

Final report of the subcommittee on technology to the Governing Board of Royal West Academy

Presented January 14, 2015

Report of the Subcommittee on Technology at Royal West Academy

This report on the consultation undertaken by the technology subcommittee of the Governing Board of Royal West Academy covers research carried out beginning in winter 2013 and ending in winter 2014.

It is divided into a number of sections as follows:

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Executive Summary

There is a high level of interest and support at Royal West Academy among teachers, parents and students in the use of technology to support the school's special mission of providing a structured milieu in which students are committed to academic achievement, bilingualism, mathematics and the sciences, computer literacy, an appreciation of the arts, an understanding of social issues and a sense of community responsibilities.

Parents and teachers share a concern that the all-too-present fascination with technology does not trump good pedagogy but rather that, when used, technology act as an enabler of student success.

Three major findings come out of the study.

1. There is a clearly stated desire by parents, students and teachers for an online portal that simplifies and opens up communications between the three stakeholder groups and offers up-to-date information on assignments, due dates, class notes where available and source materials or links to such material. There is also a strong parental desire that the portal offer access to timely reports on student progress; this desire is not as strong among students and teachers.

There are advantages to each group in the adoption of such an online portal platform. For teachers, it allows them to centralize communications with students and parents, which will decrease the amount of one-off communications that take place now on relatively rote matters. For students and parents, and particularly students who miss a class, a portal offers an easy way to remain on also the intellectual framework for evaluating and using information found on the Internet. For parents, the portal offers a window into the work going on at the school and an opportunity to monitor their child's progress.

2. There is an urgent need for significant upgrades to the school's information technology infrastructure. The current set up is not capable of supporting even the very low level of demand that exists today with service failures a common occurrence. If teachers are to embrace technology where it can actually support the achievement of the school's special mission, the infrastructure will need to be far more robust with improved signal access in all corners of the school and much faster data transfer speeds.
3. All the technology in the world is useless if the teachers are not trained and comfortable with its use in the classroom. The concern is that budget will be found for equipment and infrastructure but little or no budget will be available for training. This is already the case with the ubiquitous smart boards in the school. Some teachers have found ways to integrate them into their teaching. For many others, however, this has not been the case because they are not comfortable with the boards and they do not understand how to integrate them into their lessons.

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1. Background

Royal West Academy's (RWA) mission is to provide a structured milieu in which students are committed to academic achievement, bilingualism, computer literacy, an appreciation of the arts, an understanding of social issues and a sense of community responsibilities.

Specifically the goals of RWA are to:

- 1) Provide an atmosphere that encourages students to realize their potential and encompasses not only academic development, but also the social and physical well-being of students.
- 2) Promote responsible actions, self-discipline, and mutual respect through a structured environment.
- 3) Promote respect for cultural diversity and an understanding of social issues.
- 4) Offer a curriculum enriched with accelerated content.
- 5) Develop in all students the ability to function bilingually.
- 6) Develop in all students the ability to use information technology effectively.
- 7) Foster an appreciation of the arts.
- 8) Provide continuity and support through a "Teacher-Advisor" system.
- 9) Support students' personal development through the compulsory extra-curricular program that includes athletic, cultural, environment and community service activities.
- 10) Provide a milieu in which parents, students and staff share the responsibility for achieving the mission and goals of Royal West Academy.

In line with the school's above-mentioned goals, and those put forward by the Canadian *21st Century Learning Initiative* (see <http://www.c21canada.org/>) and their corresponding models of learning, the RWA faculty would like to augment the wise use of technology throughout the curriculum.

2. Mandate and Membership of the ICT Planning Committee

At a meeting of the Royal West Academy Governing Board held on Tuesday, November 13, 2012, the following motion was presented and passed.

Motion: That the governing board form a small committee consisting of representatives from RWA stakeholder groups to propose a technology policy for Royal West Academy. The committee should be drawn from parents, teachers, school and EMSB administrators, technology specialists within the community and students (if they have time).

The committee should include the following actions among those it takes in the development of a technology policy:

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- Consult with students, teachers, administrators and parents from the RWA community to understand their views on the role of technology in high school education.
- Identify specific technology policies that have been proven to measurably improve learning outcomes in other schools across North America.
- Assess the applicability of these practices to RWA and its unique mission and culture.
- Prepare a report for the governing board that includes an overview of the proposed policy along with a rationale each recommendation.
- Within the report, prioritize any recommended changes to the school's current de facto technology policy by their potential positive impact on learning outcomes along with an explanation of the implications of these changes on students, families, teachers and administration.
- Estimate the cost for the installation and ongoing maintenance of each recommended practice including estimated training or development costs that would be necessary or recommended.

If it is not possible for the proposed policy to be completed and presented to governing board for its meeting in May 2013, the committee is asked to make an interim report to governing board at that meeting.

Committee members

Kirk Kelly, parent representative, chair

Anne Wade, parent representative

Tony Pita, principal

Lynn Bourdeau, POP and technology teacher

Stephan Nemeth, technology teacher

Gloria Kouyunion, English teacher

André Vamvakas, technology and physical education teacher

Claudia Gucciardi, English and technology teacher (member to June 2013)

Charles Northey, teacher (member from June 2014)

3. Methodology, key dates, survey response rates

At the first meeting of the technology-policy working group, the decision was made to organize the research to form a new policy into three main initiatives:

- An assessment of the technology infrastructure in the school since any change in the use of technology would first of all have to be accommodated by the existing network
- A consultation with the teachers interested in improving how technology is used in their classrooms because whatever policies are recommended, they have to fit with the pedagogical priorities defined by the teachers in consultation with the administration.
- A consultation with each of the three major stakeholder groups in the school's success plan around their perceptions of the current use of technology, their access to technology outside the school and their perspectives on how technology might be used to further the student learning and enhance communications between teachers, students and parents.

Key dates

Meetings of the technology-policy working group

- | | | |
|-------------------|-----------------|-----------------|
| 1. Jan 15, 2013 | 2. Jan 30, 2013 | 3. Feb 19, 2013 |
| 4. March 20, 2013 | 5. May 23, 2013 | 6. Spring 2014 |

Meeting with Mike Babin re technology infrastructure: Feb 13, 2013

Report of Mr. Babin: Feb 17, 2013

Meetings with Luigi Di Filippo, Director, IT services, EMSB

1. May 2, 2013
2. October 24, 2013

Meetings of teachers with Harry Kirschner

1. April 25, 2013
2. June 16, 2013
3. October 3, 2013 (C. Gucciardi, H. Kirschner, K. Kelly only)

4. Technology infrastructure consultation

The working group identified technology infrastructure as a basic problem. The following issues were brought to the committee's attention:

- Teachers who tried to integrate technology into their teaching (e.g., showing a video relevant to a current topic as background to a discussion) were frequently being dropped from the network or unable to access the network at the time needed.
- A further problem for teachers who were successful in obtaining and maintain a connection to the network was their inability to update simple software such as Flash. If its creators had recently updated Flash, videos available on the Net would require the latest version to run. Without it, the video would simply not work. Technology support staff from the EMSB was required to carry out all software updates during the 2013 school year. RWA, with approximately 400 computers, was allocated 2 hours of technology support per week from a single technician. Every computer had to be updated one by one for every software upgrade. No one inside RWA had administrative authority to decide on software upgrades or to carry them out.
- One of RWA's fixed computer labs, located next to the switches for the school, had dead spots where students were required to move around to find an adequate signal to connect to the network. The network strength in the far wings of the school was almost non-existent.
- While the Ministère de l'Éducation, Loisirs et Sports had allocated funds to install whiteboards and related equipment in most classrooms in Québec, there had been fewer resources allocated to teacher training in how to use the equipment effectively. Teachers expressed the concern that since the impact of any changes in the school's technology infrastructure fell disproportionately on them, that it was necessary that any contemplated changes include adequate resources and time for teacher training.

It was in this context that the consultation with respect to technology infrastructure took place. It consisted of two steps.

The first initiative was to invite Mike Babin, Director of Information Technology Infrastructure and Operations at Concordia University to do a review of the existing infrastructure. Mike has worked at Concordia for over 27 years. The units he manages are responsible for all computing and networking university-wide, including a centralized data centre for each campus, administration of about 450 university applications and file servers with all their underlying computer and storage hardware, provision of services to 59 buildings, maintenance of just under 15,000 wired connections and support for about 10,000 simultaneous wireless connections at any one time. His group also runs a VOIP telephone system for 5,000 subscribers.

Mr. Babin toured Royal West Academy on Wednesday February 13, 2013. He examined the connection points between the school and the EMSB external network, the switches, the cabling used as well as the distribution of Wireless Access Points ("AP").

He submitted a preliminary report on February 17. The primary finding was the inadequacy of the network cabling. His observations and recommendations follow:

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1. “The existing network cable conforms to an obsolete standard (Cat 5) and cannot support the bandwidth required to support the current program, not to mention any future increase in demand. The performance of this cable is further degraded as a result of the use of tie-wraps to affix these cables to EMT conduit. (Note: Cat 5 cable perfectly installed supports a maximum of 100 Mbs over 100 meters from the switch to the last connection. Today’s typical desktop or laptop computer is capable of 1 Gbs (1024 Mbs) data rates or ten times the capacity of the current cabling.

Recommendation: Any new solution will require at least some network cable. Replace existing with new cable that meets current industry standards (Cat 6A) and ensure that it is installed according to manufacturer’s specifications. This is especially important should the decision is made to implement a primarily wireless solution. The newer cable will support the “Power over Ethernet” standard for supplying electricity to each Wireless Access Point (AP – the devices mounted on the ceilings), which would otherwise require the installation of an electrical outlet nearby.

2. A casual evaluation of the network topology indicates that some of the reports of inconsistent network performance are due to inadequate bandwidth between network concentration points. Daisy-chain topologies and underpowered up-link connections were both observed.

The topology in place now was adequate for facilities such as computer labs where, in the past, most of the shared resources were located within those same rooms. A greater dependency on resources located on the internet will require much greater bandwidth between all points and the internet termination point.

Recommendation: Ensure that network topology is reviewed with an eye to eliminating daisy chains and ensuring uplink connections are properly sized.

3. The existing network switches are similarly underpowered by today’s standards. These devices only support 100 Mbs connections. Even if wired connections are to be primarily used for connecting wireless APs, 1 Gbs connections will be required.

Recommendation: Replace switches with models that support 1 Gbs links and allow for the configuration of higher bandwidth ether-channel connections for the uplinks. Consider PoE capable switches to support wireless devices. A wireless solution will require fewer switches overall than are currently deployed.

In general, given the potential high cost to completely update the existing wired network, the option of making greater use of wireless (Wi-Fi) technology becomes attractive.

Some of the major considerations when deciding between a wired or a wireless networking technology:

- Wired
 - High bandwidth capacities (1024 Mbs to 10240 Mbs)
 - Highly reliable, guaranteed data rate.
 - Accessible only where cable installed. (i.e., need to reserve designated space such as computer laboratories for this use).

