and students to advance teaching, learning and communication. Specifically, we envision that technology is available and supported for all staff and students:

- To provide global access to information and be able to access, assess and share that information;
- To meet the curricular needs of all learners;
- To improve academic achievement;
- To refine critical thinking skills and foster creativity;
- To address diverse learning styles and rates;
- To provide a variety of means to communicate;
- To collect, assess and share performance information;
- To improve the effectiveness of administrative tasks;
- To master the necessary technology skills as demanded by the workforce and society;
- To develop ethical values with regard to the use of technology; and
- To facilitate a communication bridge between school and community via our division website and social media / communication platforms.

It is our intention that this vision will remain constant over the course of our plan and that it will guide the day-to-day and year-to-year implementation of technology across Aspen View Public Schools.

2. The Technology Department

Who We Are

- Director of Curriculum and Technology - Donna Wesley
- Director of IT Services – Ernest Aleixandre
- System/Network Analyst II – Jason Sigurdur
- System Analyst I – Cory Ferris
- Technician II – Phil Fokkema
- Technician I – Brad Buchanan
- Technician I – Ovi Munteanu

What We Do

- Director of Technology and Curriculum
  - Educational Technology Integration
  - Curriculum Development
  - Staff Professional Development
  - Research and Innovation
- Director of Information Technology Services - Tech Dept.
  - Infrastructure - Support - Security - Research
    - End User Technical Support
    - Infrastructure Installation and Maintenance
    - VOIP - Telephone and Telecommunications Support
    - System - Network and Internet Security
    - Wired / Wireless Network - Internet Support
    - Remote Access Support
    - Purchasing - Evergreening and Asset Management
    - Research and Innovation
    - Document Management System Support
    - Financial / Human Resources System Support
    - Backup / Disaster Recovery Planning and Support
    - Desktop / Mobile Device Support
    - Software Support
    - Database Support
    - Email Support
    - Server Support
    - Cloud Services Support
    - Firewall Support
    - Printing Device Support
    - End User Training and PD
    - Classroom Technologies Support
    - Video and Audio Conferencing Support
    - Virtualization System and Server Support
    - System / Device patching and updating

Technology Goals

Ultimately, the power of technology should be harnessed to support innovation and discovery, not simply to aid teaching. We need to engage learners to use these new technologies as designers and creators of knowledge. (Inspiring Education: A Dialogue with Albertan)

Aspen View Public Schools uses the *Learning and Technology Policy Framework* (2013) document to guide our work in the Technology Department. A copy of the Learning and Technology Policy Framework (LTPF) can be found in here.

3. Using the LTPF Policy Directions to Guide our Work

A. Student-Centred Learning - LTPF Policy Direction 1

Technology is used to support student-centred, personalized, authentic learning for all students.

Aspen View Evidence to Support this Policy Direction:

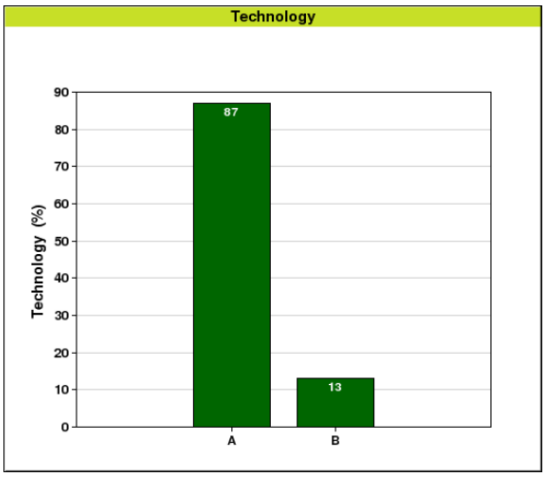
- **Devices for students:** Chromebooks – coded students receive their own device, iOS devices, iPads when necessary, laptops as required (testing), desktops as needed (editing video and photography)
- **Devices for teachers to support students:** refurbished workstations, Winbooks with remote access
- **Math specific online programs:** ReflexMath, EquatIO (TextHelp), MiPi (Mathematics Intervention / Programming Instrument), "Mathematical Mindsets" online course for teachers
- **Literacy specific online programs**: RazKids for home use, Reading A-Z, ABRACADABRA, Tumblebooks, Read&Write for Google / Snapverter, Daily 5 / Café Online Resources, CCPensieve
- **Other programs used by students:** FreshGrade pilot, All About Me, MyBlueprint, G-Suite
- **Programs/apps/social media used by teachers to support students:** G-Suite, Microsoft Office, Adobe, Netscaffold (IPP), Tell Them From Me (OurSchool), EYE-TA, Behavior Toolbox Series, Alberta Assessment Consortium, Alert Solutions, ACF (Audio Cine Films Inc.), Division and School website, Facebook, Twitter, Alert Solutions, PowerTeacher/Gradebook, Moodle
- **Storage:** Division servers for sensitive data, cloud for non-sensitive data(Google, Office 365, Azure)
- **Steam – Robotics/Coding/Makerspaces (See Appendix B):**
    - **Mechanical devices** – Bee-Bots, Blue-Bots, Dash, Dot, Ozobot, Robot Turtles Game, WeDo Lego Education, LittleBits, Osmo Coding, Makey Makey, 3D Printers, 3D pens, Raspberry Pis, Piper Computer Kit, mBots, Bloxels, Snap Circuits Jr., Snap Circuits Sound, Snap Circuits Light, Podcaster, Makerspace resources online
    - **Steam - Coding programs**: code.org, CS Unplugged, Tyker, Lightbot Jr, Kodable, Scratch Jr., Scratch Jr., The Foos, Tickle, Hopscotch, MIT App Inventor, Arduino, Snap!, Udacity, xCode, App Lab, Javascript, Khan Academy, Ruby, Blockly,
    - Lego and STEAM challenges (positive problem solving challenges)

- **GradeBook / Report Card** - provides instant communication with parents
- **Assistive technology:** Chromebook Extensions - Read & Write Google, OpenDyslexic extension, Read Aloud, Auto Highlight, Internet Abridged, video and screen captures
- **General Comments:**
  - The use of the devices and programs/apps allow for students to play a more active role in their learning process.
  - Students in Aspen View's technology rich classrooms are armed with powerful tools to help them gather information from multiple sources, consult/collaborate with fellow students or teachers and present their findings. Students can work collaboratively and asynchronously, better enabling group work.
  - Students are enabled to gather more real-world data, share their findings with learners beyond their school, and publish their findings to the world.
  - For teachers, Aspen View technology amplifies the resources they can offer to their students. Rather than only relying on a textbook or other print material for content, devices can provide online access to content experts and up-to-date information from original sources.
  - Tech devices are used as a tool to enhance learning and differentiate as per student need.
  - Students can connect with experts such as working scientists to work on real-world problems.
  - Students are increasingly more independent and confident as they have tools at their disposal which allow them to solve some of their own problems.
  - Students can share learning with parents, in nearly real-time, using programs like All About Me or FreshGrade.
  - Providing students with the option of having audio with texts by embedding audio links on a digital format of the test.
  - Greater choice of presentation formats, media, and research base = more student independence, personalization, and student centered learning.

Chromebooks, GAFE and Technology Impact on Students

Students were asked: "What effect does using Chromebooks in class have on your learning?"

- Positive (A)
- Negative (B)

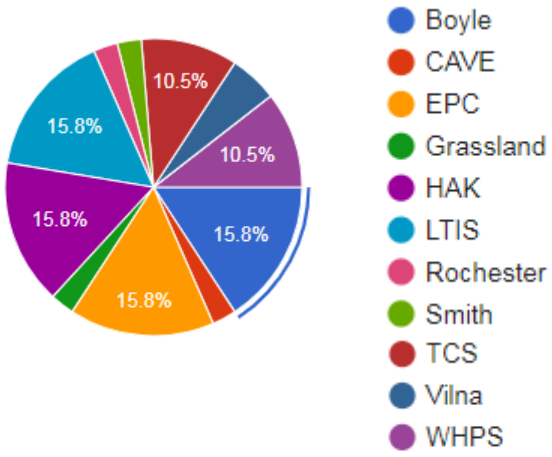


From spring, 2017 Tell Them From Me Survey.

From the spring, 2018 Tell Them From Me Survey
Student answers to open ended question (responses from one school only).
How is technology used in your classes?

- We use technology a lot.
- We only use it for school work.
- We use our technology for reflex math, health, research and 2Learn.
- To use power points on slides! We use the Chromebooks to do reflex and science and math. It's amazing!
- Almost every class. We use the computers to use the internet.
- Using the SMART Board.
- I use a computer to research sometimes.
- Our school uses technology to our advantage.
- I use a laptop for every subject, since I take everything by virtual. If I didn't have one I wouldn't be able to do my work.
- It is used to learn, write essays, write information about what we are learning.
- Using computers for research or documents for most of our assignments.
- The technology in my classes is useful to my learning.
- It's used a lot--Chromebooks for essays, math, etc.
- Work and sometimes fun.
- We play reflex math and typing.
- Science games.
- We do projects and it helps us learn and gives us more of fun.
- Technology is great for pulling up something and it helps you understand.

Teacher answers to Google Forms survey, April, 2018



Question: How do you use Chromebooks with your students in your class?

1. Most often to use google docs and slides, although I've used them for padlets and video making.
2. I use Google Classroom to put up notes and assignments for most of my classes.
3. Chromebooks are also used as tools for research and writing.

4. At times we use them to help with adaptations. The students love being able to have the access to technology they need.
5. Primarily for research while completing projects, but also for my coding classes.
6. Students are accessing lessons and materials.
7. Research.
8. Group project work through shared folders.
9. Individual work - essays, slides, forms.
10. Google slide shows to students to present information.
11. Writing projects.
12. Coding.
13. Reviewing content.
14. Using teaching/learning games.
15. Speech to text software for accommodations, gamification, visual presentations, pictures, collaboration.

16. We use the Chromebooks to conduct research, build presentations and complete lab write ups.
17. Sometimes I have grade 5 students experiment with the San Francisco Symphony kids page.
18. We use Chromebooks daily for Reflex Math, we have used them in Health to research and do power points on career choices, we have used them in Literacy when we were on our research bend, and we use them to go onto 2learn.ca at various times.
19. Sharing Google docs, assignments and collecting work with the students. They also use it to access videos and notes.
20. Math games.
21. As access points to projects, lab reports, programs, google classroom, and for research.
22. Making good copies of assignments, research, computer literacy, presentations, collaborating with others.
23. Google exit slips, google read write.
24. I use them in math and language mostly, for centers related to the outcomes.
25. Daily use (Word processor, search engines, and a lot of speech to text).
26. Occasionally when they are available I have them create graphs on Google sheets. I have also had students do research on integers in the real world.
27. Interactive educational activities.
28. I use them for research and report writing, and project making.
29. I use it to support diverse needs everything from speech to text to dyslexic fonts.
30. I use google classroom for all of my classes which allows everyone access to online assignments.
31. Making leaving sub plans super-efficient and parents have access to marks, comments and attendance in real time.
32. I use them as a resource for students to find recipes or videos explaining techniques in recipes. In my Food Quad classes and JH classes the students are on Chromebooks using Google Classroom and as a research tool when they are not in the kitchen completing labs.
33. They use the Chromebooks to complete their virtual class assignments.
34. Chromebooks are used for studying, note taking, games, review projects and research.

Question: Have you ever used Chromebooks to create a completely new task that was once impossible or unimaginable before the technology was introduced? If yes, please explain.

1. Collaborative google docs and slides.
2. Forms are much more easily accessible through Chromebooks.
3. I wouldn't say a completely new task, but I definitely use them to enhance my daily practice.
4. I don't think so; they do, however, make tasks more manageable.
5. For the most part, we are doing the same things, it just becomes more relevant to the students to do them using relevant (modern) technology.
6. Digital submission of assignments. Both the students and I rely on Google Classroom for organization, live feedback and classroom collaboration. It is also an effective tool for communication and parent involvement.
7. I have been able to place many items online using Google classroom. This has allowed students to access notes, demos, and assignments when they are away from the classroom.
8. Communicating with students directly through the Chromebook when they share their work with me.
9. When students miss school or go on trips all materials can now go with them as I scan all resources, this was not always the case.
10. I have the students share their assignment with me via google docs before they even start. This way I can tell if they are wasting class time by seeing how much they have actually accomplished in a certain amount of time.
11. Students who are away now have access to notes, WS, videos, etc. that we watch in class. Therefore, if students are away, they can catch up and not fall behind.

12. The playposit allows students to individually watch a video and then answer sporadic questions assessing how much students understand.
13. Google read write allows for students to have a tool to aid in their disability if they want it.
14. We can now edit assignments right away and give immediate feedback.
15. I have used coding games/apps and other projects that require internet usage.
16. I do a silent group research project where they have to only use the technology to research, combine and create a presentation with absolutely no verbal communication.
17. Interactive educational activities.
18. Claymation! I also, use them as alternative ways to differentiate projects for various learning needs.
19. After attending a Google PD In November I made a great review tool for my English 20-2 class. I set it up in Google Forms and if students answered theory review questions incorrectly it prompted them to a review page to help them review the theory and then had to re-answer the question. It allowed individual review and I knew that students had to look at the correct information. Students could not move on from a question until they answered correctly. This review allowed students to check their knowledge and know what they had a good understanding of and what they should review for upcoming summative assessments.
20. Google Classrooms and editing documents allow a more personal and accessible interaction with students.

Question: When we provide technology to our staff and students, we do so in the hopes that it will have great educational returns. We refer to these educational returns as a Return on Learning. In education, some positive Returns on Learning are: 1) enhanced student learning, 2) increased parental involvement, 3) increased attendance, 4) higher graduation rates, 5) lower dropout rates, 6) boosted teacher capabilities, 7) increased staff retention rates, 8) streamlined data processes – increased staff efficiency and effectiveness. Do you believe the use of Chromebooks has had a positive Return on Learning in your class or in your school? Please provide evidence to support your answer.