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- Wireless
 - Lower bandwidth capacities (realistically 300 Mbs under ideal conditions)
 - Susceptible to interference from other electro-magnetic frequency sources such as cell phones, other Wi-Fi equipped devices, cordless phones) resulting in degraded service
 - Depending on the extent of the wireless infrastructure, access to the internet would not be restricted to specially-equipped spaces such as computer labs.”

Based on Mr. Babin’s observations and recommendations, the committee decided, as a second initiative, to reach out to the newly installed director of information technology services at the EMSB, Mr Luigi Di Filippo, to arrange a meeting.

In preparation for that meeting, Anne Wade prepared an extensive background briefing for the meeting between the working group and Mr Di Filippo. That informative briefing note can be found in Appendix A.

The meeting with Mr Di Filippo took place at the school on May 2, 2013 with the entire working group in attendance. Mr. Di Filippo shared some of the EMSB’s plans for infrastructure upgrades across the entire school network. Anne Wade prepared the following highlights from that meeting.

“Over the next five years there will be major upgrades to the EMSB IT infrastructure including an increase from 1 GB to 10 GB link between each school and Central Office. This work is underway now with the Commission scolaire Marguerite-Bourgeoys and Lester B. Pearson School Board. Cost will be \$350,000 for the central traffic control alone; then each of the approximately 65 schools in the EMSB system will need upgrading.

Currently there is a tender going out to upgrade the IT back end. Along with other advantages, this will allow for the ability to update software centrally. This in turn, will free up the technicians' time when they are in the schools.

A BYOD (Bring Your Own Device) project for students and teachers is planned for next fall (fall 2013) as a pilot. If the device used in the school is a non-EMSB device, it will be asked for authentication (username or email address) and the user will be left inside firewalls: able to reach the internet but not able to access any central school or EMSB files. The board will be testing the setup at the Fielding Street headquarters first. Initially, bandwidth will be limited and monitored. Principals will soon be asked if they are interested in having their schools participate.

Other items of note

- When IT decisions are made for an individual school, the entire school board's needs (esp. budgetary) must be taken into consideration. All ICT (Information and communications technology) plans need to take into account budgetary considerations as the school boards have experienced and are likely to continue to experience budget cuts. While the EMSB’s student enrolment is decreasing, the number and range of devices that can connect to a network are increasing which presents a challenge.

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- The IT Department is working to improve its understanding of the needs of each individual school by putting appropriate communications channels in place.
- Assigning administrative access to end user machines at the school level is currently a problem for a multitude of reasons. There is currently no sub-admin (or restricted) access - one can only open up the entire network or close access altogether. If IT were to open access up, the entire network could become vulnerable to viruses and other technical difficulties that would put the whole EMSB network at risk. Also, it is very difficult to provide effective (and efficient) support for end user machines when there is no standard or consistency in setup across machines. RWA staff noted there is an array of expertise at the school level, and that an in-school ICT point person who was assigned access could document every change in the school's IT setup so that central IT could ensure it conforms to board requirements. This idea is that this could relieve some burden on the technicians and some of the frustration of teachers who are always waiting for upgrades or permission to try new software.
- (Note devices such as iPads have a third of the signal strength as compared to desktops.)

Action items:

- Mr. Di Filippo will review RWA's current ICT infrastructure including the speed of the link (network connectivity), the need for new switches, Mr. Babin's observations and recommendations, the possible need an additional wiring closet on south side of the building, and the general set up. He will try to provide a diagnosis of RWA's infrastructure situation, along with a cost estimate prior to the end of the school year.
- In fall 2013, depending on board budgets, there may be funds to install a few additional AP access points in some key areas of various schools at a cost of approx. \$2000 per access point.
- Mr. Di Filippo will add Chrome as a permitted browser at RWA.
- The RWA ICT Planning Committee will meet with Mr. Di Filippo again in October 2013 to learn further about the state of the EMSB IT's upgrades, and the possibilities for the school.

A subsequent meeting was held with Mr Di Filippo on Thursday, October 24, 2013. Following that meeting, Mr Di Filippo made the following commitments to RWA:

- ITS will provide RWA with 3 additional access points to be distributed as necessary. This will be done as soon as a new order for APs is placed, expected within the next few weeks.
- ITS will open access to a select few teachers for their computers to allow them to install new software for testing and experimentation purposes. It is understand that if a problem associated with these "open" devices arises, ITS will only support them as part of the regular service rotation, not on any priority basis.
- As the new system management solution is deployed, RWA will be a pilot/proof of concept school to review the feasibility of allowing local management of computing devices. At this point, there is no clear direction

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that can be defined as this will be the outcome of the pilot/proof of concept activity.

- ITS will investigate the issues surrounding Google Chrome installation and if possible will install it on the computers RWA designates within the activities of regular Field Services support.

Subsequent events

In fall 2013, RWA signed on as a participant in the pilot BYOD program. It is being slowly rolled out to teachers and a plan is being developed to begin allowing some students to also be included. The EMSB has allocated 10% of its total 500 Mb bandwidth to the BYOD experiment.

Three new APs were installed including one in the library.

Four RWA teachers have been given open access to their EMSB computers to test new software for inclusion on other computers in the school.

In the summer of 2014, the number of Aps was increased to 40 throughout the school resulting in much better coverage on all floors and in all wings of the school building.

5 Group consultation with teachers

The second initiative of the technology working group was to consult with teachers at RWA. Claudia Gucciardi of the working group undertook to contact teachers, invite them to a meeting with Harry Kirschner, chair the meetings and record and report on the meeting events. Her help was invaluable.

Harry Kirschner comes to RWA from Concordia. A former RWA parent, he has more than 15 years industry experience in the facilitation of user needs with respect to technology and more than 5 years experience in incorporating process, people, and technology perspectives in project implementation, much of it in an academic environment.

Harry facilitated three meetings in 2013 in total: April 25, June 16 and October 3.

The April 25th meeting was attended by Harry, Claudia and Kirk Kelly as well as the vice-principal Irini Margetis and seven teachers: Xavier Desilets (social sciences: geography, history, and contemporary world), Francois Girardin (math), Milada Prachar (French), Jamal Zigby (physics, chemistry, science, math), Nathalie Cheff (French, geography), Akim Munro (science, math) and Ana Cristina Almeida (Spanish, contemporary world, history).

The goal of the meeting was to explore the current usage, desires and criticisms of the use of technology at RWA. The minutes of the meeting can be found in Appendix B.

From the two and a half hour meeting, Mr Kirschner was able to identify 47 specific problems, needs, planned or possible improvements as well as tactics that were useful under current conditions. A list of these items can be found at Appendix C to this report.

The June 16th meeting and the October 3rd meetings were used to whittle the 47 problems and opportunities down to a smaller and actionable set of conclusions and recommendations.

Based on the October 3rd meeting, the following conclusions were reached:

“Harry summarized the findings of the tech consultation as showing:

- 1. That there is a clearly expressed need from teachers for an effective and efficient student-teacher interface as well as one that meets the needs of parents and teachers.**
- 2. As well, there is a definite need to focus on teacher training in all technology initiatives. Thousands of dollars invested in technology tools are useless unless teachers understand how those tools can be used to support the pedagogical goals specific to RWA’s special mission.**

With respect to the need for an effective interface, the immediate challenge is to define in detailed terms what is needed.

In Harry’s experience, there appear to be two alternative ways to proceed with this:

- a) Hold another round of consultations and try to iron out the specs based on an overarching descriptive structure answering the following questions as suggested by Harry:

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- What exactly needs to be achieved? [Who are the participants? What will they be able to do/need to do? Who can communicate with whom? What types of controls are required?]
 - How will we create the conditions so that we can achieve our goals?
 - What can we expect from this investment of time and resources after what period of time?
- b) Find some teachers who are willing to pioneer adding an interactive technology component to their classrooms and let other teachers observe. Assuming the experiment is as positive as it has been in other schools, move towards adoption by more teachers as time goes on.

Taking the pioneer route (option b) would seem to be the path of least resistance – the pioneers would be willing and over time, other teachers, depending on their level of tech interest, would be attracted to join based on the initial experiences. It will be important to make sure all the pioneers share the same goals on the direction of achieving two-way communication with parents and students.

Currently there are one or two teachers using other online resources such as MathHelp extensively at RWA. The expectation would be that they would continue to do this but would rely on the agreed upon channel for two-way communications with students and parents. Ideally, such a channel would also allow students to hand in work electronically.

There was a discussion of the features and benefits of Moodle versus Edmodo with the sense that Edmodo was more appropriate for the types of uses that the RWA community wanted, specifically teacher with student communications and teacher with parents.

In the fall of 2013, Ms. Gucciardi began work at Laurier-Macdonald secondary school. In her new role, Ms. Gucciardi has a website as referenced above for all her classes that contains all the class materials, assignments and related materials. She uses Edmodo to communicate with students and also to receive their assignments. She can also communicate with parents.

In Claudia's opinion, the general benefits she has observed include:

- Less anxiety generally for students, parents and even teachers. Students know what the assignments are, when they are due etc. Sick students can get their assignments online reducing the sense of being left behind. Fewer excuses about assignments left at school or homework forgotten at home.
- Teachers save time because they can communicate with all students, some students, all parents, or some parents, as needed. Everything is in one place, rather than strung out across 1,000 emails.
- Students generally like using technology and the Edmodo interface is very similar to that on Facebook.

Subsequent events

On October 3, Lynn Bourdeau, an RWA teacher in the technology stream and a member of the technology working group, learned that she had been awarded a \$7,000 Professional Development and Innovation Grant ("PDIG"). The grant will release six teachers for six days to plan, implement and support RWA in creating Professional Learning Communities ("PLC"). The focus of the cross discipline PLCs for this year is the integration of computer technology in the classroom. At the October 17th Regional

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Professional Development Day, teachers were introduced to the functioning of a PLC followed by a first meeting. A PLC's purpose is to look at changing and adapting teaching practices based on data analysis.

Their recommendations can be found in Section 8: Subsequent Events.

6. Online survey of students, parents and teachers – quantitative data

Three surveys, one targeted to each of students, teachers and parents, were constructed to have almost parallel structures with only a few questions different between the teacher, parent and student versions.

The goal of the surveys was to gather perceptions of the various stakeholder groups around the current technology environment at RWA and to solicit feedback on how that environment might need to be transformed to meet stakeholder future needs and expectations.

Copies of the survey questions for each stakeholder group can be found in Appendix D.