1. Many of my students take pride in showing their parents their work on google.
2. They have a much easier time loading documents and it saves time in class compared to logging in to laptops and then again having to log in to chrome.
3. With the use of Google classroom I am now able to categorize and organize student notes and assignments.
4. Students can work at home if they miss class and have notes available to them should the miss them or not write fast enough to write down notes. My students know all notes get put on the classrooms, reducing stress and anxiety for them.
5. The Chromebooks have been very beneficial for my students who have learning disabilities. Using dyslexic font and coloured paper has greatly helped one of my struggling students.
6. I put all the materials for my senior high classes on google classroom allowing my athletes flexibility of program and success.

7. Yes, especially in terms of the amount of ownership students take in their research.
8. Enhanced student learning. Increasing student engagement
9. Many of my students take pride in showing their parents their work on google. They also have a much easier time loading documents and it saves time in class compared to logging in to laptops and then again having to log in to chrome.
10. Enhanced parental involvement through the use of google classroom. Students can (and do) show parents assignments at home and parents become more engaged in their child's learning.
11. Students are relying on Chromebooks as a tool for success. Google Read & Write has become a necessary tool for students. Parents can be active participants in Google Classroom and can help their children take more ownership of their learning.
12. I believe it has had a positive impact because it can allow a teacher to develop several google classrooms to assist in the differentiation of the material being presented. Students then can work on their task without others knowing how different it is from their own task at hand.
13. Students are engaged when they are working on them.
14. Enhanced student learning, as the students have the Chromebooks readily available when they need them.
15. I feel students are more engaged and so are parents because it is easier to access things at home.
16. It enables my students to do research that they would not be able to do without access to the

internet.

17. Differentiation - speech to text and so on for IPP students
18. If we are investing on students' future learning we need to introduce them to technology. Chromebooks are a starting point, however they do have limitations to what a student can do.
19. I believe it enhances student learning as it allows them to research deeper into any topic they are more interested in. It also allows for different formative assessment including kahoot.
20. I believe the Chromebooks are being used to enhance student learning and to help reinforce curriculum outcomes.
21. I use the Chromebooks for students who don't have a cell phone so they can browse the web for a particular topic. So enhanced student learning would be the return on learning.
22. Absolutely, our students are growing up in a world where they will not know a world without technology. I actually worry that we don't have enough technology to keep up with society. That said, we definitely use the technology we have to the absolute best of our abilities. We are able to differentiate projects for our students allowing us to create greater ways of making sure students are understanding outcomes in curriculum.
23. The earlier we begin this process the less difficult school becomes for students who have difficulties allowing for greater graduation rates.
24. The more PD staff has on technology, the higher the potential for use and practice in the classrooms.
25. An excellent example I can think of is in my grade 3 social students were given an assignment of finding 3-5 things they knew about each country we were studying; drawing and labeling them onto a poster. Students were allowed to use Chromebooks to help if needed for finding pictures to draw. Two of my students have various needs and this assignment would be extremely daunting to them. So I spent a day teaching them how to log in and bring up a new document, and find pictures on the internet and copy them into a report. While this was hard for them to learn it became something they will know from grade 3 forward and be able to show that they are capable of hitting the outcomes just in a different way.

26. Attendance might be increased with students being able to access learning more readily and feeling more successful with writing and having text read to them
27. All ties into student success so may see it with an increase in student access. We need more Chrome books to have a set in each room rather than 3 classes sharing a cart.
28. I like to think use of Google share has increased communication with staff.
29. I feel it motivates students especially those reluctant to write as they enjoy using the Chromebooks for their final version. I also find it useful for struggling writers because there are features like read and write that allow these students to put down ideas that otherwise would be very difficult.
30. With all of the online tools and platforms available, especially all the ones available through Google I believe it has enhanced student learning.
31. There are a lot of review games that can be set up and played in the classroom to help review information and it's not another worksheet for students to complete.

32. I think it has improved teacher capabilities due to the fact that as long as you have internet access and a device with you can update assignments, marks or provide feedback instantly to your class.
33. Without the use of Chromebooks, the CAVE would not function.
34. Students are able to access all of their information needed to succeed instantly.
35. Students that do not respond well to auditory learning may use the Chromebooks to stimulate their visual learning in order to grasp information being exposed to.
36. Inability to read students work has been eliminated, also eliminating misconceptions of work provided.
37. Students are able to see missing assignments through google classroom and have access to all of their materials which directly correlates to less paper wasted and fewer dropout rates due to missing/not handed in assignments.
38. Parents are incredibly involved with their student's education since all documents are available online - in an online world this is incredibly crucial that parents are involved and aware of what their students are currently learning/working on.
39. Chromebooks are necessary to students learning because when they get into university they need to understand how to do proper research and understand multiple resources for assignments and there is no better way to get them exposed to this than by having technology readily available to the classroom. Each subject should have a Chromebook cart in my opinion.

Question: Has the use of Chromebooks negatively impacted teaching and learning in your classroom or school? If yes, please explain.

1. At times students do not always use technology as it is intended to be used.
2. As with any technology, close monitoring is key.
3. They can be an extra distraction in the classroom. Also it is another job for teachers to try and maintain and track them. It is nice that students can use them, especially when writing and printing are difficult, but they can also lead to off task behavior.
4. I think too often Chromebooks are used for a reward ... eg. If you are finished, you may watch a youtube video, if you are finished, you may play a game etc,
5. Only so far as the shop I teach out of has no wireless internet signal.
6. Too much screen time for kids for the day.
7. Mostly no. However I feel that it's pigeon toeing the students into one type of operational system. They are becoming so use to google products they have know idea how to open, use, operate, and save offline programs.
8. Sometimes I feel they believe they are entitled to a Chromebook, and accomplishing an assignment without a Chromebook is really difficult for them.
9. Some students may play games when teacher isn't watching. As teachers, we are aware of that issue and deal with it within our classroom.

10. I think that students that cannot write properly need to be made to hand write more. It cannot be used as a way to escape having print by hand. This is an essential skill.
11. Since Chromebooks can only run apps and not executable programs, I use the SMART Board with the class for high school mathematics learning. So Chromebooks are limited for my area of teaching but are more useful for lower grades.
12. There is a lot of pre-teaching time it takes if students don't know how to use them already.
13. Sometimes, if the Internet is slow or down and you have your assignment on Google classroom and students are to research it can slow down the lesson plan.
14. Students will oftentimes do their work on their own which is great but will end up ignoring what the instructor is teaching about and miss the discussion points crucial to learning.
15. They will grab them without being prompted to and will not plug them back in.
16. Having a computer in front of them at all times in my opinion also hinders communication.
17. Students, in general, have an obsession with technology and it is an addiction with some of them. Having more access to technology feeds this addiction.

Question: Do you have general comments that you would like to share regarding using Chromebooks in your classroom or school? If yes, please comment here.

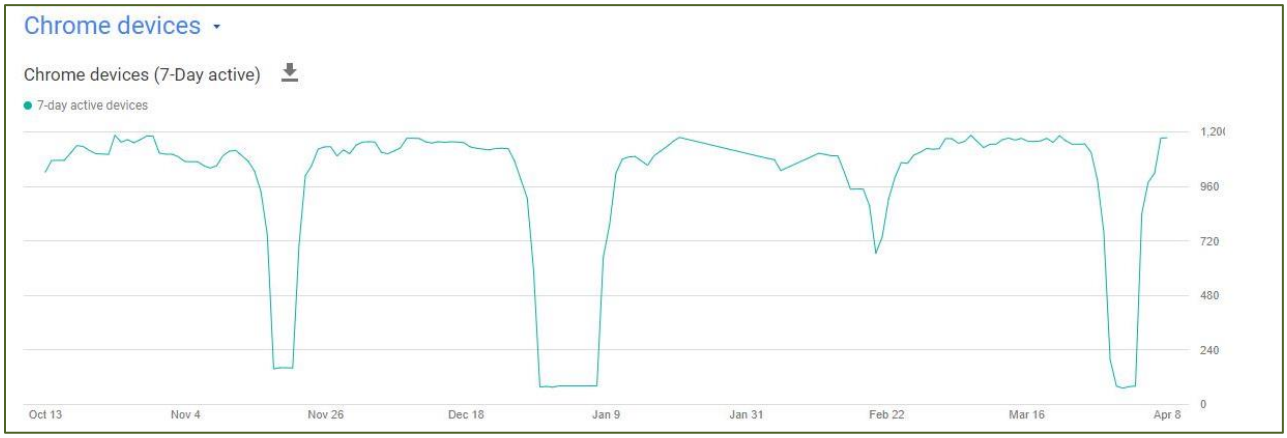
1. Since many of us do our Literacy in the morning there isn't always enough Chromebooks to go around.
2. Looking at promoting BYOD more and trying to have students have a one-to-one technology use or scanning out the devices for each use. Getting a scanner for each cart.
3. The devices are being used all the time.
4. We've had many discussions on ensuring the students take better care of the technology made available to them. As a staff, we need to increase student expectations and responsibilities at some levels. Some staff are amazing.
5. I no longer make paper copies of the staff meeting agendas. I create and share the agenda.
6. I love being able to use the Team Drives to keep the drive more organized.
7. Speech to text / text to speech for Differentiated instruction - Love It"

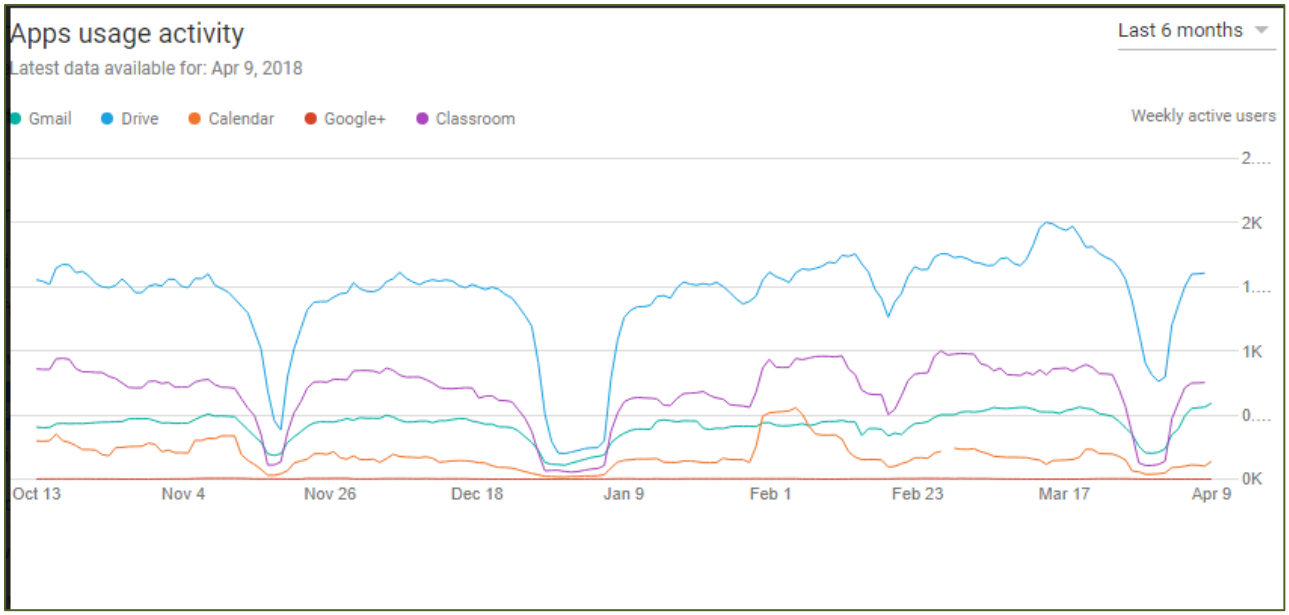
8. It would be very helpful to have several Chromebooks that stayed in the classroom. That way, when you have a small number of students needing to finish a project or assignment, they don't have to track down a Chromebook from another classroom or another cart.
9. Chromebooks are a necessary tool in the classroom. They are reliable, easy to use, and help with student success.
10. They are very convenient, durable, and quick. Students find them very user friendly. I like them.
11. I appreciate having the Chromebooks and I would like to become more knowledgeable about all they are capable of doing. They would help some students greatly with all their features.
12. In my opinion I would rather have class sets of laptops instead of Chromebooks.
13. It is extremely difficult to ascertain any real data on the effectiveness of Chromebooks and technology when it is not being used equally and consistently throughout the school or

division.

14. I have been disappointed with their limitations for my own professional teaching use. On a Chromebook I cannot duplicate the word processing capabilities found in Microsoft Word. I find equation editors found on the Chromebook apps do not compare to those found on a computer running Windows or Apple OS in ease of use and quality of display. For the use in High School mathematics, I also I have explored the test managers on the Chromebooks and also find they do not adequately compare to those on a Windows based platform. One final note is the inability to run the marks program (PowerSchool) on a Chromebook.
15. We need a set per class. Sharing can be difficult when we are all teaching LA at the same time - for example.
16. I think they are a tool we are underutilizing however I don't believe they will be the answer to increasing all the items as outlined in the earlier pages. Yet to be determined.
17. Students need access to them and a session should be taught on interesting activities to do with their laptops that are not pertained around elementary education.
18. I think it is a delicate balance using technology in the classroom and not creating technology dependent students who do not know how to focus or do life without an electronic device in their hands. Creativity can be stifled when we can always find what we want online. Students also are unable to be patient for answers, expecting instant gratification with the web always available. I think it is important to ensure the use of technology is purposeful and not just novel or more attractive.
19. The students look forward to using Chromebooks to complete core subject projects.