Surveys were live for various periods:

Student version: May 26 to June 25, 2013

Teacher version: May 30 to June 25, 2013

Parent version: June 5 to September 26, 2013

Response rates were good for student and teacher surveys, and acceptable for the parent survey as shown below in Table 1:

Stakeholder group	# responses	Response rate	Margin of error
Students	592	68%	+/-4.1%
Teachers	42	81%	+/-15.4%
Parents	248	28% or 14%	+/-5.4%

TABLE 1: NUMBER OF RESPONSES, RESPONSE RATE AND MARGIN OF ERROR FOR EACH OF THE THREE STAKEHOLDER GROUPS SURVEYED. NOTE THAT RESPONSE RATE FOR PARENTS VARIES DEPENDING ON WHETHER ONE COUNTS FAMILIES OR INDIVIDUAL PARENTS AS POTENTIAL RESPONDENTS.

The surveys were divided into sets of themed questions.

The **first set of questions** was to determine students' and teachers' access to computers outside the school and the type of operating systems in use. The survey results in Chart 1 below show that access to a computer outside RWA is nearly universal among students with slightly lower access reported by teachers. Parent reports of their children's access to computers is a close match to student accounts. As an independent verification, the RWA administrative services reports that 31 families (or about 4% of the total number of families with one or more children at RWA) report no email address as a contact point. This may include a small number of families with email access but who prefer to receive communications from the school through other channels.

The **second set of questions** was to ask those students with access to computers outside RWA how important they are to a number of academic-related pursuits such as

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looking up reference information, sharing notes or questions with classmates or teachers, preparing assignments, etc. Students' responses are shown in Chart 2 below.

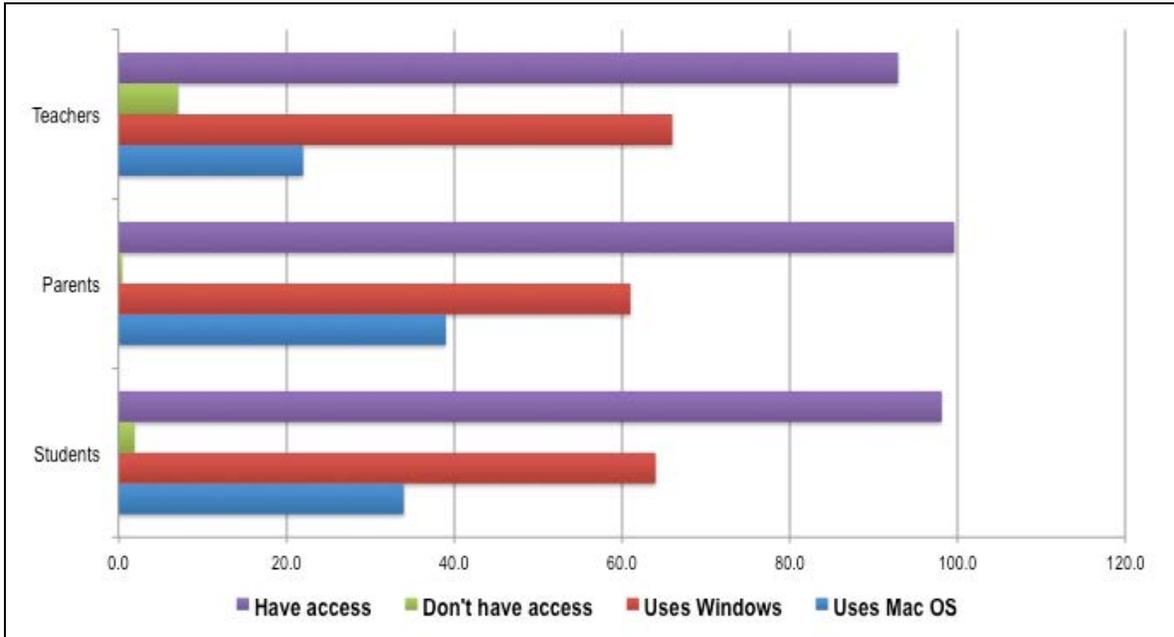
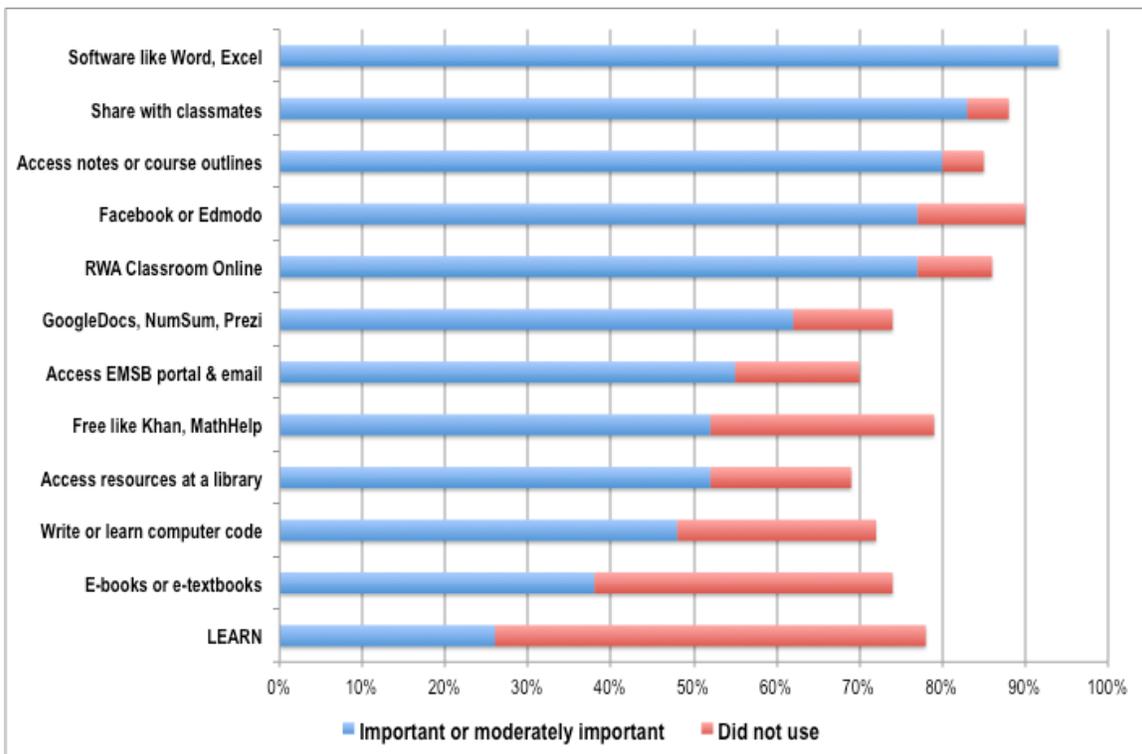


CHART 1: ALMOST 100% OF STUDENTS & PARENTS HAVE ACCESS TO COMPUTERS OUTSIDE RWA WITH MAC OS RUNNING ON ABOUT 50% OF MACHINES. ACCESS IS LOWER FOR TEACHERS WITH 7% REPORTING NO ACCESS TO A COMPUTER OUTSIDE RWA. (STUDENTS N = 548, PARENTS N = 248, TEACHERS N = 42)



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CHART 2: STUDENT RESPONSES TO QUESTIONS ABOUT THE IMPORTANCE OF COMPUTERS USED OUTSIDE RWA ON SCHOOL-RELATED TASKS. (STUDENTS N = 548)

The **third set of questions** touches on access to mobile devices that share some of the capabilities of computers. Chart 3 shows the penetration of these devices among teachers and students. Respondents were only allowed to select one answer; as a result, we can say that 85% of students and 71% of teachers report access to smart mobile devices outside RWA. Usage patterns for these devices are similar to those shown in Chart 2 for desktop and laptop computers.

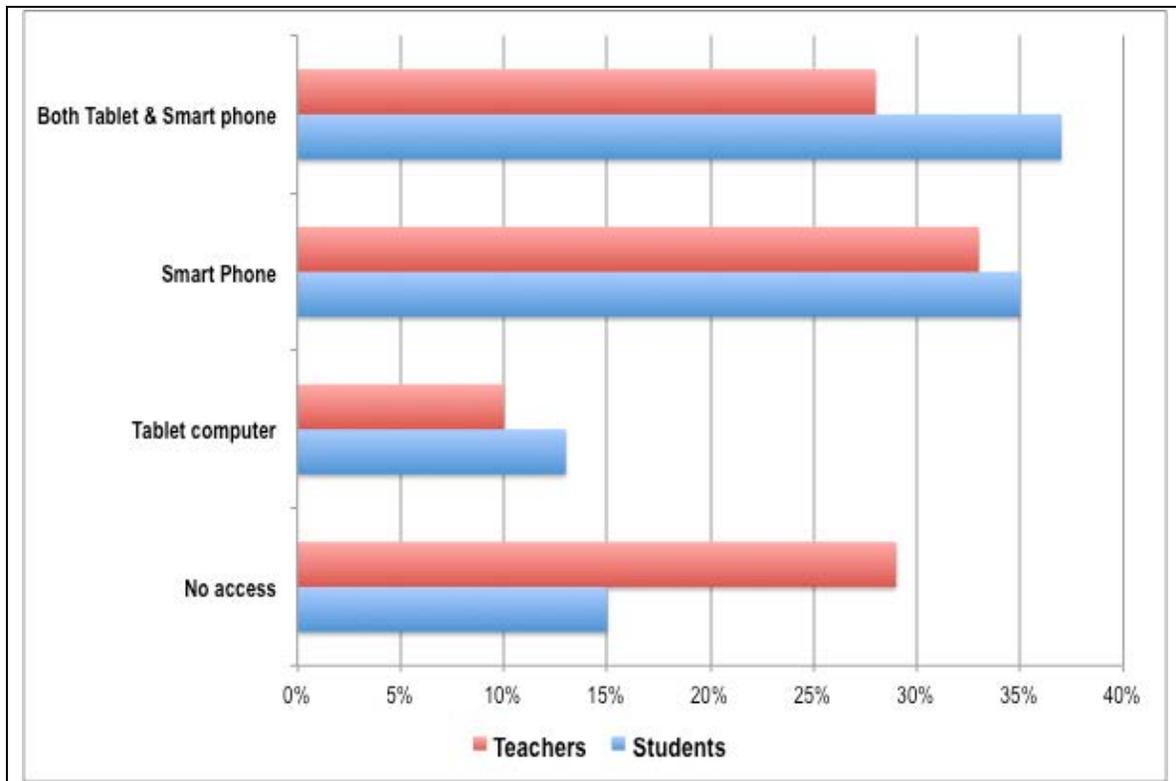


CHART 3: LEVEL OF PENETRATION OF MOBILE COMPUTING DEVICES AMONG STUDENTS AND TEACHERS. RESPONDENTS COULD ONLY CHOOSE ONE ANSWER TO THE QUESTION; 85% OF STUDENTS AND 71% OF TEACHERS HAVE ACCESS TO ONE OR MORE MOBILE COMPUTING DEVICES OUTSIDE RWA. (STUDENTS N = 548, TEACHERS N = 42)

The **fourth set of questions** probed students, parents and teachers to determine what forms of communication are important to success at RWA and the forms of communication that each stakeholder group would like to see used more, less or the same in relation to academic work at RWA.