GAFE Stats

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Last 6 months
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Calendar
Google+
Classroom
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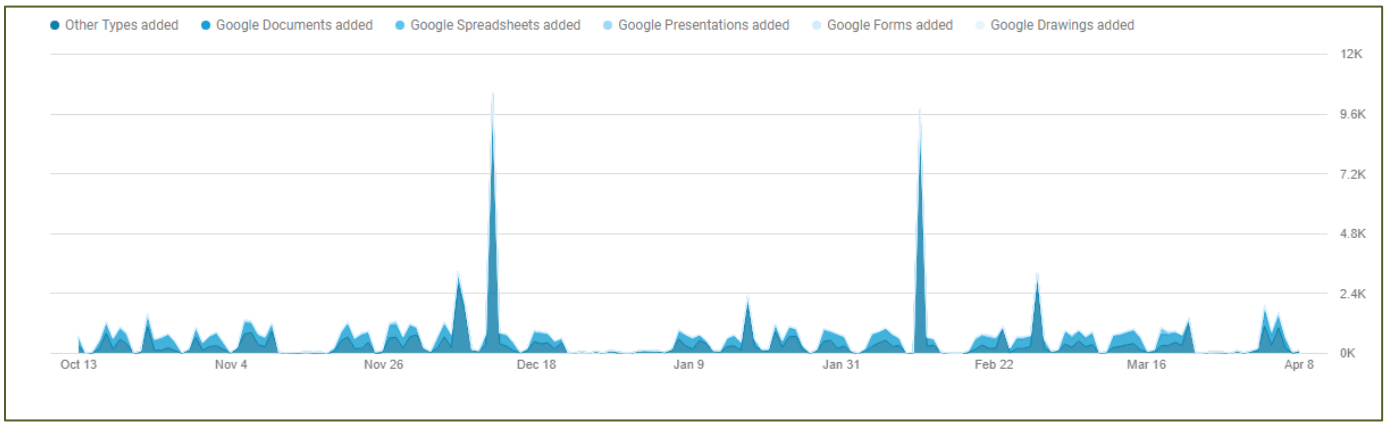
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Google Spreadsheets added
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Google Forms added
Google Drawings added
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Nov 4
Nov 26
Dec 18
Jan 9
Jan 31
Feb 22
Mar 16
Apr 8


Classroom
Active classes
14-day active classes
120
96
72
48
24
0
Oct 13
Nov 4
Nov 26
Dec 18
Jan 9
Feb 1
Feb 23
Mar 17
Apr 9

B. Research and Innovation - LTPF Policy Direction 2

Teachers, administrators and other education professionals read, review, participate in, share and apply research and evidence-based practices to sustain and advance innovation in education.

Aspen View Evidence to Support this Policy Direction:

- Teachers and staff are eager to be members of the Technology Steering Committee, a committee in which they are able to take part in technology related decision making for the division.
- Some teachers have been doing their own research to bring innovative activities into their classrooms, such as: #HourofCode, Invent to Learn, Genius Hour.
- Teachers and staff are becoming more aware of the technologies that are or could be available for their students, and have been requesting them for their students.
- Students and staff are embracing the Makerspace philosophy; they come up with an objective, create a proposal, get it approved, create/learn and then demonstrate their learning through a presentation.

- Currently reviewing Administrative Procedures.
- Technology research is shared at Technology Steering Committee meetings.
- Teachers and staff have been encouraged to access research materials on the Technology page of the Aspen View website and on the technology Padlet.
- Teachers and staff are eager to attend technology conferences when given the opportunity.
- Director of Curriculum and Technology and the Director of IT Systems ensure that their work reflects the standards of ISTE and best and future practices as set out in the *Horizon Report*.
- The guidelines set out by the CASS/ERLC document *A Guide to Support Implementation: Essential Conditions* are followed as new technologies are introduced into the division. The guidelines from this document are being shared with school administrators so that they can make conditions right in their schools.
- Administrators are eager to take part in the division's first annual "Tech Trek", where the Director of Curriculum and Technology and Director of IT Services will be visiting each school to share what's new in technology in the division, and to find out the technology needs and concerns at each school. These treks are planned for April 16 – 27, 2018.
    - During these visits, administrators will be guided through the research that guides Aspen View's technology decision making.

C. Professional Learning - LTPF Policy Direction 3

Teachers, administrators and other educational professionals develop, maintain and apply the knowledge, skills and attributes that enable them to use technology effectively, efficiently and innovatively in support of learning and teaching.

Aspen View Evidence to Support this Policy Direction:

- Use of Diploma and Achievement Data to inform our practice.
- Teachers and staff have engaged in many current, popular readings regarding the effective use of technology and design thinking. With continued implementation, teachers continue to refine their approach to using technology to drive learning forward.
- Staff has participated in PD opportunities to further their knowledge in technologies, including PD such as Makerspaces, Robotics, Coding, Google summits, ATLE Conferences, and JTC events.
- Teachers and staff have presented at ATLE, CASS and JTC events.

D. Leadership - LTPF Policy Direction 4

Education leaders establish policy and governance structures, cultivate innovation and building capacity within the system to leverage technology in support of student-centred learning and system efficiencies.

Aspen View Evidence to Support this Policy Direction:

- Division sending all technology leaders Education Technology Conferences like: ATLE, JTC events and Google Summits.
- Continue to increase communication with parents regarding the purpose of our schools' increased focus PBL and STEAM learning.
- Leadership gives staff opportunities to increase their learning of technology which in turn helps student learning.
- The technology Admin Procedures have been updated to reflect current terminology and national/international expectations.

E. Access, Infrastructure and Digital Learning Environments LTPF Policy Direction 5

All students, teachers, administrators and other education professionals have access to appropriate devices, reliable infrastructure, high-speed networks and digital environments.

The technology department ensures that the following actions as outlined in the LTPF are maintained:

a. Ensure equitable student access to devices, other technologies and, as appropriate, to assistive technologies to support student learning;
b. Provide students, teachers, administrators and other education professionals with access to well-designed, high-speed, reliable and sustainable networks and technology infrastructures;
c. Consider opportunities for community partnerships that expand access to technology-supported learning experiences;
d. Ensure the administration of safe and secure networks, infrastructure and technologies
e. Provide students, teachers, administrators and other education professionals with access to high-quality digital learning environments;
f. Provide and maintain timely technical support and services;

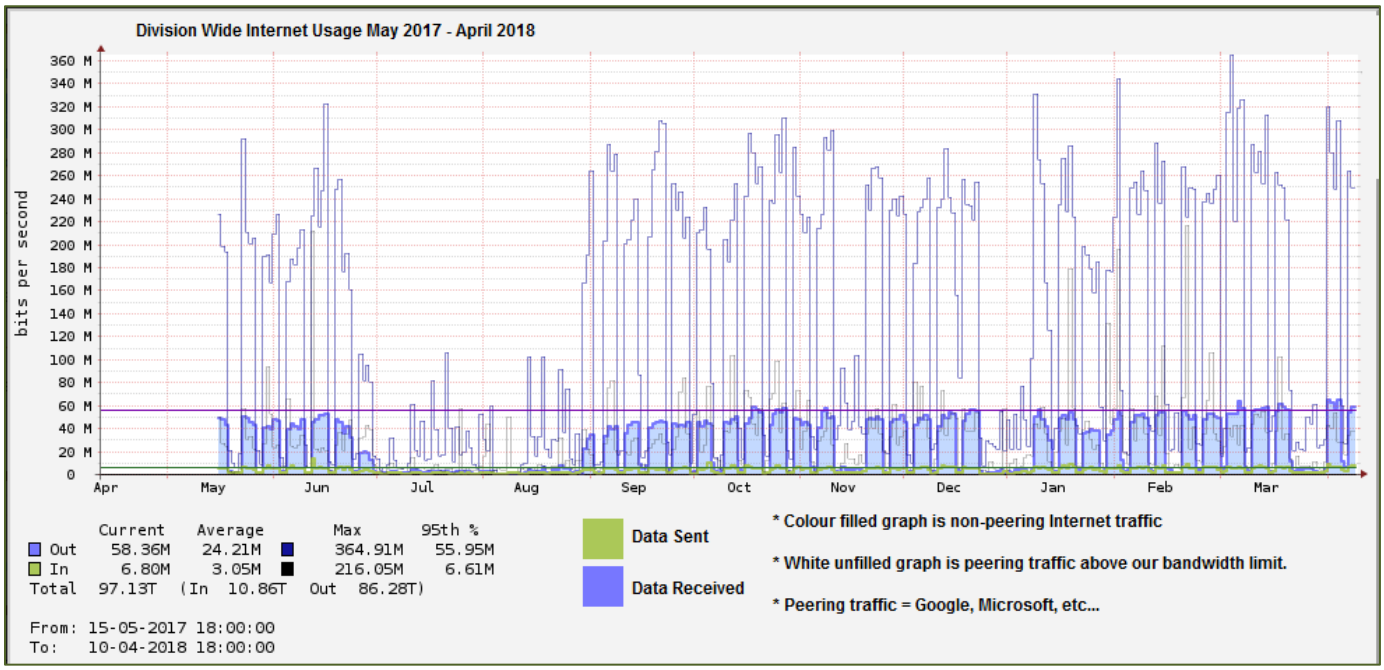
g. Adopt and maintain effective practices and up-to-date technological standards with respect to Information Technology (IT) governance, IT management, and information security management.

Devices in Aspen View

- Refer to Appendix A.

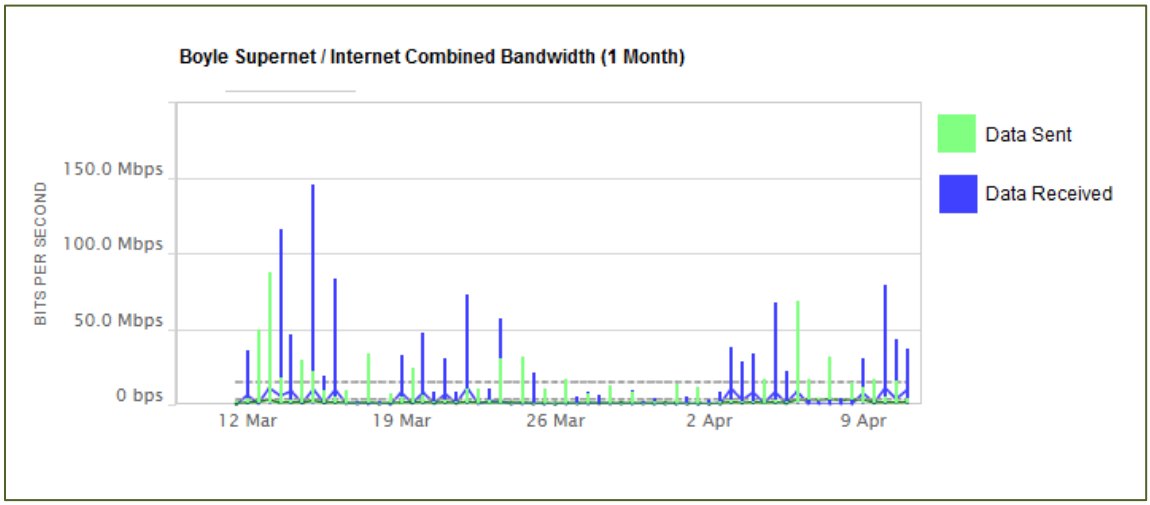
Aspen View Evidence to Support this Policy Direction:

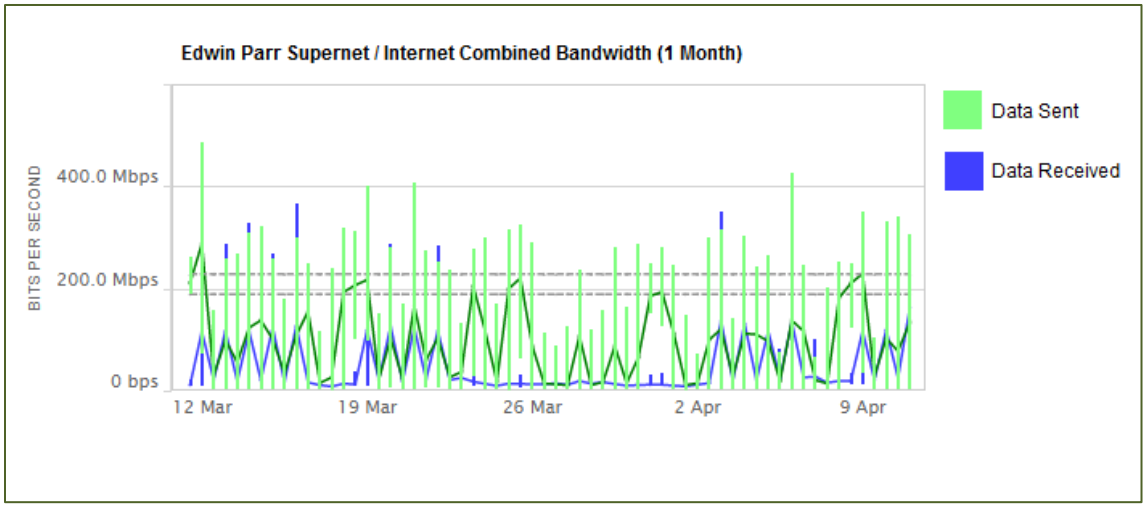
Bandwidth and Wireless Management

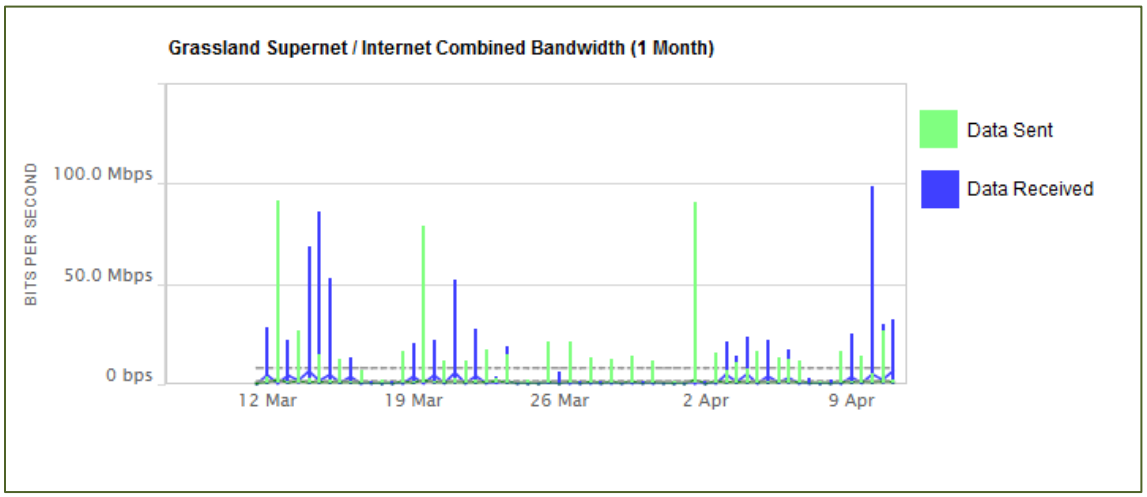


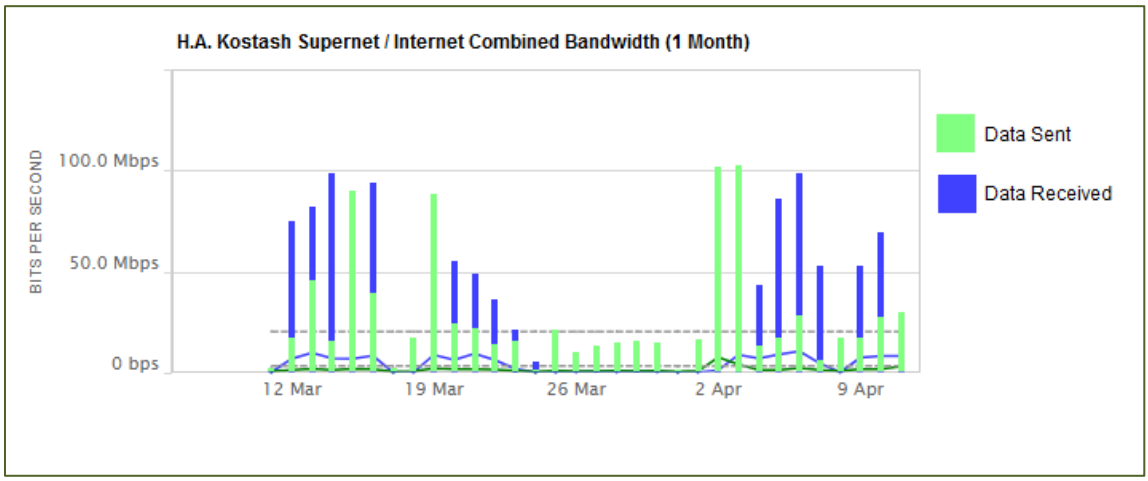
Wireless Internet Bandwidth Usage (30 days) Top 20 Apps

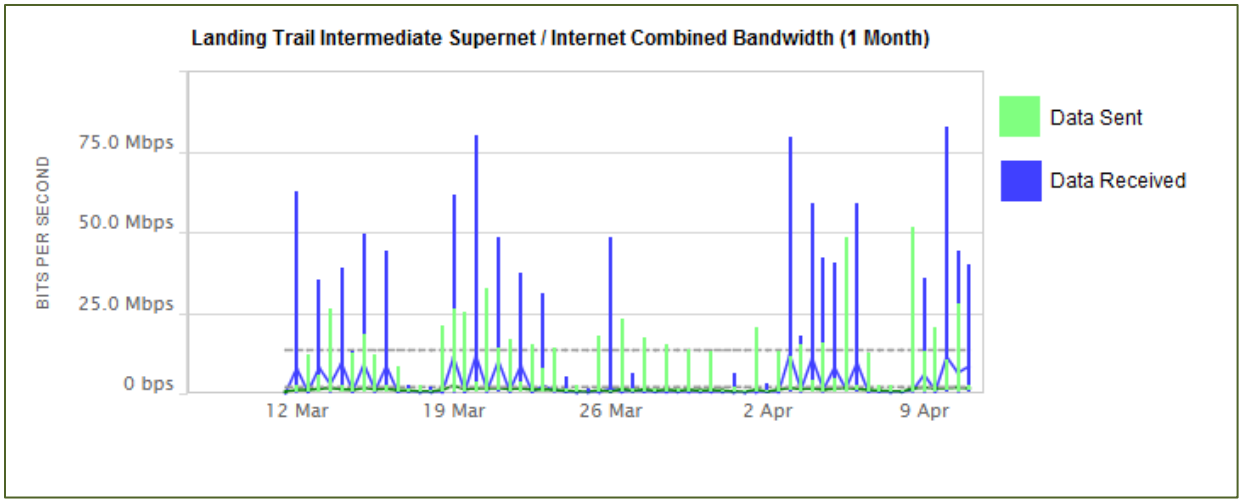
#	Description	Group	Usage	% Usage	Group usage ▾	Group % usage
1	YouTube	Video	1.44 TB	18.0%	2.62 TB	32.7%
2	Netflix	Video	1.14 TB	14.2%	2.62 TB	32.7%
3	Miscellaneous video	Video	33.96 GB	0.4%	2.62 TB	32.7%
4	Dailymotion	Video	8.55 GB	0.1%	2.62 TB	32.7%
5	Vimeo	Video	1.86 GB	< 0.1%	2.62 TB	32.7%
6	Amazon Instant Video	Video	697.5 MB	< 0.1%	2.62 TB	32.7%
7	Xfinity TV	Video	185.3 MB	< 0.1%	2.62 TB	32.7%
8	BBC iPlayer	Video	81.3 MB	< 0.1%	2.62 TB	32.7%
9	hulu.com	Video	7.1 MB	< 0.1%	2.62 TB	32.7%
10	ustream.tv	Video	11 KB	< 0.1%	2.62 TB	32.7%
11	Miscellaneous secure web	—	1.27 TB	15.8%	1.27 TB	15.8%
12	UDP	—	845.75 GB	10.3%	845.75 GB	10.3%
13	Google	—	582.57 GB	7.1%	582.57 GB	7.1%
14	iTunes	Music	501.87 GB	6.1%	561.42 GB	6.8%
15	Spotify	Music	37.01 GB	0.5%	561.42 GB	6.8%
16	Miscellaneous audio	Music	22.20 GB	0.3%	561.42 GB	6.8%
17	soundcloud.com	Music	351.8 MB	< 0.1%	561.42 GB	6.8%
18	last.fm	Music	1.3 MB	< 0.1%	561.42 GB	6.8%
19	Pandora	Music	252 KB	< 0.1%	561.42 GB	6.8%
20	Rhapsody	Music	108 KB	< 0.1%	561.42 GB	6.8%

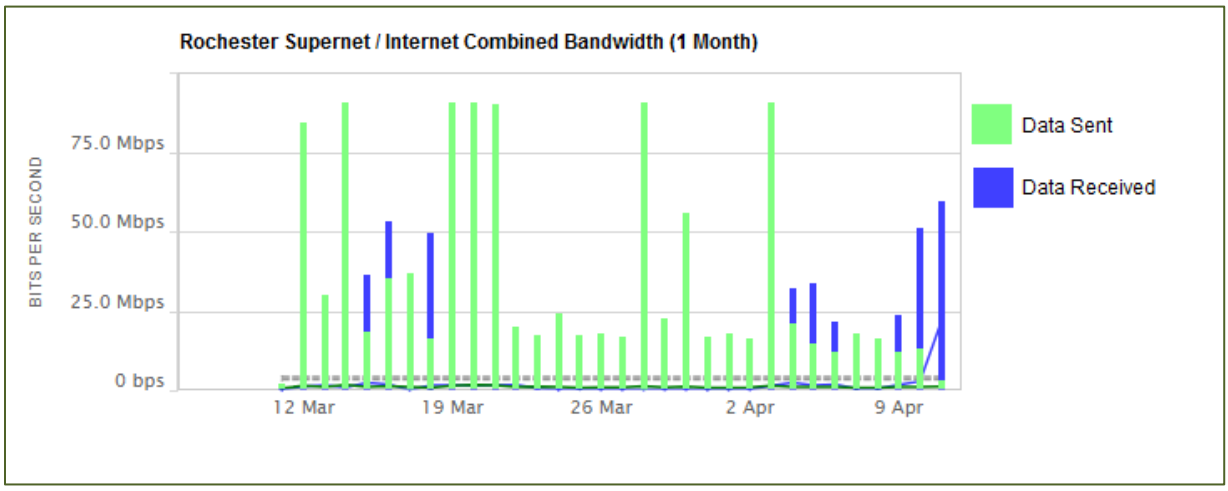


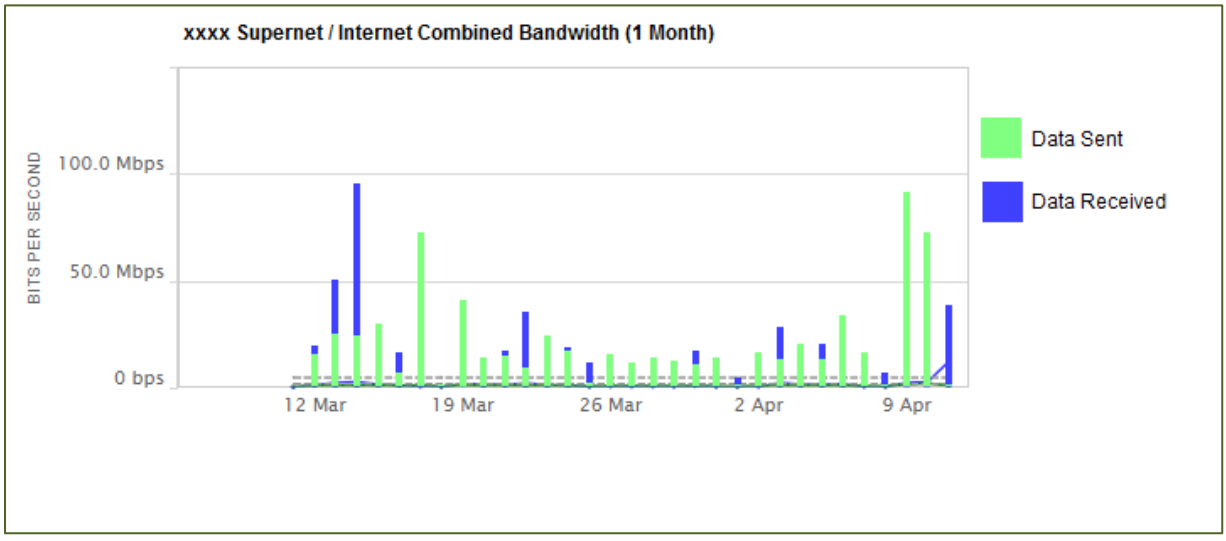

Edwin Parr Supernet / Internet Combined Bandwidth (1 Month)
BITS PER SECOND
400.0 Mbps
200.0 Mbps
0 bps
12 Mar
19 Mar
26 Mar
2 Apr
9 Apr
Data Sent
Data Received

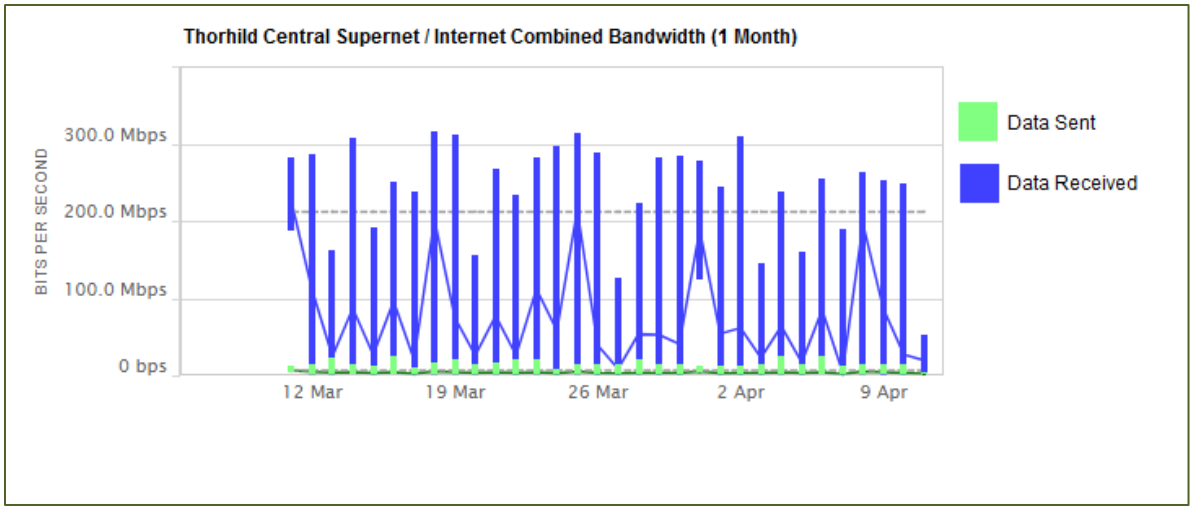

Grassland Supernet / Internet Combined Bandwidth (1 Month)
BITS PER SECOND
100.0 Mbps
50.0 Mbps
0 bps
12 Mar
19 Mar
26 Mar
2 Apr
9 Apr
Data Sent
Data Received