Chart 4 shows how each of the groups surveyed perceives the importance of 10 different currently available forms of communication out of an original list of 15 forms of communication in the survey. The results displayed are the sum of percentages of those who selected “Very Important” or “Important” as their rating. The five not shown all received lower ratings than the EMSB Portal option shown on the far right of the chart.

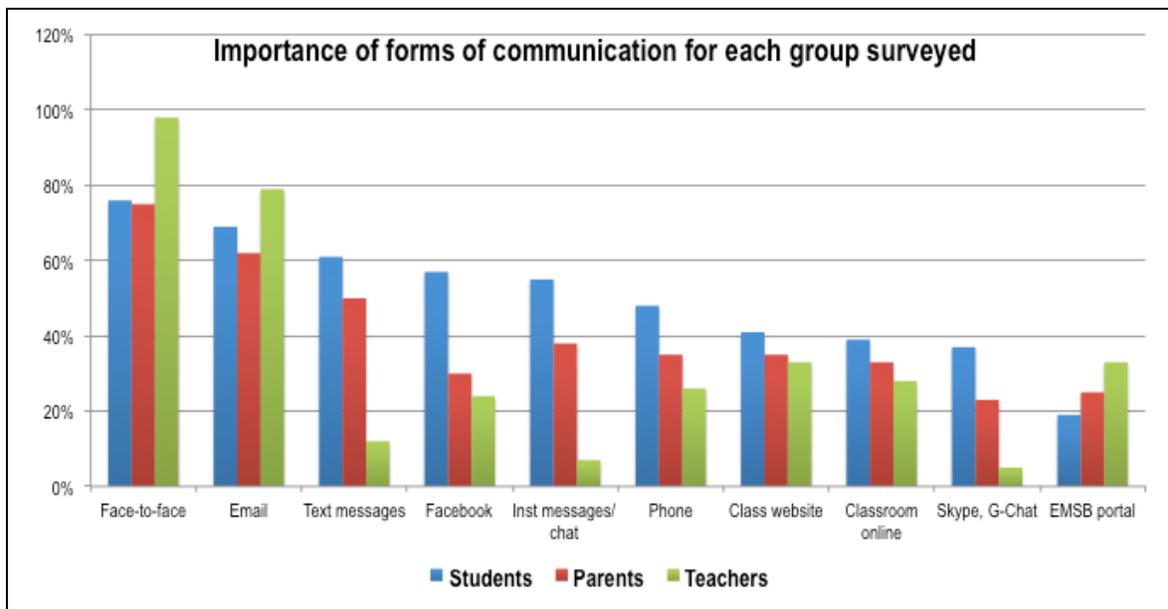


CHART 4: HOW THE DIFFERENT STAKEHOLDER GROUPS RATE THE IMPORTANCE OF A VARIETY OF CURRENTLY AVAILABLE FORMS OF COMMUNICATION. RESULTS SHOW THE TOTAL PERCENTAGE OF EACH GROUP THAT RATED EACH FORM OF COMMUNICATION AS EITHER “VERY IMPORTANT” OR “IMPORTANT.” (STUDENTS N = 548, PARENTS N = 248, TEACHERS N = 42)

Almost 100% of teachers rate face-to-face communications as the most important followed by at least 75% of students and parents. Email is the second most important channel for all three stakeholder groups. Also of interest here is the pattern of verbatim comments from parents (open text answers where parents are asked to share their thoughts) who have a concern that technology might somehow be thought of as a solution to replace face-to-face communication. Many parents made the point that technology can be an enabler but the most critical element in shaping a child’s future is a great teacher in a classroom. The point is made many times that nothing can replace a teacher’s passion and skill.

At least 50% of students and parents rate text messaging as important but only 10% of teachers agree, perhaps concerned about having their private lives invaded 24/7 by texting-happy students.

The next forms of communication where there are similar ratings of importance from all three groups are “portal-type” resources: class websites and some form of “Classroom online.” Note that the existing portal solution provided by the EMSB gets very low ratings from students and parents while just over 30% of teachers rate it as important, possibly because it is the channel they use to submit marks to the board and the government. In the opinion of many students and parents, the portal, developed internally at the EMSB, is difficult to access, poorly designed and user-unfriendly. Commercially developed portals, even those that are free to users, are much more intuitive and responsive to the actual needs of the stakeholder groups.

In the second section of the fourth set of questions, each stakeholder group was asked to identify forms of communications that should be used more, less or the same in the

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classroom. Chart 5 shows the results for “more usage” for the top 7 of the 15 options listed.

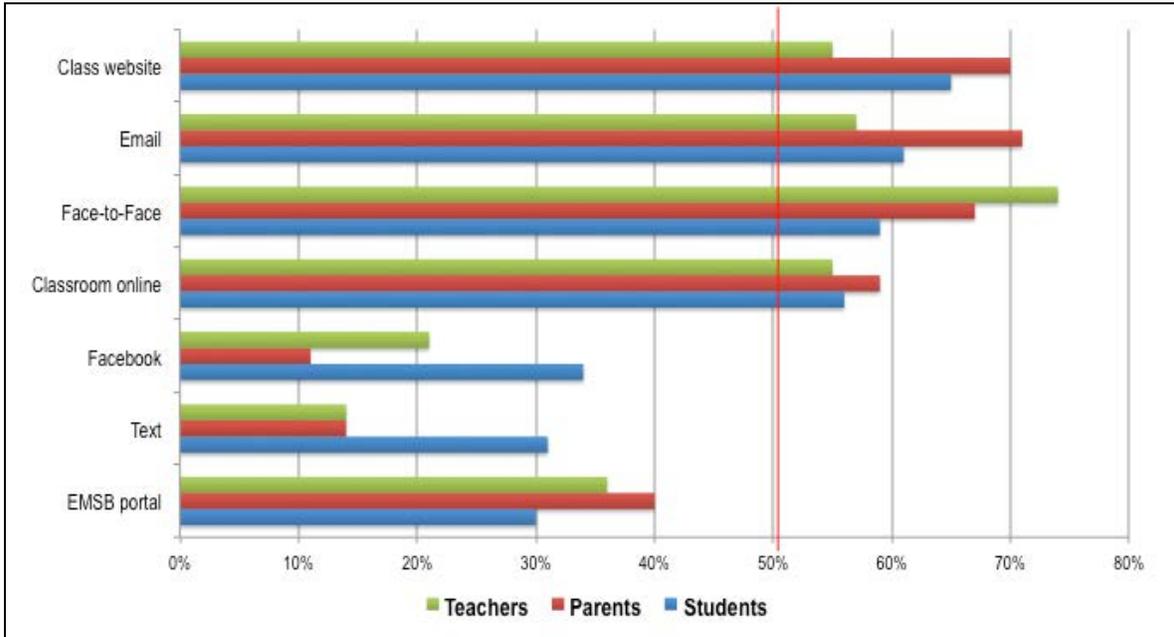


CHART 5: THE RESULTS FOR THE TOP 7 OF 15 FORMS OF COMMUNICATIONS SURVEYED SHOWING THE PERCENTAGES OF EACH STAKEHOLDER GROUP THAT BELIEVE THIS FORM OF COMMUNICATION SHOULD BE USED MORE. RESULTS ARE RANKED BY THE STRENGTH OF STUDENTS' RESPONSES. VERTICAL RED LINE HIGHLIGHTS THE 50% RESPONSE LEVEL. (STUDENTS N = 548, PARENTS N = 248, TEACHERS N = 42)

The results displayed in Chart 5 show that teachers would encourage more face-to-face communications, which receives support from parents and students. Over 65% of parents and students give their strongest support to greater use of some version of a class website with a further 55%+ supporting more use of “Classroom online.” About 55% of teachers support each of the online forms of communication.

Increased use of email is the third form of communication that attracts support from at least 50% of each stakeholder group.

The **fifth set of questions** focuses on technologies rather than forms of communication. These questions follow a similar pattern to those in the fourth set: stakeholders are asked which technologies should be used more, less or the same in the classroom. Chart 6 displays the results.

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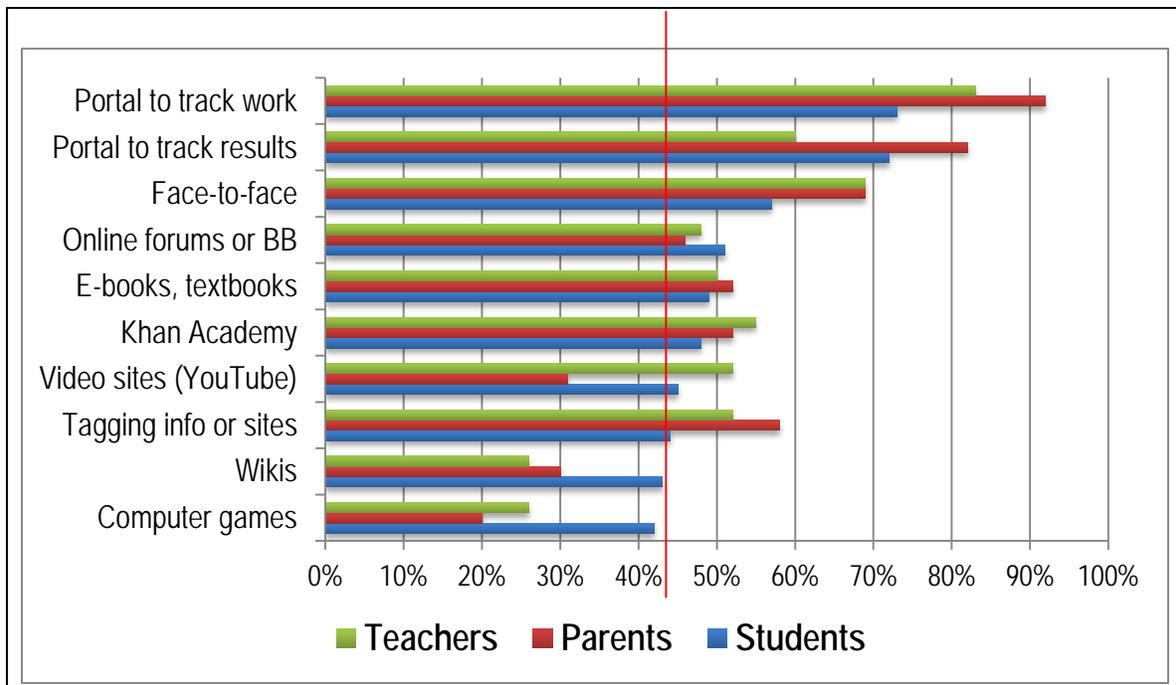


CHART 6: STAKEHOLDER GROUPS IDENTIFY THE TECHNOLOGIES THAT SHOULD BE USED MORE IN THE CLASSROOM. (STUDENTS N = 548, PARENTS N = 248, TEACHERS N = 42)

Shifting the definition of online portals from a form of communication (fourth set of questions, Chart 5) to a technology in this set of questions reveals a high level of support for portals particularly from parents. This is in line with anecdotal evidence where many parents with one or more children in the private school system lament the lack of a portal at RWA. Just over 83% of teachers perceive that a portal to track work should be used more but only 67% think the same of a portal to track results.