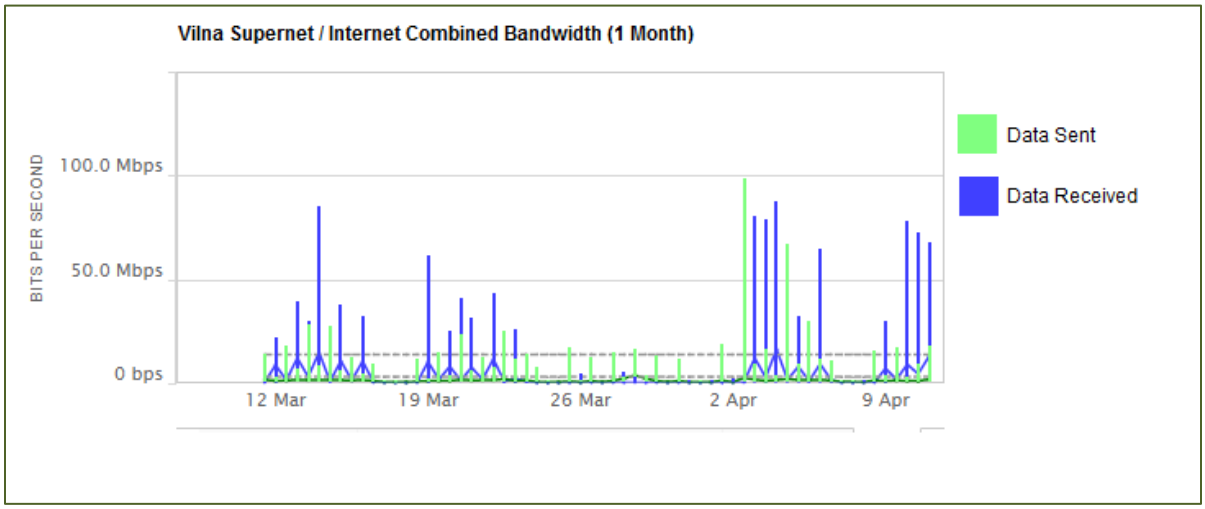

H.A. Kostash Supernet / Internet Combined Bandwidth (1 Month)
BITS PER SECOND
100.0 Mbps
50.0 Mbps
0 bps
12 Mar
19 Mar
26 Mar
2 Apr
9 Apr
Data Sent
Data Received

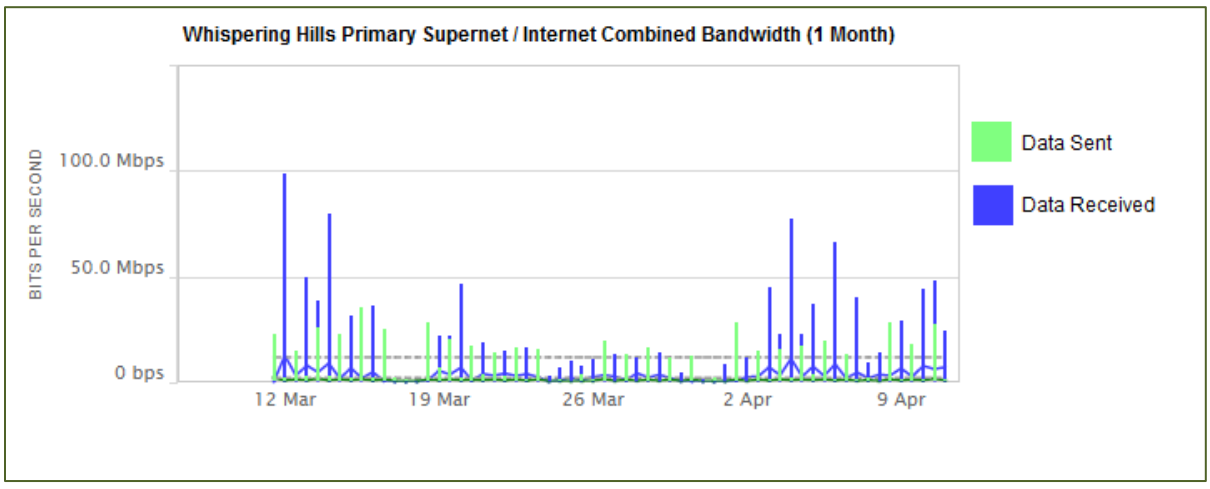

Landing Trail Intermediate Supernet / Internet Combined Bandwidth (1 Month)
BITS PER SECOND
75.0 Mbps
50.0 Mbps
25.0 Mbps
0 bps
12 Mar
19 Mar
26 Mar
2 Apr
9 Apr
Data Sent
Data Received


Rochester Supernet / Internet Combined Bandwidth (1 Month)
BITS PER SECOND
75.0 Mbps
50.0 Mbps
25.0 Mbps
0 bps
12 Mar
19 Mar
26 Mar
2 Apr
9 Apr
Data Sent
Data Received

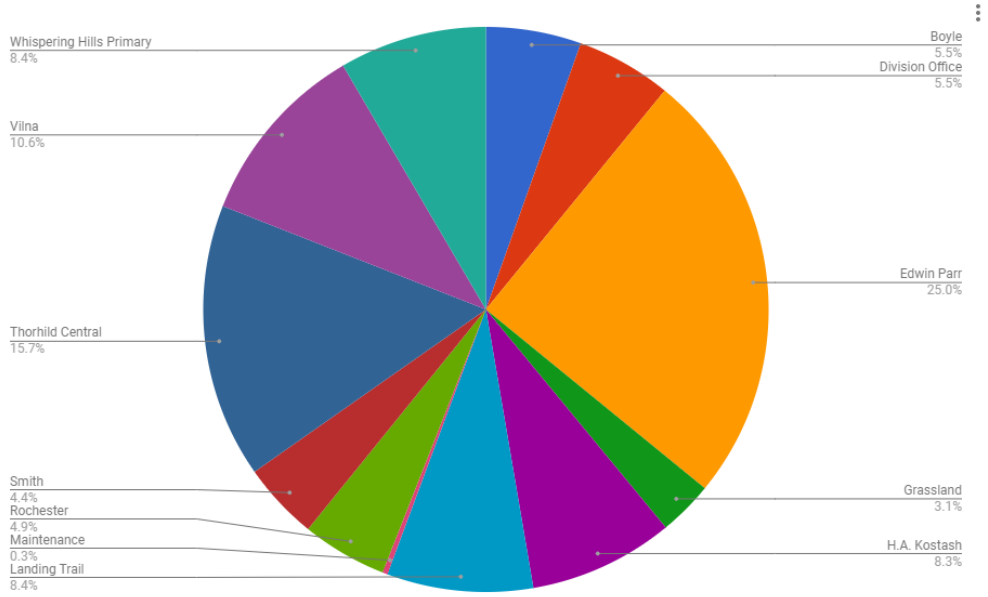

xxxx Supernet / Internet Combined Bandwidth (1 Month)
BITS PER SECOND
100.0 Mbps
50.0 Mbps
0 bps
12 Mar
19 Mar
26 Mar
2 Apr
9 Apr
Data Sent
Data Received


Thorhild Central Supernet / Internet Combined Bandwidth (1 Month)
BITS PER SECOND
300.0 Mbps
200.0 Mbps
100.0 Mbps
0 bps
12 Mar
19 Mar
26 Mar
2 Apr
9 Apr
Data Sent
Data Received

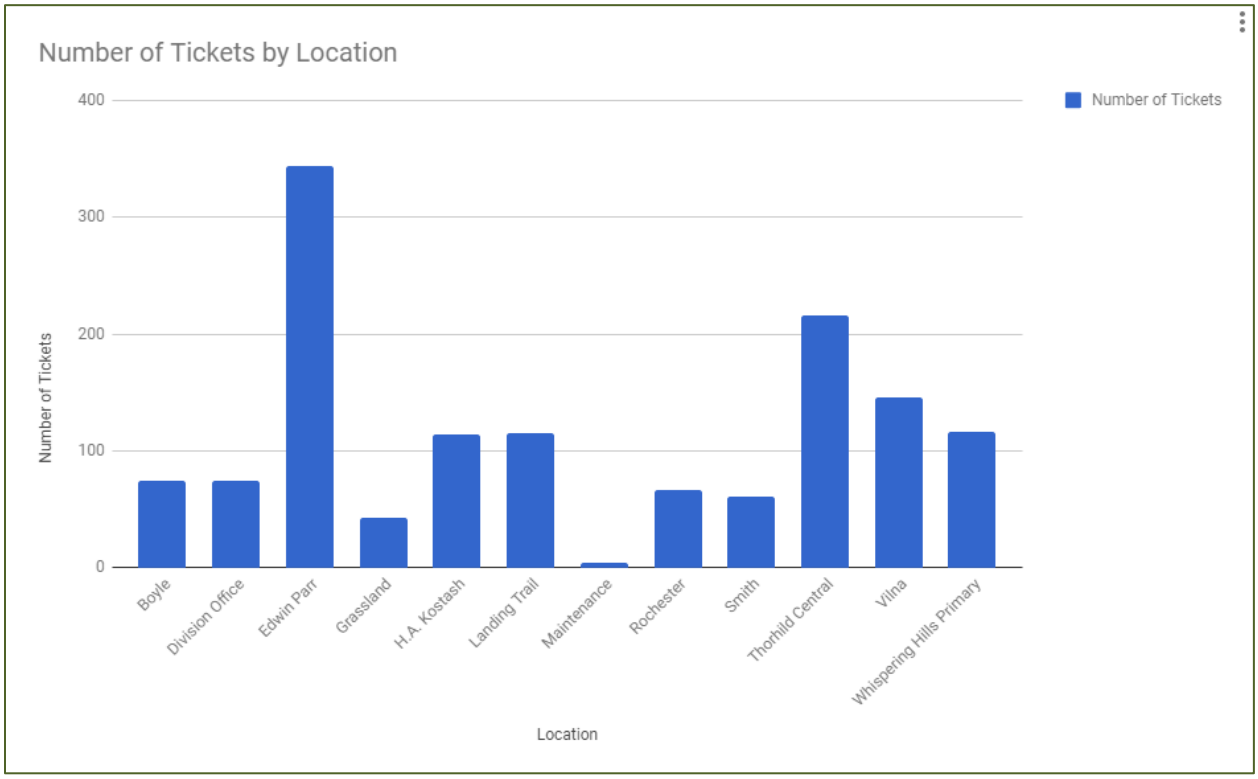

Vilna Supernet / Internet Combined Bandwidth (1 Month)
BITS PER SECOND
100.0 Mbps
50.0 Mbps
0 bps
12 Mar
19 Mar
26 Mar
2 Apr
9 Apr
Data Sent
Data Received


Whispering Hills Primary Supernet / Internet Combined Bandwidth (1 Month)
BITS PER SECOND
100.0 Mbps
50.0 Mbps
0 bps
12 Mar
19 Mar
26 Mar
2 Apr
9 Apr
Data Sent
Data Received

Helpdesk Management



% of total support time Technology Department spent supporting each school.
September 1, 2016 –August 31, 2017



4. How Aspen View is Improving

a. Learning and Technology Plan for 2017/2018 – 2019/2020
   - This is a living/working document.
   - This is the first year that we based our plan on the LTPF.
   - Click here to access the plan.

b. Projects we are Working On
   - Click here to access our project plans.

c. Return on Learning Data Collection Tool: Technology Purchase Proposal
   - Technology requests from teachers and staff will need to be made using this document. This document takes teachers into the research behind why we should be making technology decisions in our schools. The documents that are referred to in this proposal are:
     a. LTPF
     b. SAMR
     c. Essential Conditions
     d. ISTE
     e. Return on Learning

   - Click here to access the Technology Purchase Proposal document.

Appendix A:

Devices: - Updated April 11, 2018

	Client side devices									Infrastructure (back end)					
2016	Desktops	Windows Laptops	Chromebooks	Printers	3-D Printers	Smartboards	Data Projectors	Wireless Access Points	Robotics /Makerspaces /Coding/CS	Servers	In house data stored (TB) *Estimate	Cloud Services data stored (TB) *Estimate	Telephones	School Student Count	Device per Student (laptop/chromebook) ratio
Central					0					10	28.433	0.2	Full VOIP		
Boyle School	94	42	131	8	0	11	11	22		1	0.454		Telus	228	0.76
CAVE	0	19		2	0	1	1	2		0	With EPC		Telus	39	0.49
EPC	192	104	284	15	0	20	20	30		1	1.23		Telus	539	0.72
Grassland School	45	49	30	4	0	12	12	13		1	0.418		Telus	91	0.87
HAK School	81	88	111	10	0	17	17	19		1	0.483		Telus	326	0.61
LTIS	41	70	157	3	0	20	20	31		1	0.436		Telus	443	0.51
Rochester	9	31	29	3	0	7	7	11		1	With Roch		Telus	72	0.83
Smith	49	31	46	4	0	11	11	10		1	0.23		Telus	81	0.95
TCS	58	76	179	6	0	26	26	23		1	0.292		Telus	331	0.77
Vilna	84	70	82	9	0	7	7	20		1	0.679		Telus	219	0.69
WHPS	65	36	83	3	0	20	20	23		1	0.398		Telus	454	0.26
Athabasca Colony											With Vilna		Telus		
New Pine Colony											0.33		Telus		
Deep Creek Colony													Telus		
Smoky Lake Colony													Telus		
Totals	718	616	1132	67	0	152	152	204	0	20	33.383	0.2		2823	0.62	Division Ratio

	Client side devices									Infrastructure (back end)					
2017 (Current)	Desktops	Windows Laptops	Chromebooks	Printers	3-D Printers	Smartboards	Data Projectors	Wireless Access Points	Robotics /Makerspaces /Coding/CS	Servers	In house data stored (TB)	Cloud Services data stored (TB)	Telephones	School Student Count	Device per Student (laptop/chromebook) ratio
Central			381		2 Researching opportunities			70	Researching and purchasing sharing through Padlet	10	30.433	0.25	Full Voip		
Boyle School	53	37	132	8		11	11	23	See Appendix B	1	0.454	Student	Hybrid Voip	217	0.78
CAVE	0	5	15	2		1	1	2		0	With EPC	0.199	Full Voip	60	0.33
EPC	122	78	373	15		20	20	32		1	1.23		Hybrid Voip	533	0.85
Grassland School	31	24	30	4		12	12	13		1	0.418		Hybrid Voip	83	0.65
HAK School	50	84	165	10		17	17	20		1	0.483		Hybrid Voip	328	0.76
LTIS	8	60	190	3		20	20	32		1	0.436		Hybrid Voip	446	0.56
NightWind	0	14						2			With Roch				
Rochester	2	30	29	3		7	7	11		1	0.23		Telus	70	0.84
Smith	31	24	44	4		11	11	10		1	0.292		Hybrid Voip	77	0.88
TCS	26	70	288	6		26	26	23		1	0.679		Hybrid Voip	313	1.14
Vilna	63	69	82	9		7	7	20		1	0.398		Hybrid Voip	205	0.74
Vilna Outreach	0	10						1		0	With Vilna			28	0.36
WHPS	20	30	146	3		20	20	23		1	0.33		Hybrid Voip	414	0.43
Athabasca Colony													Telus	12	
New Pine Colony													Telus	8	
Deep Creek Colony													Telus		
Smoky Lake Colony													Telus	12	
Totals	406	535	1875	67	2	152	152	282	0	20	35.383	0.449		2806	0.86	Division Ratio

Devices Summary

	In Schools as of November 2016	In Schools as of April 2018	To be Deployed
Desktops	718	406	
Windows laptops	616	535	
Chromebooks	1132	1494	381
Robotics	67	67	
3-D printers	0	2	
Smartboards	152	152	
Data Projectors	152	152	
Wireless Access Points	204	282	
Robotics	0	0	
Servers	20	20	
In house data stored (TB)	33.383	35.383	
Cloud Services data stored (TB)	0.2	0.449	

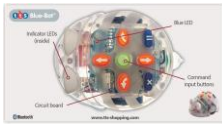
Device per Student (laptop/chromebook) ratio	
2016	0.62
2018	0.86

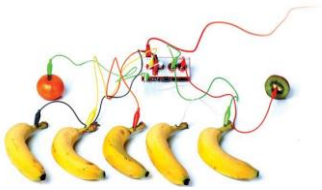
Appendix B:

Coding/Robotics/Makerspace Resources Available to Borrow from Division Office

Updated April 11, 2018

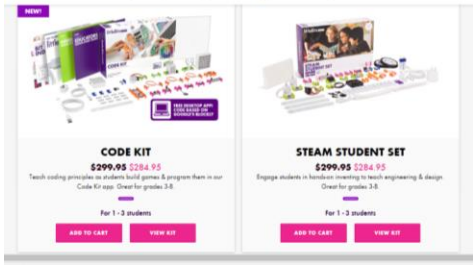
Already Purchased

Item Name and (How Many)	
Bee-Bot (3) and mats Specs 	Bee-Bot is a robot that teaches sequencing, estimation, and problem-solving. Directional keys are used to enter up to 40 commands which send Bee-Bot forward, back, left, and right. Pressing the green GO button starts Bee-Bot on its way. Bee-Bot blinks and beeps at the conclusion of each command to allow students to follow Bee-Bot through the program they have entered and then confirms its completion with lights and sound. Students want to use Bee-Bot over and over and are inspired to enter ever more creative and complex command sequences. Bee-Bot moves in 6"/15cm steps and 90º turns. **Tech Requirement Options: No App or program required to run.** Click here to see a YouTube video of students experiencing hands on learning with the Bee Bots in a science lesson. Click here to see a YouTube video of students experiencing hands on learning with the Bee Bots in a numeracy lesson. Click here to see a YouTube video of students experiencing hands on learning with the Bee Bots in a literacy lesson. Be sure to check out Pinterest for some great classroom ideas.
Blue-Bot (3) and mats Specs  	Blue-Bot is a more advanced version of Bee-Bot. It is a bluetooth enabled robot, which means you can wirelessly control it with your tablet or PC. Blue-Bot has a clear shell so children can see the components inside. It is also rechargeable. You can use Blue-Bot like a normal Bee-Bot and program it using the buttons on the robot. However, Blue-Bot is capable of connection to tablets, PCs and Macs, allowing you to take the programming much further. Download the free iOS/Android app to connect to tablets, or download the Windows and Mac software below to connect to your desktop. For another fun way to program Blue-Bot, use a Blue-Bot Tactile reader. Not suitable to be used in sand or water. **Tech Requirement Options: Android – Blue-Bot App** **iOS – Blue-Bot App** **Can be run without app/program** Click here to access downloadable BeeBot mats for use on the tablet. Click here to see a of YouTube video of Blue Bot. Be sure to check out Pinterest for some great classroom ideas.
Dash & Dot (3) Specs 	Dash is a real robot, charged and ready to play out of the box. Responding to voice, navigating objects, dancing, and singing, Dash is the robot you always dreamed of having. Use Wonder, Blockly, and other apps to create new behaviors for Dash — doing more with robotics than ever before possible. **Tech Requirement Options: Android – Wonder, Blockly, Xylo, Path, Go, Cue** **iOS - Wonder, Blockly, Xylo, Path, Go, Cue** Click here and here to see a couple of YouTube videos of Dash & Dot.

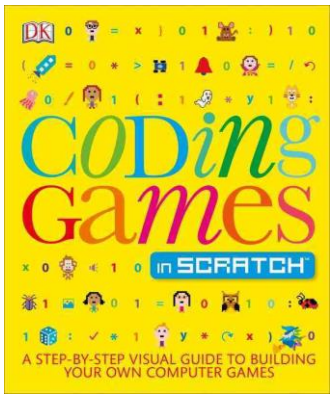
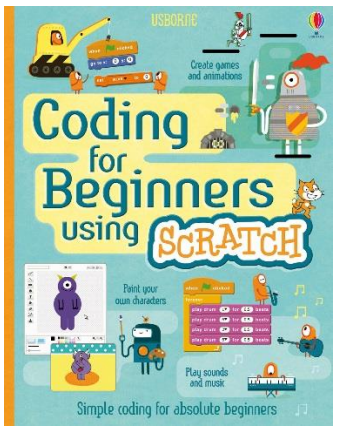
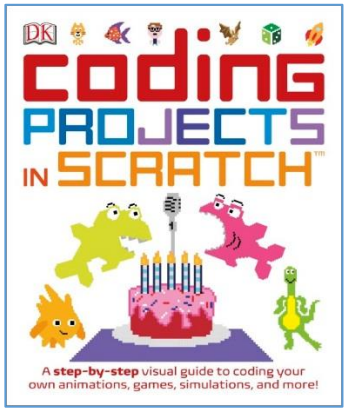
Ozobot (3) Specs 	Ozobot is a tiny robot, measuring 1 inch in height and diameter, which comes with a photo sensor array for recognition of patterns, lights, colors, and codes, an automatic detection functionality for physical and. digital playing surfaces, and color sensing technology. Ozobot is a powerful tiny robot that expands STEAM and computer science learning through a collection of game based activities and digital apps. **Tech Requirement Options: Android – Evo for Ozobot** **iOS – Evo for Ozobot, OzoBlockly** Click here to see a YouTube video of Ozobot. Click here to access a PDF of Ozobot Educator's Guide. Click here to see a YouTube video of using Ozobot with high school students. Click here to see a video of using OzoBlockly. Click here to download some ideas for Ozobot lessons in K-12 classrooms.
Makey Makey (3) 	Makey Makey is an electronic circuit board developed at the MIT Media Lab which uses an Arduino microcontroller. Allows the use of everyday object to replace the computer keyboard and mouse. Makey Makey is perfect for the classroom. Students can invent projects that combine the tactile materials of the classroom with the coding projects they're creating on the computer to bring their creations to life. With the Makey Makey, students can make any conductive material act as the input device for a computer. Because it comes preprogrammed, students with no coding experience can use it and learn to experiment with it as they start to learn coding. **Tech Requirement Options: Windows or Mac Laptop required … Makey Makey replaces keyboard** Makey Makey states their products are for ages 6 to infinity. Makey Makey and Scratch are a match made in heaven. Once students have created their perfect game on Scratch, they can use the Makey Makey to bring it into the physical world. Click here to see a YouTube video of a Makey Makey. **Click here** (https://makeymakey.com/lessons/lesson-plans.pdf) to access Makey Makey lesson plans.
3D Printers (2)  Schools need to purchase filament before they borrow this printer. Filament can be purchased from the tech department.	The MakerBot Replicator 3D Printer is Cloud-enabled, allowing you to control the printer over the cloud using MakerBot Print or MakerBot Mobile software. It can also be controlled using a built-in dial and an integrated LCD display, each of which allow you to maintain your 3D printer, preview print files, and access your object library. Click here to see a video of a MakerBot 3D printer in action. Click here to learn about the MakerBot 3D printers. Click here to see some amazing projects completed with 3D printers. Click here and here to see grade appropriate lesson plans. **These printers will be available for schools to borrow.** Cost per printer: $4000 +
3D Printers (final selection process for 2)	For EPC and TCS.
Monoprice Mini 3D Printers (10)	One for each school.
3D Pens (10 on order)	One for each school.

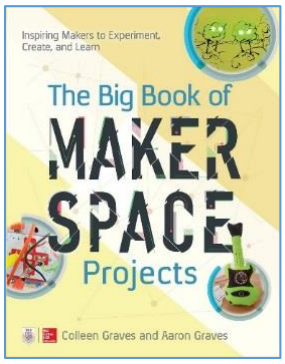
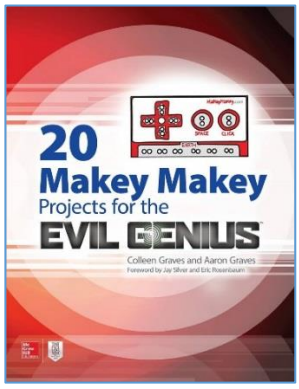
Raspberry Pi Kano Kit (1) Specs 	It's a computer anyone can make!! When students build their own Kano computer, they get a real computer, powered by Raspberry Pi 3 and Kano OS. All the learn-to-code tool, apps and programs you need are found in the kit. **Tech Requirement Options: HDMI display (monitor)** Cost per kit: $263.23 Click here to learn about the Raspberry Pi Kano Kit. Click here to see a video about how to put the Raspberry Pi Kano Kit together to create a computer.
CanaKit Raspberry Pi 3 Complete Starter Kit (1)  Adeept New Ultimate Starter Learning Kit for Raspberry Pi (1) 	The Raspberry Pi is a series of small single-board computers developed by the Raspberry Pi Foundation to promote the teaching of basic computer science in schools. A Raspberry Pi is a low-cost, micro-computer about the size of a credit card, which plugs into a computer monitor or TV and uses a standard keyboard and mouse. But don't let the size or price fool you, there's so much you can do with it! Students can use it to learn the basics of coding their own games with Python and Scratch. This kit is a comprehensive starter leaning kit for using a Raspberry Pi. This kit will take you from knowing to utilizing as students learn about computer software and hardware by working through the 26 experiments outlined in the guide book. This kit will help students learn the basics of electronics and Linux programming, and will learn to be a programmer/developer. **Tech Requirement Options: No App or program required to run. Raspbian will be pre-installed on the Pi.** Click here to read about some of the neat features of Raspberry Pi. Click here to see a video of the Top 10 Coolest Raspberry Pi Projects. Click here to see a video about the components of the CanaKit.
Piper Computer Kit Educational Toy That Teaches Stem and Coding Through Minecraft (1) 	• Hand-crafted wooden computer case with lcd screen monitor • Minecraft story mode adventure play with hardware components and challenges • Wifi enabled gameplay for extra levels and sharing capabilities • Electronic gadgets including led lights, motion sensors, buzzers, buttons and switches • Self-contained computer running on a raspberry pi 3 project board, 1gb ram, 1.2Ghz quad-core CPU **Tech Requirement Options: Nothing additional required. Self-contained.** Cost per kit: $ 389.00
mBot Kit (3) 	mBot is an all-in-one solution to enjoy the hands-on experience of programming, electronics, and robotics. Working with mBlock inspired by Scratch 2.0, connecting with computers or smart devices via Bluetooth or 2.4G (by different version), this easy-to-assemble mBot provides infinite possibilities for you to learn STEAM (Science, Technology, Engineering, Mathematics). Contains 38 assembly parts that can be assembled in 10 minutes and color-labeled RJ25 ports for convenient wiring, making sure more time can be spent on programming and creativity. **Tech Requirement Options: Android – mBlock App, MakeBlock App** **iOS - mBlock App, MakeBlock App** Click here to see a video of an mBot in action. Click here to access the online tutorials to use with mBot. **Click here** to download the mBlock userguide and **here** to download the Scratch userguide for use to program the mBots.