Almost 70% of parents and teachers think face-to-face communication should be used more; only about 55% of students agree. About half of teachers would support more use of online forums or bulletin boards (“BB”), e-textbooks or e-books, sites like Khan Academy or video sites such as YouTube.

The **sixth set of questions** consists of three statements that touch on attitudes towards online communities. Respondents are asked to indicate their level of agreement with each statement using a 5-point response scale: Strongly Disagree, Disagree, Neutral, Agree, Strongly Agree. The question is shown here in its entirety:

10. Please tell us how much you agree with each of the following statements about online communities. Response required

- a) I like to keep my school life and my social life separate.
- b) I like using sites like Facebook or Edmodo to communicate with other students about schoolwork.
- c) I would like to have an online forum to communicate and interact with other students about schoolwork outside school.

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Chart 7 shows the percentage of each stakeholder group that either Agreed or Strongly Agreed with each statement. The parent versions of the questions were about how much they agreed that students should use online communities, not how they themselves would use online communities. Teachers were asked about their interest in online communities for communicating with students.

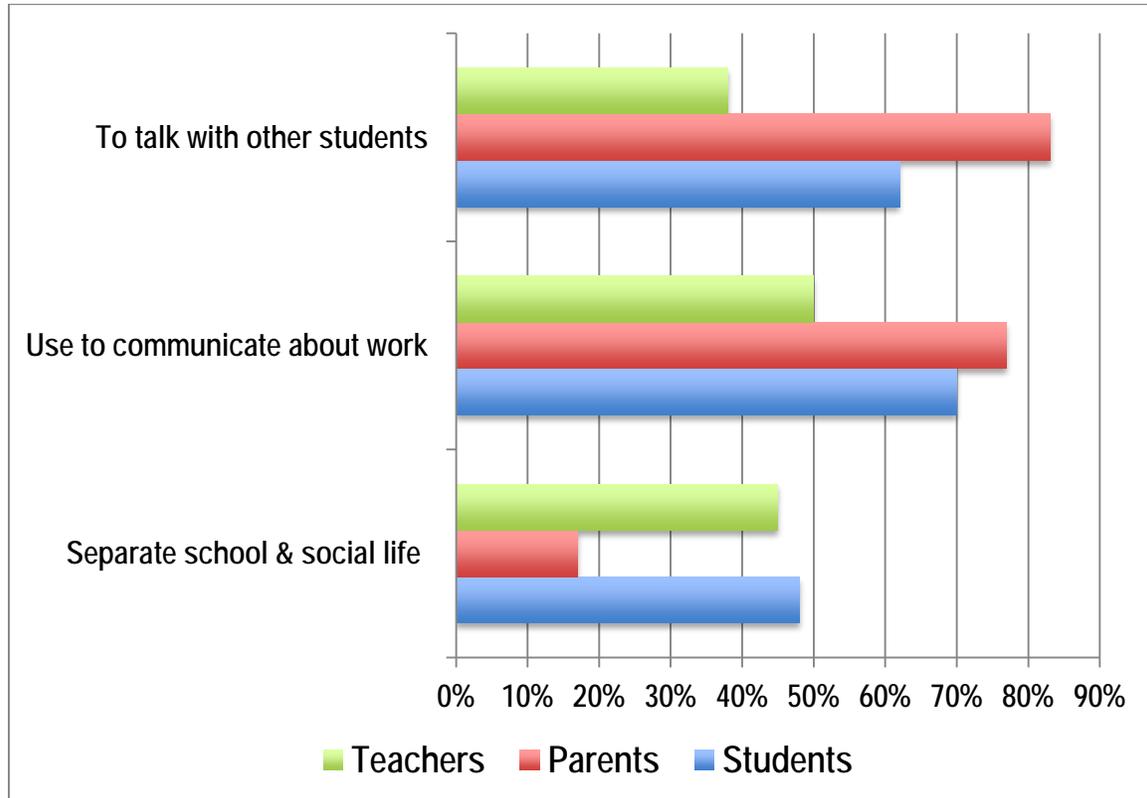


CHART 7: PERCENTAGE OF EACH STAKEHOLDER GROUP THAT AGREES OR STRONGLY AGREES THAT STUDENTS SHOULD USE ONLINE COMMUNITIES IN THE WAYS OUTLINED IN THE QUESTIONS ABOVE. (STUDENTS N = 548, PARENTS N = 248, TEACHERS N = 42)

Students are very much in agreement that online communities are useful for talking with other students and for communicating about work. Anyone who has watched their child online with friends or classmates will recognize this phenomenon at work. Teachers are less in agreement with online communities as a way to talk to students or discuss their work. Interestingly, only 17% of parents agree that their children should keep their social and school lives separate compared to 48% of students agree that this separation is desirable.

The **seventh and final set of questions** aimed at all stakeholders touch on opinions about the use of technology at RWA. Respondents were presented with 11 statements about technology usage and asked to rate their level of agreement with each statement using a 5-point scale as in the sixth set of questions. In order to display all the results, they are shown in two charts following (Chart 8 and Chart 9); you might imagine that the second chart is the right hand continuation of the first chart. The results for the statements are ranked based on student's level of agreement with each statement.

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The statement set in its entirety is shown here:

11. What is your opinion about each of the following statements? Response required

- a) Technology can make it easier for students to know what is going on in class, what the assignments are and when they are due.
- b) Technology helps me succeed in school.
- c) The things we learn in computer class are new to me.
- d) The technology skills we learn at RWA are the ones needed to succeed in CEGEP and university.
- e) I already had the technology skills I needed at RWA before I came to the school.
- f) It is important that students learn real world technology skills while they are at RWA.
- g) I would really like to take a course in computer programming at RWA.
- h) RWA teachers already use enough technology in classrooms.
- i) If students were allowed to use laptops, tablet computers or smartphones in class, they would not pay attention to the teacher at all.
- j) Giving students access to laptops, tablets or smartphones in class would make courses more interesting because students and teachers would have access to many more resources.
- k) I have the technology skills I need to succeed in all my courses.

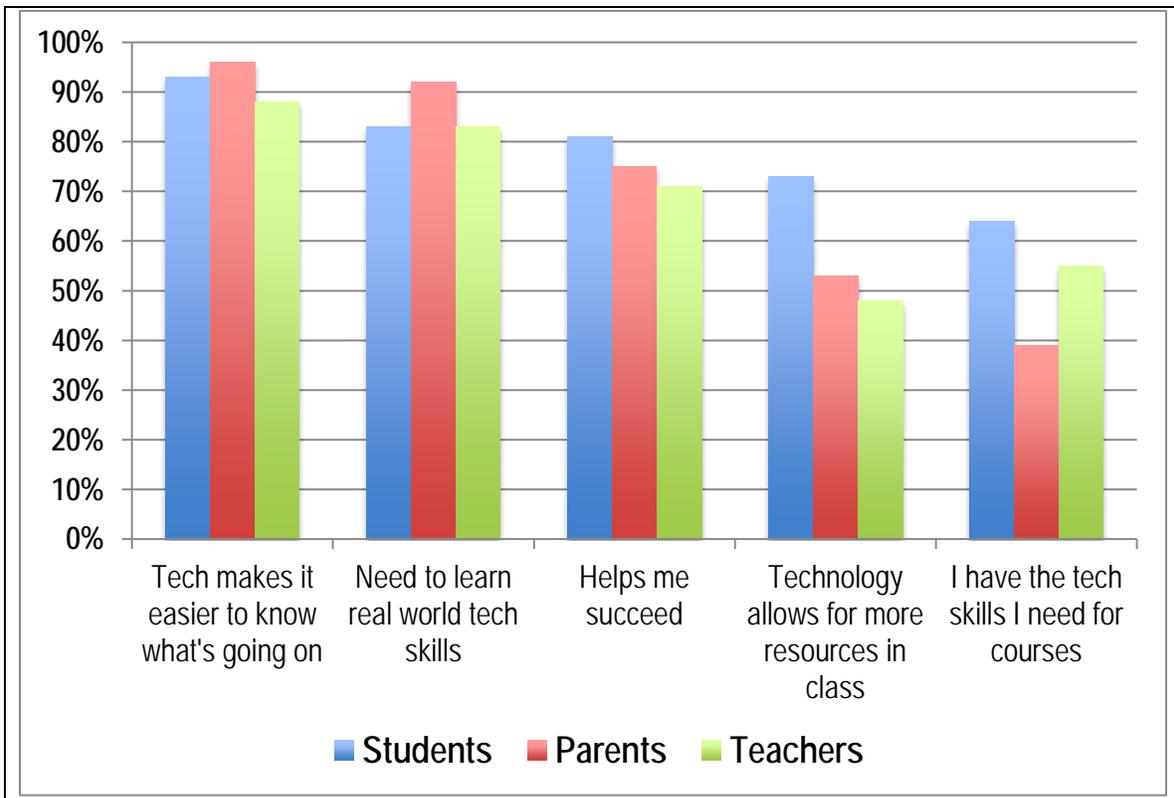


CHART 8: OPINION STATEMENTS RANKED BY THE LEVEL OF AGREEMENT OF STUDENTS WITH EACH STATEMENT (TOTAL OF AGREE + STRONGLY AGREE). THE STATEMENTS CONTINUE IN CHART 9 ON THE NEXT PAGE. (STUDENTS N = 548, PARENTS N = 248, TEACHERS N = 42)

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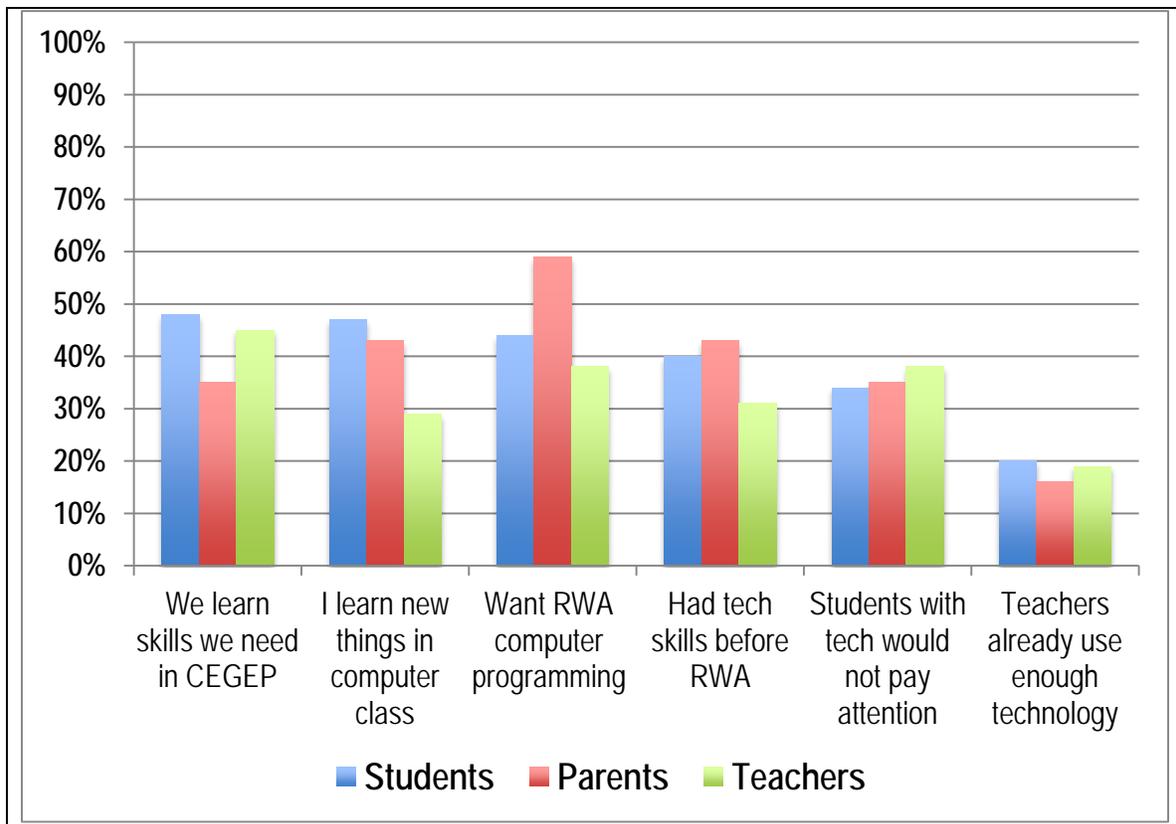


CHART 9: CONTINUATION OF CHART 8 SHOWING THE REMAINING OPINION STATEMENTS RANKED BY THE LEVEL OF STUDENT AGREEMENT WITH EACH STATEMENT (TOTAL OF AGREE + STRONGLY AGREE). (SAME N AS ABOVE)

Three opinion statements attract very high levels of agreement. More than 85% of teachers, parents and students agree or strongly agree “Technology can make it easier for students to know what is going on in class, what the assignments are and when they are due.” More than 80% of teachers, parents and students agree or strongly agree that it is important for students to learn real-world technology skills while they are at RWA. And more than 70% agree that technology helps students succeed in school.

Levels of agreement with the other statements are lower and there is greater disparity in the opinions of the three groups until the last two statements. Around 35% of all three groups share a concern that students equipped with electronic tools capable of connecting to the internet might not pay attention in class. In spite of that, less than 20% of each group agrees that teachers are already using enough technology in the classroom.

Teachers were asked an additional question about how they might use a portal as follows:

“We're interested in your views of the usefulness of a portal or online classroom in supporting student success at RWA. Please check the statements that represent your views on what should be included. Select all that apply

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As Chart 10 shows, a majority of the 42 teacher respondents would find a portal useful to post assignments, notes and test dates, to communicate with students and parents and to allow students to work together.

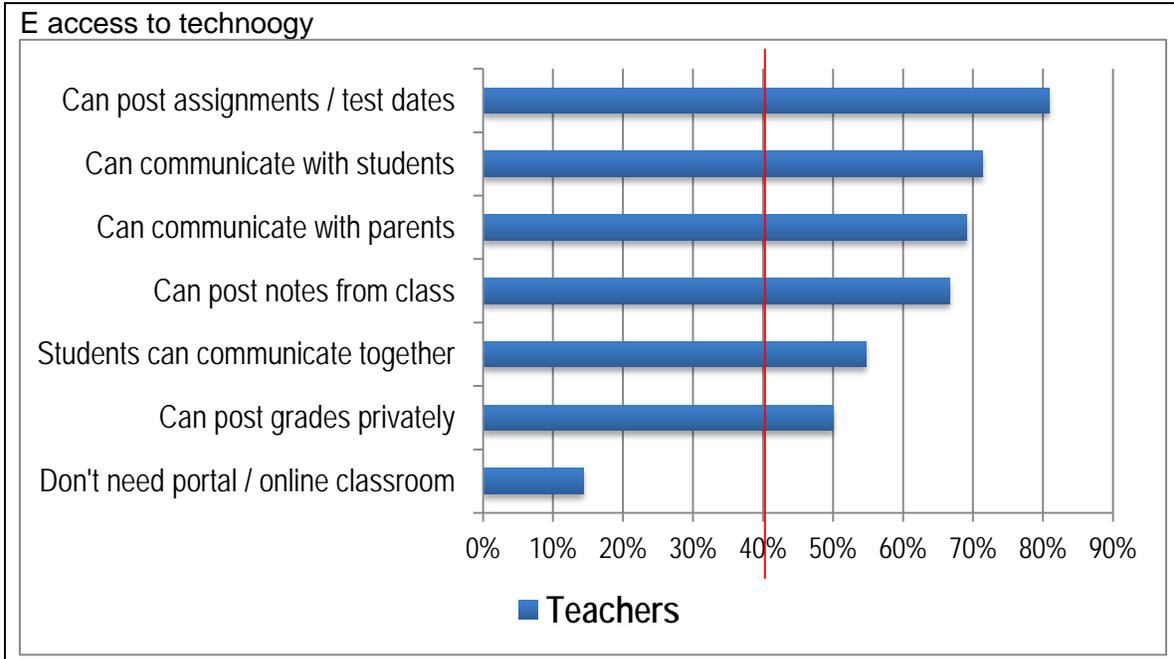
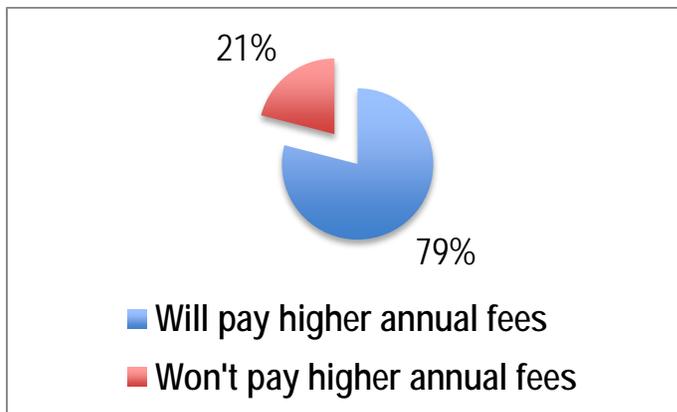


CHART 10: HOW TEACHERS WOULD USE A PORTAL IF A FUNCTIONING ONE EXISTED. (TEACHERS N = 42)

Finally, parents were asked a question about their willingness to pay higher annual fees to increase access to technology at RWA. The exact question is shown below:

Would you be willing to pay higher annual student fees (currently \$290/student) in order to increase access to technology in support of your child's success at RWA? (Possible answers: Yes, No)

79% of parent respondents say they would be willing to pay higher annual fees, 21% would not. (n = 248)



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The 79% of parents who said they would be willing to pay higher annual fees to increase access to technology at RWA were asked a further question:

You have indicated that you would be willing to pay higher annual student fees (currently \$290/student) in order to increase the access to technology in support of your child's success at RWA. What do you think would be a reasonable annual increase?

- **Between \$25 and \$50 per student (would raise between \$20,000 and \$40,000/year)**
- **Between \$50 and \$75 per student (would raise between \$40,000 and \$60,000/year)**
- **Between \$75 and \$100 per student (would raise between \$60,000 and \$80,000/year)**
- **Between \$100 and \$150 per student (would raise between \$80,000 and \$120,000/year)**
- **\$150 per student (would raise approximately \$120,000/year)**

The results are shown in Chart 11 below.

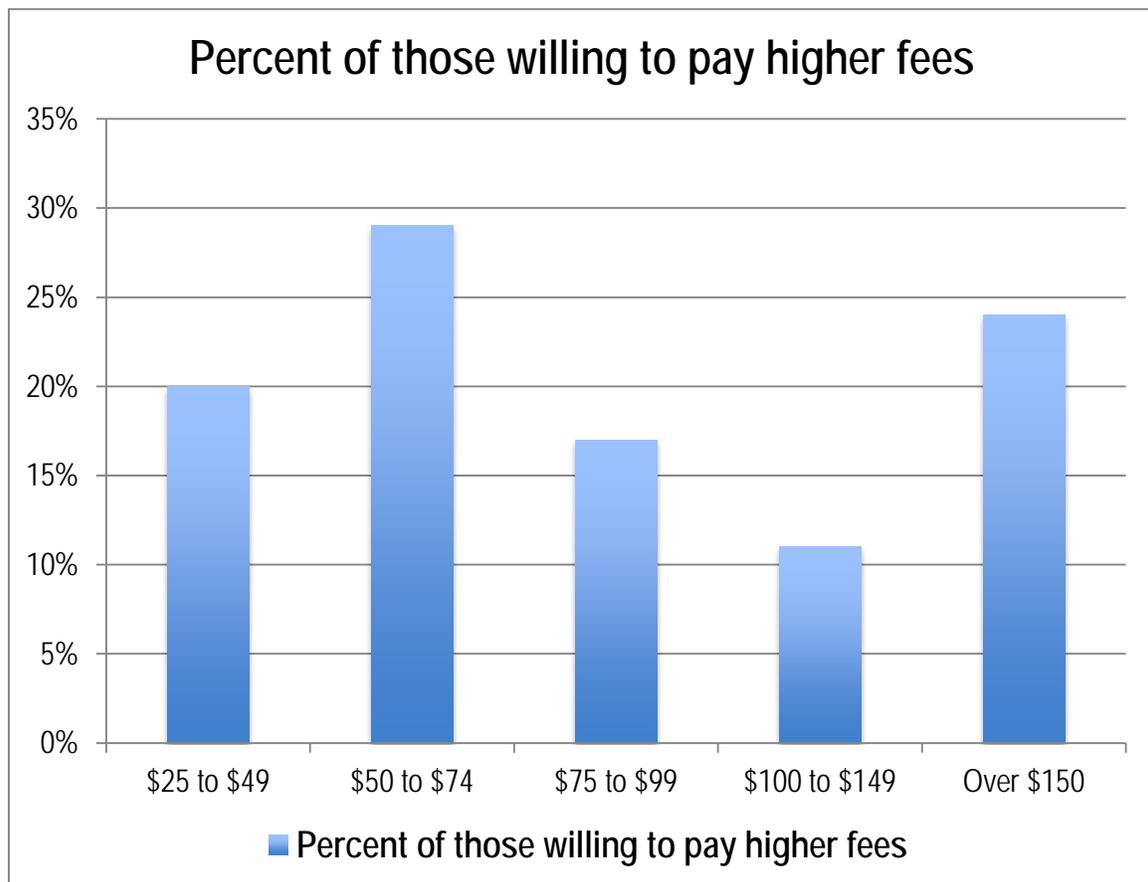


CHART 1 1: THE DOLLAR AMOUNTS THAT THOSE PARENTS WHO ARE WILLING TO PAY HIGHER FEES TO INCREASE ACCESS TO TECHNOLOGY AT RWA WOULD BE PREPARED TO PAY. (N = 197)

7. Online survey of students, parents and teachers – qualitative data

A small number of open-ended questions were included in each version of the survey. For the most part, there were only a few responses to the questions apart from the parent survey.