Bloxels Build Your Own Video Game (3) 	Build your own video games with Bloxels! The innovative video game creation platform makes concepting and execution easy. Watch your game world come to life as you create and animate play spaces, characters and objects because you are the artist, game designer, storyteller, programmer, publisher AND player! The physical pieces in the Bloxels game set work with the free Bloxels Builder app to digitize your creations, put them on-screen and make them playable. Download the FREE Bloxels Builder app to your smart device to get started. Then use the 13 x 13 Gameboard and colored blocks to design a room, create the art for game elements and bring your heroes and villains to life. When creating game rooms, each color in your design represents a different element, like terrain, water or a hazard. When working on art, the blocks represent the pixelated image. There are eight different colors and 320 blocks for lots of endless possibilities. Once you have finished adding blocks, snap a picture with the "in-app camera" to digitize your creation. Go from blocks to "bloxels" instantly! On-screen test your game, edit layouts and change the colors of your art assets. The process of building the game is easy to follow, with instructions and tutorials to help beginners. From creating the map of your game to animating your characters to adding power-ups to full-on playing, you make the decisions and produce the work. How will your game evolve? How will it start? What story will you tell? Get ready to get in the game -- video game development -- with Bloxels. Includes Gameboard, 320 blocks, challenge poster and instruction manual; the Bloxels Builder app is downloadable for free. Recommended for Grades 1-5, but useable for Grades K-8. Click here to see a video of Bloxels in action. Click here to watch Bloxels tutorials. **Click here** to download the Bloxels Guidebook.
Osmo (3 on order) 	Osmo Coding is an iPad game that uses the Osmo game system. By casting the camera down toward the desk, kids can use the Osmo Coding blocks to create commands for Awbie, a cute character who loves to eat strawberries. You essentially fit a mirror over the front-facing camera of an iPad, and through some clever software and visual-recognition tech, it's able to translate any physical objects in front of the iPad to a digital environment. Previous Osmo titles include *Words*, which uses letter pieces, and *Tangram*, which uses geometric objects. *Osmo Coding* functions in much the same way, except that you use physical blocks to direct the actions of a character in a game. The character is called Awbie, and it loves strawberries. Indeed, the objective is to make it eat them while maneuvering through obstacles like trees, bushes and lakes. Each of the aforementioned blocks represents a certain command like going up or down or an action like "jump" or "grab." You can also group the blocks together to form a series of commands, which is handy if you want Awbie to get to its destination faster or eat a whole bunch of berries in a row. There are also modifier blocks like "loop" and "if-then" Boolean-style commands for those who are more advanced. Click here to see a video of Kodable in action.
WeDo 2.0 LEGO education 	Division Office has not purchased the physical Lego components. However, schools that have purchased WeDo 2.0 Lego robotic kits of their own can access the online and PDF resources. Click here to access a Quick Start guide for using WeDo 2.0 Lego. **Click here** to access a PDF of Lego Elementary Maker Activities for Preschool. **Click here** to access a PDF of Lego Education WeDo 2.0 for Elementary Students. **Click here** to access a PDF of Lego Elementary Maker Activities for Grades 3-5. **Click here** to access a PDF of Lego Elementary Maker Activities for Grades 6-8. Click here and here to see a video of WeDo 2.0 Lego in action.
Robot Turtles Board Game (3)	Robot Turtles is a board game for 4-5 year olds. It sneakily teaches the fundamentals of programming. Robot Turtles is a board game for students inspired by the Logo programming language. It provides crucial brain development and computer programming skills to children as young as 4 years. Players dictate the movements of their Robot Turtle tokens on a game board by playing Code Cards: Forward, Left and Right. When a player's Robot Turtle reaches a jewel they win! If they make a mistake, they can use a Bug Card to undo a move. The game has many levels so, as the players advance, they will

	encounter obstacles like Ice Walls and use more complex Code Cards (like lasers to melt the walls). Play continues until all players collect a jewel, so everyone wins. Beginner to Advanced levels will make it a family favorite for many years. It includes a large Game Board, 40 Tiles, 4 Robot Turtle Tiles, 4 Jewel Tiles, 4 Code Card Decks (45 cards in each deck) and instructions. 2-5 players can play at once and everyone who gets the Robot Jewel wins. Click here to see a video of Robot Turtles in action.
littleBits (quote requested) 	littleBits is the easiest and most versatile way to learn and prototype with electronics. littleBits makes a growing library of electronic modules that snap together with magnets for prototyping, learning, and fun. Each module has a specific function (motors, lights, sound, sensors, buttons, thresholds, pulse, wireless control, etc.), and all modules snap to make larger circuits. Building circuits is simple and intuitive, allowing anyone to create powerful, sophisticated electronics in a matter of seconds. No soldering, no wiring, no programming – it's the easiest, most powerful way to prototype, learn about, and have fun with electronics. Click here to access a PDF of littleBits Workshop Guide. Click here to see a video of LittleBits in action. Quote sent to company for: 
Elenco Snap Circuits Jr. (3) 	Students will enjoy learning electronics with the Snap Circuits Junior Electronics Projects Kit. It is an ideal combination of fun and education. Students can begin with the basics and complete over 100 projects with the Snap Circuit kit, including a water detector, a sound controlled switch, a flashlight doorbell and more. The whole process is simple thanks to the colorful pictures in the manual. The Snap Circuits Junior Electronics Projects Kit includes three integrated circuits, a photo resistor, a motor, switches, a speaker and other items for a total of 30-plus parts. They all snap together easily on the plastic grid, so children will love to build electronic circuits. When they are ready to move on, this electronics kit for students allows them to create their own electronics and experiments in minutes. This product is best suited for students ages 8 and older. Recommended for ages 8 and up. Click here to see a video of Elenco Snap Circuits Jr. in action. **Click here** to access the Elenco Snap Circuits Jr. manual with 101 experiments.
Elenco Snap Circuits Sound (1) 	Explore sound with this great kit from Snap Circuits - Features: Keyboard with optical Theremin, Echo effects, Voice changer; Record voice or music and play it back at different speeds. Sound energy demonstration. Color changing light. Connect to your smart phone and analyze sounds with downloadable apps. Recommended for ages 8 and up. Click here to see a video of Elenco Snap Circuits Sound in action. **Click here** to access the Elenco Snap Circuits Sound manual. Suggested apps to download for projects 186-188 in the manual: • Project 186, Android: FuncGen Signal Generator, free on Google play • Project 186, iPhone: Tone Generator Ultra, free from the app store • Project 187, Android: Sound Wave, free on Google Play

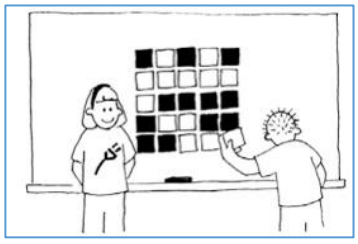
	• Project 187, iPhone: Physics Oscilloscope, free from the app store • Project 188, Android: FrequenSee, free on Google Play • Project 188, iPhone: SpectrumView, free from the app store
Elenco Snap Circuits Light (1) 	Give your students an exciting, hands-on introduction to electronics with Elenco Electronics Snap Circuits Light. This innovative kit contains over 55 color-coded, real circuit components that snap together to create working electronic circuits and devices. Recommended for children 8 and older, this set offers 175 plus do-it-yourself projects that will give your child an entertaining, concrete education on how electronics work. Because the projects are arranged in order of complexity, students can build on their skills as they progress through the manual. The lessons start out with a simple LED light and switch project that demonstrates how electricity is turned on and off with a switch. Other projects include: Infrared Detector, Stobe Light with spinning patterns, Color Changing LED, Glow-in-the-Dark Flying Fan, Strobe integrated circuit (IC), Fiber Optic communication. Color organ controlled by iPod or other MP3 Player and many more. Recommended for ages 8 and up. Click here to see a video of Elenco Snap Circuits Light in action. **Click here** to access the Elenco Snap Circuits Light manual.
Padcaster Studio (1) 	The Padcaster (wide-angle lens, shotgun mic, dual mic/headphone cable, case, lens bracket, tripod, LED light, 5′ x 7′ green screen) + iPad mini kit is an all-in-one mobile production studio that is rugged, elegant and versatile so that students can create professional quality video content that inspires. As well, the iPad mini that comes with it has a few different iOS film making apps. Creative green screen ideas Other Green Screen resources – basic fabric green screen (buy a basic muslin fabric), use green screen paint (coordinate with Facilities if this is for a classroom) or buy a plastic/fabric tablecloth (Dollar Store). **EARLY YEARS** • Green Screen by Do Ink on an iPad • Weather and Groundhog Day Lesson **MIDDLE YEARS** • Green Screen with Do Ink, iMovie, Pixabay, Pexels, or even Discovery Ed on an iPad • Green Screen filming workshop lesson plan • Using Green Screen in the Classroom **HIGH SCHOOL** • Green Screen Photography with Do Ink, Unsplash, Pixabay, Morguefile, Pexels on an iPad • Top 10 Tips for Green Screen Click here to learn how to get started using the Padcasater. Click here to check out some Padcaster videos.

Books	
Coding Games in Scratch (1) 	Written for children ages 8-12 with little to no coding experience, this straightforward visual guide uses fun graphics and easy-to-follow instructions to show young learners how to build their own computer projects using Scratch, a popular free programming language. With Coding Games in Scratch, students can build single and multiplayer platform games, create puzzles and memory games, race through mazes, add animation, and more. All they need is a desktop or laptop with Adobe 10.2 or later, and an internet connection to download Scratch 2.0. Coding can be done without download on https://scratch.mit.edu. Essential coding concepts are explained using eight build-along game projects that guide young coders step-by-step, using visual samples, easy-to-follow instructions, and fun pixel art. The book teaches important strategies for solving problems, designing projects, and communicating ideas, all while creating games to play with their friends. Supporting STEAM education initiatives and the maker movement, computer coding teaches students how to think creatively, work collaboratively, and reason systematically, and is quickly becoming a necessary and sought-after skill. DK's computer coding books are full of fun exercises with step-by-step guidance, making them the perfect introductory tools for building vital skills in computer programming.
Coding for Beginners using Scratch (1) 	An accessible introduction, walking children through the basics before getting them started on some fun projects to stretch their skills. An ideal introduction to what will be a very important subject for the students of today. The clear explanations make every project easily achievable and will really give children confidence to tackle coding for themselves; the end results are great fun and very satisfying, giving children a strong sense of achievement. A super guide to coding for beginners... Written so clearly and simply that even a non-coding adult could understand it.
Coding Projects in Scratch (1) 	A straightforward, visual guide that shows young learners how to build their own computer projects using Scratch, a popular free programming language, using fun graphics and easy-to-follow instructions. Students can animate their favorite characters, build games to play with friends, create silly sound effects, and more with Coding Projects in Scratch. All they need is a desktop or laptop with Adobe 10.2 or later, and an internet connection to download Scratch 2.0. Coding can be done without download on https://scratch.mit.edu. Step-by-step instructions teach essential coding basics and outline 18 fun and exciting projects, including a personalized birthday card; a "tunnel of doom" multiplayer game; a dinosaur dance party animation with flashing lights, music, and dance moves-and much more. The simple, logical steps in Coding Projects in Scratch are fully illustrated with fun pixel art and build on the basics of coding, so that students can have the skills to make whatever kind of project they can dream up. Supporting STEAM education initiatives, computer coding teaches students how to think creatively, work collaboratively, and reason systematically, and is quickly becoming a necessary and sought-after skill. DK's computer coding books are full of fun exercises with step-by-step guidance, making them the perfect introductory tools for building vital skills in computer programming.

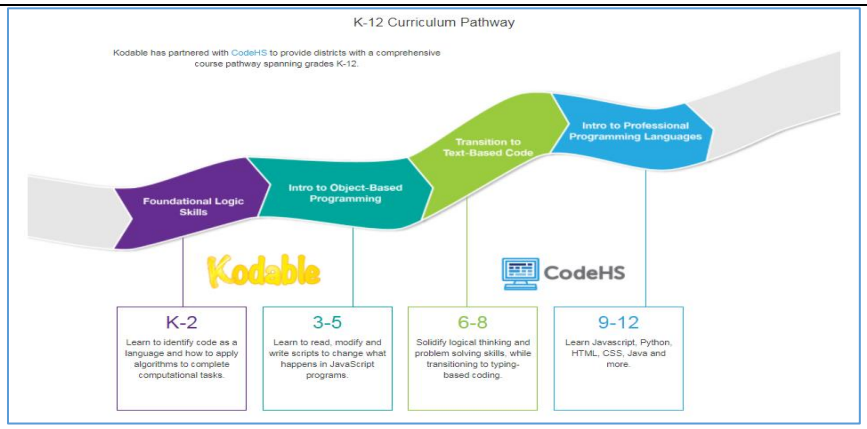
The Big Book of Makerspace Projects: Inspiring Makers to Experiment, Create, and Learn (1) 	This easy-to-follow guide features dozens of DIY, low-cost projects that will arm you with the skills necessary to dream up and build your own creations. The Big Book of Makerspace Projects: Inspiring Makers to Experiment, Create, and Learn offers practical tips for beginners and open-ended challenges for advanced makers. Each project features non-technical, step-by-step instructions with photos and illustrations to ensure success and expand your imagination. You will learn recyclables hacks, smartphone tweaks, paper circuits, e-textiles, musical instruments, coding and programming, 3-D printing, and much, much more! Discover how to create: • Brushbot warriors, scribble machines, and balloon hovercrafts • Smartphone illusions, holograms, and projections • Paper circuits, origami, greeting cards, and pop-ups • Dodgeball, mazes, and other interesting Scratch games • Organs, guitars, and percussion instruments • Sewed LED bracelets, art cuffs, and Arduino stuffie • Makey Makey and littleBits gadgets • Programs for plug-and-play and Bluetooth-enabled robots • 3D design and printing projects and enhancements
Makey Makey Projects for the Evil Genius (1) 	20 fun and inventive Makey Makey projects for Makers from beginner to expert. This hands-on guide is filled with DIY projects that show readers, step-by-step, how to start creating and making cool inventions with the Makey Makey invention kit. Each project features easy-to-follow, fully-illustrated instructions and detailed photographs of the finished gadget. Readers will see how to apply these skills and start building their own Makey Makey projects. *20 Makey Makey Projects for the Evil Genius* starts off with very approachable introductory projects, making it a great starting point for beginners. It then builds to more challenging projects, allowing more experienced users to go further by incorporating technologies like Raspberry Pi, Processing and Scratch programming, 3D Printing, and creating wearable electronics with Makey Makey. Projects are divided into four categories: "Fun and Games," Interactive," Hacks and Pranks," and "Makey Makey Go." • No prior programming or technical experience is required • Basic enough for beginners, but challenging enough for advanced makers • Written by two educators who believe in fostering creative innovation for all
Generation Code Series Kit (1) 	Titles in this Kit are: • I'm an App Developer • I'm a JavaScript Games Maker: The Basics • I'm a JavaScript Games Maker: Advanced Coding • I'm a Python Programmer • I'm an HTML Web Page Builder • I'm a Scratch Coder
Get Connected to Digital Literacy Series Kit (1) 	Titles in this Kit are: • Awesome Algorithms and Creative Coding • Great Game Design • Computer Networks • Amazing Applications and Perfect Programs • Super Social Media and Awesome Online Safety • Computing and Coding in the Real World • The Science of Computers • Web Page Design