A thematic analysis of the open-ended answers that parents offered revealed the following patterns:

Question: 13. If you can, give one example of a technology that you think that teachers could use that would help your child succeed at RWA.

Theme identified	Number of comments
Need for an online resource accessible to all stakeholders	45
Need for chat facility where students can ask questions	2
Greater use of smart boards (or the use of smart boards)	14
Encourage the use of iPads in classes	15
Better online communication	8
Need for more resources online, in the classroom, portal etc.	23
Deeper knowledge of software	2
Greater general use of technology ("stop surveying, start doing something")	10

Question: 14. If you can, tell us one thing that RWA could do with technology that would help your child succeed.

Theme identified	Number of comments
Online portal with assignments, key dates, marks etc.	25
More education on the appropriate uses of technology in presentations, business, reports, etc.	29
More effective use of technology resources	14
Better interaction between school and parents	6
Internet access for students while at RWA	3
More effective communication about dates, progress etc	8
Encourage use if iPads	7
Need more technology, need less technology...	15

Question: 15. Please share any other thoughts, comments or suggestions you might have.

Theme identified	Number of comments
Better communication between school and parents through technology	6
Teach children how to use technology intelligently rather than being slaves to it	22
Need for a portal	10
Encourage interpersonal relationships not relationships mediated by technology	7
Teachers are the key to student success, technology is just an enabler	19
Pro and con iPads	15

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Need for more basic technology resources like functioning laptops in library, printers, electrical outlets, etc.	8
Grade 7 parents not really sure how to answer survey given their short exposure to school (3 weeks)	19

The entire database of comments will be posted online.

8. Impact

The timing of the technology consultation was either a stroke of good luck or a bit like the great comeback you think of an hour after everyone has left the party.

There is no question that the winter and fall of 2013 were very exciting times for the evolution of technology at RWA. Whether this a partly a result of the attention that was focused on technology through the working group (we had everyone talking about technology and its appropriate use) or whether the changes that are now taking place were already in the works is probably a matter that can't be resolved.

What's clear is that change is underway, and most observers would agree that these changes are for the better.

First off, the EMSB has embraced a far more open IT climate than it has done in the last few years:

- The ability to update all computers for commonly used software from a central control is being installed and will free up technicians in the schools to work on more pressing problems. As of the end of 2014, however, the system was still not functioning as promised: in room 205, Flash is often out of date and updates still require from weeks to months.
- The increase in bandwidth available to the schools and improvements in the general functioning of the entire board network can only expand the choices that schools, teachers, parents and students will have to choose from.
- The attempt to create direct lines of communication between the schools and the IT service along with the willingness to meet with school representatives shows a new maturity in terms of organizational priorities.
- As budgets permit, additional Wireless Access Points are being installed in schools eliminating some of teachers' frustration in being able to get a dependable and predictable network signal.
- The ability of schools to opt into an experimental program using a BYOD approach. RWA has opted in and is beginning to experiment on how to roll the program out to greater numbers of stakeholders. The EMSB has also dedicated a portion of its bandwidth to the BYOD experiments.
- The EMSB has also undertaken to purchase a commercial portal system for use by all the schools. Details are to follow.

Perhaps the most positive development is the formation of Personal Learning Communities at RWA drawing teachers together to share experiences, goals and tactics on how to incorporate technology into RWA's specific mission. The PLCs are possible due to a PDIG grant made to Lynn Bourdeau, a teacher in the technology stream at RWA. A PLC's purpose is to look at changing and adapting teaching practices based on data analysis. The PLCs have met through the late fall and winter and have come to a series of conclusions laid out here:

Teachers worked in collaborative interdisciplinary teams and studied the integration of technology in RWA classrooms. The teams followed the Professional Learning Community process, defined by these 4 steps: Mission, vision, values, and goals. Teachers acted as team leaders. Team leaders prepared the agenda for the meetings, analyzed the outcomes of the meetings

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and guided the teams through the steps of the Professional Learning Community process.

The accomplishments of the collaborative teams are as follows:

1. Rewrote the RWA digital technology mission printed in our agenda to reflect our priorities.

We believe that for students to develop the ability to use digital technology effectively, they must first be able to assess the relevance and validity of any information they come across on the Internet.

2. Assisted in the elaboration of the RWA Digital Technology program for grades 7-8-9
3. Refined a subject-specific guide to websites and software available for our classes. (There is the possibility of this becoming a wiki so we can add to it and change it to reflect what we are using)
4. Agreed on the use of a common checklist for RWA students to assess the validity of web resources and the information they contain.
5. Agreed on the creation of a guide for RWA students on how to cite sources and create a bibliography (in both French and English)
6. Identified and gathered together different tools for teachers, that can be used to evaluate bibliographies. (in both French and English)
7. Agreed on the importance of having 15-30 tablets available in the school that could be signed out and used in classes when needed.
8. Developed some digital technology workshops that can be held at the start of the year to support RWA staff with digital technology needs.

9. Observations and recommendations

- A) There is a strong willingness to understand how technology can further RWA's special mission tempered by a reluctance to pursue technology as an end in itself rather than an enabler of more critical goals such as student success and improved communications between all stakeholders. In other words, sound pedagogy and a healthy school community must always drive technology decisions; technology must not drive pedagogy.
- B) There is a concern that adequate time and resources for teacher training accompany any changes in the technology environment at RWA. The PDIG grant obtained by Lynn Bourdeau is an excellent example of how teachers at various levels of technology familiarity and with different appetites for the use of technology in the classroom can be brought together to share concerns, ideas and initiatives to improve student success through collaborative effort.
- C) Parents appear to have three primary preoccupations that in different ways involve technology:
- The need for students to learn the technology skills they will need to succeed at higher levels of education and in the workplace
 - A desire for greater transparency in terms of what students are doing, what assignments they have and how they are progressing
 - A concern that any use of technology in the school be subordinate to a continuing focus on great teachers sharing their passion for their subjects and interacting one-on-one with their students to draw the best from them.
- D) No meaningful proportion of any of the stakeholder groups sees technology as a "magic bullet" that will solve everything that is perceived to need fixing at RWA.
- E) There is a strong desire from all stakeholder groups for a portal solution that will allow for more transparency and accountability around the education program at the school. Given the still-to-be-confirmed news that the EMSB is turning to a major outside vendor for its next portal iteration rather than using a home-grown solution, there is some reason for hope that this issue will soon be addressed. It is critical that teachers be given the training and encouragement to use the portal solution, assuming it actually works.
- F) While students and parents seem to embrace technologies like instant messaging and chat, teachers are less enthusiastic about being connected 24/7. They lean more towards communications solutions like more face-to-face communications or electronic communications through a portal or email.
- G) Technology infrastructure in the school threatens to be a serious limitation on wider use of computers (or mobile devices) in the curriculum. While the EMSB will undoubtedly do its best with the limited and declining resources it has available, there may need to be consideration of alternate funding solutions considered in the future.

10. Moving Forward

As the mandate of the RWA Technology Planning Committee unfolded, both the mission and the goals of the ICT program were revised by the RWA staff. These changes reflect the need to move away from teaching “technical ICT skills” to RWA students and instead focusing on developing responsible and competent digital citizens equipped with strong media and information literacy skills.

Royal West Academy’s (RWA) mission is to provide a structured milieu in which students are committed to academic achievement, bilingualism, [literacy in digital technology](#), an appreciation of the arts, an understanding of social issues and a sense of community responsibilities.

Specifically the goals of RWA are to:

- 1) Provide an atmosphere that encourages students to realize their potential and encompasses not only academic development, but also the social and physical well-being of students.
- 2) Promote responsible actions, self-discipline, and mutual respect through a structured environment.
- 3) Promote respect for cultural diversity and an understanding of social issues.
- 4) Offer a curriculum enriched with accelerated content.
- 5) Develop in all students the ability to function bilingually.
- 6) [Develop in all students the ability to use digital technology effectively, students should be able to assess the relevancy and validity of information](#)
- 7) Foster an appreciation of the arts.
- 8) Provide continuity and support through a "Teacher-Advisor" system.
- 9) Support students’ personal development through the compulsory extra-curricular program that includes athletic, cultural, environment and community service activities.
- 10) Provide a milieu in which parents, students and staff share the responsibility for achieving the mission and goals of Royal West Academy.

These goals will serve to influence future decisions related to pedagogical approaches and priorities that are taken by the RWA staff.

11. Further Readings

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12. Appendices

- A. Briefing prepared by Anne Wade for meeting with Mr. Di Filippo, Director of Information Technology, EMSB page 33
- B. Minutes of first consultation with teachers facilitates by Harry Kirschner page 40
- C. Results of Mr. Kirschner's analysis of the meeting on April 25 with teachers page 45
- D. Copies of the survey instruments used with parents, teachers and students available online

Appendix A

Royal West Academy
ICT Infrastructure
March 2013

Royal West Academy's (RWA) mission is to provide a structured milieu in which students are committed to academic achievement, bilingualism, computer literacy, an appreciation of the arts, an understanding of social issues and a sense of community responsibilities.

Specifically the goals of RWA are to:

- 11) Provide an atmosphere that encourages students to realize their potential and encompasses not only academic development, but also the social and physical well-being of students.
- 12) Promote responsible actions, self-discipline, and mutual respect through a structured environment.
- 13) Promote respect for cultural diversity and an understanding of social issues.
- 14) Offer a curriculum enriched with accelerated content.
- 15) Develop in all students the ability to function bilingually.
- 16) Develop in all students the ability to use information technology effectively.
- 17) Foster an appreciation of the arts.
- 18) Provide continuity and support through a "Teacher-Advisor" system.
- 19) Support students' personal development through the compulsory extra-curricular program that includes athletic, cultural, environment and community service activities.
- 20) Provide a milieu in which parents, students and staff share the responsibility for achieving the mission and goals of Royal West Academy.