Be a Maker Series Kit (1) 	Titles in this Kit are: • Maker Projects for Kids Who Love Printmaking • Maker Projects for Kids Who Love Designing Communities • Maker Projects for Kids Who Love Sports • Maker Projects for Kids Who Love Photography • Maker Projects for Kids Who Love Designing Spaces • Maker Projects for Kids Who Love Exploring the Outdoors • Maker Projects for Kids Who Love Paper Engineering • Maker Projects for Kids Who Love Woodworking • Maker Projects for Kids Who Love Electronics • Maker Projects for Kids Who Love Greening up Spaces • Maker Projects for Kids Who Love Robotics • Maker Projects for Kids Who Love Animation • Maker Projects for Kids Who Love Games • Maker Projects for Kids Who Love Graphic Design • Maker Projects for Kids Who Love Music • Maker Projects for Kids Who Love Fashion
Cutting-Edge Careers in Stem Series Kit (1) 	Titles in this Kit are: • What is Digital Entrepreneurship? • Dream Jobs in Science • Dream Jobs in Math • Dream Jobs in Engineering • Dream Jobs in Technology • Dream Jobs in Technology • A Math Journey Through Computer Games
Scratch Coding Cards (1) 	Want to introduce your students to coding in a fun and creative way? With the Scratch Coding Cards, students learn to code as they create interactive games, stories, music, and animations. The short-and-simple activities provide an inviting entry point into Scratch, the graphical programming language used by millions of students around the world. Students can use this colorful 75-card deck to create a variety of interactive programming projects. They'll create their own version of Pong, Write an Interactive Story, Create a Virtual Pet, Play Hide and Seek, Racxing Game, Dance Party and more! Each card features step-by-step instructions for beginners to start coding with Scratch. The front of the card shows an activity students can do with Scratch--like animating a character or keeping score in a game. The back shows how to put together code blocks to make the projects come to life! Along the way, students learn key coding concepts, such as sequencing, conditionals, and variables.
Andrea Beaty books 	Titles in this Kit are: • Rosie Revere Engineer • Ada Twist Scientist • Iggy Peck Architect

Online Resources	
Makerspace resources	Click here and here to access makerspace resource lists and ideas.
Code.org Course 1 (free online) 	Code.org Course 1 is available free here. Curriculum and lesson plans for Course 1 are available here. Start with Course 1 for early readers. Recommended for grades K-1. Students will create computer programs that will help them learn to collaborate with others, develop problem-solving skills, and persist through difficult tasks. By the end of this course, students create their very own custom game or story that they can share. The blocks that are assembled in the tasks can also be shown in JavaScript, the world's most widely used coding language. This is a good for showing students how the blocks actually are written code.
Code.org Course 2 (free online) 	Code.org Course 2 is available free here. Curriculum and lesson plans for Course 2 are available here. Start with Course 2 for students who can read and have no prior programming experience. Recommended for grades 2-5. In this course students will create programs to solve problems and develop interactive games or stories they can share. The blocks that are assembled in the tasks can also be shown in JavaScript, the world's most widely used coding language. This is a good for showing students how the blocks actually are written code.
Code.org Course 3 (free online) 	Code.org Course 3 is available free here. Curriculum and lesson plans for Course 3 are available here. Course 3 is designed for students who have taken Course 2. Recommended for grades 4-5. Students will delve deeper into programming topics introduced in previous courses to create flexible solutions to more complex problems. By the end of this course, students create interactive stories and games they can share with anyone. The blocks that are assembled in the tasks can also be shown in JavaScript, the world's most widely used coding language. This is a good for showing students how the blocks actually are written code.
ode.org Course 4 (free online) 	Code.org Course 4 is available free here. Curriculum and lesson plans for Course 4 are available here. Course 4 is designed for students who have taken Courses 2 and 3. Recommended for grades 4-8. Students will learn how to tackle puzzles with increased complexity as they learn how to combine several concepts when solving each challenge. By the time this Course is completed, students will be creating programs that let them showcase multiple skills, including for loops and functions with parameters. The blocks that are assembled in the tasks can also be shown in JavaScript, the world's most widely used coding language. This is a good for showing students how the blocks actually are written code.
Accelerated Intro to CS Course	This 20-hour course covers the core computer science and programming concepts in courses 2-4. The course is designed for use with ages 10-18. Check out courses 2-4 for a more complete experience! Click here to access courses.

CS Unplugged (free online) 	CS Unplugged is Computer Science without a computer. The CS Unplugged website is available here. The CS Unplugged activities are available in a free downloadable book here. CS Unplugged is a collection of free learning activities that teach Computer Science through engaging games and puzzles that use cards, string, crayons and lots of running around. The activities introduce students to Computational Thinking through concepts such as binary numbers, algorithms and data compression, separated from the distractions and technical details of having to use computers. Importantly, no programming is required to engage with these ideas!
Tynker- Hour of Code lessons (some activities are free) 	Tynker Hour of Code lessons are available here. Tynker is a visual coding tool (HTML5-based website and a mobile app) that teaches kids to program with blocks of code similar to Scratch. Kids can start coding right away in Tynker's Play section. Free six-hour coding lessons and Hour of Code activities offer beginner experiences through short coding puzzles. Paid courses offer deeper, more creative experiences through JavaScript and Python. Kids can create their own projects, collaborate with others, and share with the online Tynker community. An Admin Dashboard lets teachers manage rosters and assignments with a single Google or Tynker login. Clever integration with platforms like Minecraft, Lego WeDo, and Parrot Mambo drones makes Tynker even more relevant to kids. As with other popular coding tools, Tynker's drag-and-drop command blocks help kids visually sequence code. But instructions are text-heavy. Strong readers who excel at following directions step by step will take to Tynker quickly, while struggling, impatient readers may skip instructions and miss out on learning. Some video tutorials are dotted throughout the lessons. The interactive curriculum is organized into grade-specific courses where students move at their own pace through scaffolded lessons to learn concepts and apply them creatively. Used in over 60,000 schools, the award-winning curriculum includes 24 game-based coding, STEAM, drone, LEGO®, JavaScript and Python courses. Click here to read some Tynker teacher reviews. Click here and here to see a video of Tynker in action. Click here to see a video of Tynker Workshop Basics.
Lightbot & Lightbot Junior (minimal cost) 	Lightbot Junior is only available through the App Store, and is only available for iOS devices. Lightbot Junior can be downloaded here for a minimal cost. Lightbot Junior is specifically designed for ages 4-8, and is an easier version of the popular Lightbot, featuring a gentler learning curve and less complex puzzles. You can play as Boybot or Girlbot as you solve puzzles that use game mechanics that are rooted in Computer Science concepts. Lightbot Junior lets players gain a practical understanding of basic concepts like writing instructions, debugging problems, simple procedures and loops, just by guiding a robot with commands to light up tiles and solve levels. Lightbot Junior features 42 levels and lets you play in English and French. Click here to see a video of Lightbot in action.

Kodable and CodeHS (first few lessons free, then a purchased license required)



Kodable (K-5)

Division Office has not purchased a Kodable license, however, you can access 12 "Kick Start" K-5 lesson plans and student activities for free here.

With a paid license, you can choose from over 70 lessons with both on-screen and off-screen components.

With Kodable, everything you need to teach coding is in one place. No more piecemeal curriculum! You'll find all the materials, lessons and resources you need to teach. Every lesson includes instruction guidance, vocabulary words, and student materials. You can teach K-5 computer science as its own content area or integrate into math, ELA, digital citizenship, robotics, or other subject area.

Click here (kodable k_5_scope_and_sequence.pdf) to access Kodable's recommended Scope & Sequence for K-Grade 5. Note: All students without coding experience should start with beginner concepts regardless of age. Older students will complete the work faster and need less practice with beginner concepts. See the year one scope and sequence (kodable year_1_scope_and_sequence.pdf) for details.

Click here to see a video of Kodable's curriculum.

Click here and here to see a video of Kodable in action.

CodeHS (Gr.6-12)

Info about Code HS can be found here.

CodeHS helps schools and districts build a comprehensive Middle School to High School computer science pathway starting from introductory level block-based programming courses all the way to AP level text based courses in many languages.

Scratch (free)

Scratch is available here.

Scratch is a project of the Lifelong Kindergarten Group at the MIT Media Lab. It is provided free of charge.

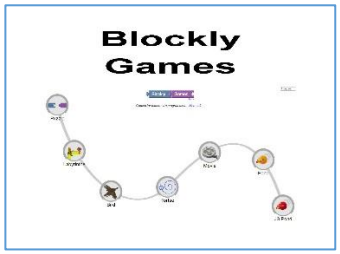
Scratch is designed especially for ages 8 to 16, but is used by people of all ages.

Students can use Scratch to code their own interactive stories, animations, and games. In the process, they learn to think creatively, reason systematically, and work collaboratively. Students can then share their creations with others in the online community.

Click here to see a video outlining what Scratch is.

Why learn Scratch? Watch a TedTalk here to find out!!

Click here (Scratch Users Guide - CreativeComputing.pdf) to access the Scratch User Guide created by Creative Computing.

Scratch Jr (free) 	Scratch Jr is available as a free app here. With Scratch Jr, young children (ages 5-7) can program their own interactive stories and games. In the process, they learn to solve problems, design projects, and express themselves creatively on the computer. Click here to access Scratch Jr Activities, Curriculum and Assessments. Click here to see 10 things to try on Scratch or Scratch Jr. Click here to see a video with a Scratch Junior Activity Guide.
Blockly (free) 	Blockly Games is a series of educational games that teach programming. It is designed for children who have not had prior experience with computer programming. By the end of these games, players are ready to use conventional text-based languages. Blockly is library that adds a visual code editor to web and Android apps. The Blockly editor uses interlocking, graphical blocks to represent code concepts like variables, logical expressions, loops, and more. It allows users to apply programming principles without having to worry about syntax or the intimidation of a blinking cursor on the command line. The games can be found at https://blockly-games.appspot.com/ All code is free and open source. Click here to see a video of Blockly in action. Click here to see a video of Blockly being used with Dash and Dot. Click here to see a video of Blocky being used by grade 1 students to do math with Dash and Dot.
Tickle (free) 	The Tickle app can be downloaded here. The Tickle website can be accessed here. Tickle is a block based, or drag and drop, (similar to Scratch) app for students to code programs using iOS devices. The Tickle app works as a stand-alone for students to program games within the app; however, one of its greatest points of appeal is its ability to run the programs with drones, Sphero robot balls, Philips hue lights bulbs, and numerous other devices. Student engagement is at an all-time high when they see the program they built in Tickle in action through the physical manipulation of these objects. Plus, who doesn't like drones and robots?! The Tickle app allows for many curriculum tie-ins too. For example, students can use it in a probability lesson where they can predict the probability of certain colors appearing in a random color generation. Students must develop a program with the Tickle app to make the Sphero generate colors at random. It is a lot of trial and error and the students gain a foundation in the principles of coding in this manner. Tickle allows you to start learning programming the same way as Computer Science courses at Harvard and UC Berkeley. Tickle is used by makers and designers around the world to create custom robots and interactive projects, including Stanford University computer scientists. Create stunning games and interactive stories using Tickle's library of animated characters and sounds. With the ability to program devices to interact with other devices and virtual characters, the possibilities are limitless. Tickle is designed with accessibility in mind. It's the world's first programming app to support VoiceOver, so that users who are blind or have low vision can also learn to code and program the world around them. With Tickle, everyone can have the power of Augmented Reality, and engage in mixed reality experience by coding 3D characters to interact with multiple robots.

	A video outlining the uses for the Tickle app can be watched here. Tickle can be used to program devices such as • Sphero • WeDo Lego • Dash • Dot • Drones … to see info regarding programing these and other devices, click here.
Hopscotch (free) 	Click here to access the Hopscotch webpage. Transition your students from ScratchJr to more advanced coding on Hopscotch. These have block-to-block comparisons and suggestions for building off concepts explored in ScratchJr. To see a video on using Hopscotch click here.
Foos / Spark Academy with The Foos (free) 	The game is free for public schools and non-profits. Students who want to play at home will have to purchase a subscription (costs $7.99 USD per month, which includes a 7 day free trial). Their school accounts will not transfer over to their home accounts. To register for a teacher account, go to http://dashboard.thefoos.com/#/ and follow the onscreen instructions to create and register your students. You'll have to log-in to each device using your teacher account log-in. After that, students can choose their classroom and profile from the ones you created. When you're registering students, it is suggested that you organize them by class period, grade, or alphabetically for easier searchability. The highlights of using Foos: • Learn the ABC's of coding. • Completely word-free. • Self-directed - no experience required. • Built with girls in mind without pandering; however, can be used with girls and boys ages 5-9. The earlier kids are exposed to programming, the less likely they are to demonstrate gendered stereotypes about STEAM careers. • Available on iOS and Android tablets and mobile devices. • Based on research-backed curriculum from MIT and Princeton. Click here to see how Foos works. Click here to learn how to register yourself as a teacher and register your class roster. A light version of Foos can be used on a computer without downloading an app by clicking here.

Professional Development
https://code.org/educate/professional-development-online

How to set up CS in your division
https://code.org/administrators

CS Curriculum and Lesson plans for Code.org Courses A-F
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