In line with the school's above-mentioned goals, and those put forward by the Canadian *21st Century Learning Initiative* (see <http://www.c21canada.org/>) and their corresponding models of learning, the RWA faculty would like to augment the wise use of technology throughout the curriculum.

Rationale

The Royal West Academy Information and Communication Technology (ICT) curriculum is a local program developed by the ICT teachers and the administration of the school and respects the school's educational project and MELS guidelines. The courses taught in our ICT program are meant to provide students with skills and knowledge that can be used within the courses and programs offered by our school. Our goal is for all of our students to acquire the ability to use ICT effectively. Subject teachers are encouraged to use ICT to plan, create and teach pedagogical content. The categories that our ICT curriculum focuses on are as follows:

- communicating, inquiring, decision making and problem solving

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- foundational operations, knowledge and concepts
- impact of ICT on self and society.
- processes for productivity.

The following are examples of innovative ICT-dependent learning initiatives currently being implemented by the various RWA staff:

- The development of lifelong learning skills through the teaching of various software that will assist the students in the completion of homework and prepare them for CEGEP and university studies.
- Access to pedagogical resources outside the classroom to facilitate student learning. For example, under Goal 1 of the school's MESA, and the following **Objective**: To increase the rate of success on MELS Sec. IV Mathematics examinations, one **Strategy** is to *“Use MathHelp Software to increase motivation and homework completion.”* A number of staff are integrating this resource in their math instruction.
- The design and delivery of the following courses in which the instruction and use of ICT is integrated throughout:

3-D Design: (available to non-science sec. 5 students) Incorporates technical drawing and digital modeling skills. Students will begin by learning the basics of technical drawing, and then use their hand drawn sketches to create 3 dimensional digital models using Sketchup, software used by design and engineering professionals. This course will help students develop their technical abilities. It will also hone their ability to think logically by encouraging them to consider the practicality of their designs. This course is especially well suited to students with an interest in engineering, architecture, animation, illustration, and design.

Graphic & Web Design – This course focuses on using the Adobe Photoshop and Illustrator to create and edit graphics and images, and HTML language, Dreamweaver, and JavaScript in order to create and maintain websites. Artistic talent and interest are a must. Evaluation will focus on the aesthetic quality of the art as well as the level of the websites produced on computers by the students. This course can be advantageous for students interested in studying Fine Arts.

Computer Science: This is a course in computer programming. Students are taught the fundamentals of Java computer programming language - perhaps the fastest growing language in the industry. The intent of the course is that students acquire a solid foundation that will assist in any programming environment. There is no prerequisite for this course; however, very good problem solving skills are necessary. In addition, strong math skills are a distinct asset. Students should understand that this is a challenging course that will require considerable effort out of class. Any questions should be directed to the Computer Science teacher before selecting it.

Educational Technology 1: This course is an exploratory course to learn the basics of keyboarding, information literacy, Microsoft applications, web design and the basic essentials of computer programming (SCRATCH). Students will

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complete individual and group projects related to the different subjects that will be introduced throughout the year. Correct terminology related to hardware, software, different operating systems and applications will be introduced and reinforced. This course will prepare students for Educational Technology 2. Students will also learn about internet safety, cyber bullying and social, legal and ethical issues related to the correct use of technology, including acceptable use and copyright. Internet research tools and methodology will be introduced.

Educational Technology 2: This course builds on previously learned concepts and skills introduced in Educational Technology 1. Students will be introduced to spreadsheets, databases, multi-media, and introduction to computer programming (HTML, CSS, & SCRATCH). Students will continue to build upon their previous skills throughout the year including keyboarding and information literacy. Students will continue to use appropriate terminology related to hardware and software and build on social, legal and ethical issues related to the correct use of technology. Internet research tools and methodology will be developed.

Educational Technology 3: This course builds on previously learned concepts and skills introduced in Educational Technology 1 and 2. It will focus on the development of computers skills using application and programs such as Microsoft Office with a special emphasis on Microsoft Excel. Students will be building upon their previous knowledge on databases, typing skills, basic programming and presentation technology (Microsoft PowerPoint and Prezi). In addition, there will be a special emphasis on creative uses of technology (Trimble SketchUp, Adobe Photoshop, Movie Maker and/or GameMaker 8.1). Students will continue to use appropriate terminology related to hardware and software while building media literacy skills. This course is designed with the intention of preparing and enticing students towards more advanced elective technology courses.

Film: This course enables students to view movies with a critical eye and to become familiar with the elements of film such as camera, sound, editing etc. These films will be used to write critical reviews and as models in the production storeboards, scripts and short films. An introduction to photography and the study of image pleasing or riveting elements will also be explored. This course will enable students who may plan to study film or communication in postsecondary education to start building a portfolio.

Personal Orientation Project: The technology in POP supports the learning process by enhancing career explorations. All students have access to a laptop computer equipped with programs related to careers. Throughout the process students use an electronic portfolio (ePEARL) to keep track of their work and to reflect on each aspect of the career exploration. Students also use the online program 'La Ligne du temps' to show how their exploration has developed over time. The other websites used for the course are: Research: REPÈRES, career cruising, monemploi.com. *Experimenting:* repertoireppo.qc.ca (online videos, interviews, visits, activities to learn how to do some of the tasks required in the career.) *Knowing yourself:* online personality tests and quizzes. Evaluation is done through the electronic portfolio and use of rubrics. The POP teacher uses Notebook and the Smartboard to plan and teach lessons. She also Skypes with

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other POP teachers to validate teaching practices, learn new teaching methods, learn about new technology related to the course and solve pedagogical problems. She is part of two online communities that support POP teachers and help integrate new technologies related to the course.

Sound Engineering: This course is available to all interested sec V students. Students must have access to an acoustical musical instrument of their choice including voice. This course will explore elements of music technology and will include the following areas: use of software for the purpose of arranging music, use of software for the purpose of sound exploration, use of software for composition, sound recording including editing and mastering.

Our ICT Vision

We believe that the use of ICT is important to facilitate teaching practices and to support student learning. We know that the use of ICT can be a powerful teaching tool to reach all students regardless of their learning style, to promote autonomy, and to improve organizational skills. As outlined in our Educational Project, our goal is for all of our students to acquire the ability to use ICT effectively. To reach this goal we will:

- Align the ICT content of our subject courses and ICT courses to maximize student learning of ICT within each course offered at our school.
- Support the enhancement of ICT instructional practices through professional development.
- Support the integration of ICT to maximize the competencies of teachers and students.

RWA teachers are interested and prepared to take ICT integration across the curriculum to the next level within this community. However, in order to do so, limitations with the current infrastructure will need to be addressed.

Current ICT Infrastructure Challenges

The following challenges have been experienced:

- Teachers want to be able to integrate videos and other resources from the Internet into a lesson plan to enrich the material being studied. However, when trying to do this, they report frequent system failures. The problems are serious enough that even technology-savvy teachers have pretty much abandoned trying to use media and technology in the classroom. By the beginning of the school year 2014-15, the situation had improved and has become much more fluid than previously. However, teachers still have the occasional challenge in using technology in the classroom but nowhere near the problems encountered earlier.
- Failing the ability to integrate technology into classrooms, most of the responsibility for technology education falls to the labs and their specialized teachers. Unfortunately, there are access problems even in the labs with students in one lab often needing to move into the corridor to find a “hot spot” to access the network. By the academic year 2014-15, the issues with the sporadic performance of wireless “hot spots” have been rectified by the addition of dedicated access points in all computer labs (205, 206, 207 and 208) and increasing the number of Wi-Fi access points from 15 to 40 throughout the rest of the building.

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- Currently the school makes a set of laptop computers available in the library for students to use outside classes. Ideally, these laptops could be moved to classrooms where, for specific projects, their use could be integrated into a project. However, wireless access is sporadic in many parts of the school. This limits the use of the “mobile” laptops the school owns. In summer 2014, with the increase in Wi-Fi hot spots from 15 to 40, the school went ahead with the purchase of a new mobile lab with 30 MacBook Air laptops. The laptops can be reserved by classes and complement the set already available in the library.

Suggested Infrastructure Solutions

In compliance the EMSB’s *Information And Communication Technologies – Access And Appropriate Use* policy (Resolution #11-11-23-12.2; Nov. 2011), the RWA community would like to put forward some solutions for consideration by the EMSB’s IT Department.

The school was pleased to accept the volunteer services of an individual who oversees the IT infrastructure at Concordia University and who is a possible future RWA parent. He surveyed the installations at RWA and made the following observations and recommendations:

4. The existing network cable conforms to an obsolete standard (Cat 5) and cannot support the bandwidth required to support the proposed program. The performance of this cable is further degraded as a result of the use of tie-wraps to affix these cables to emt conduit.

ie. Cat 5 supports a maximum of 100 Mbs over 100 meters vs Typical desktop or laptop computers are capable of 1 Gbs (1024 Mbs) data rates.

Recommendation: Any new solution will require at least some network cable. Replace existing with new cable that meets current industry standards (Cat 6A) and ensure that it is installed according to manufacturer’s specifications. This is especially important should the decision be made to migrate to a primarily wireless solution to solve the current access problems. The newer cable will support the “Power over Ethernet” standard for supplying electricity to each Wireless Access Point (AP – the devices mounted on the ceilings), which would otherwise require the installation of an electrical outlet nearby.

5. A casual evaluation of the network topology indicates that some of the reports of inconsistent network performance are due to inadequate bandwidth between network concentration points. Daisy-chain topologies and underpowered up-link connections were both observed.

The topology currently in place was adequate for facilities such as computer labs where, in the past, most of the shared resources were located within the labs themselves. A greater dependency on resources located on the Internet will require much greater bandwidth between all points and the Internet termination point.

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Recommendation: Ensure that network topology is reviewed with an eye to eliminating daisy chains and ensuring uplink connections are properly sized.

6. The existing network switches are similarly underpowered by today's standards. These devices only support 100 Mbs connections. Even if wired connections are to be primarily used for connecting wireless APs, 1 Gbs connections will be required.

Recommendation: Replace switches with models that support 1 Gbs links and allow for the configuration of higher bandwidth ether-channel connections for the uplinks. Consider PoE capable switches to support wireless devices. A wireless solution will require fewer switches overall than are currently deployed.

In general, given the potential high cost to completely update the existing wired network, the option of making greater use of wireless (Wi-Fi) technology becomes attractive.

Some of the major considerations when deciding between a wired or a wireless networking technology:

- Wired
 - High bandwidth capacities (1024 Mbs to 10240 Mbs)
 - Highly reliable, guaranteed data rate.
 - Accessible only where cable installed.
 - ie. Need to reserve designated space (computer laboratories) for this use.*
- Wireless
 - Lower bandwidth capacities (realistically 300 Mbs under ideal conditions)
 - Susceptible to interference from other electro-magnetic frequency sources
 - e.g. cell phones, other Wi-Fi equipped devices, cordless phones) resulting in degraded*
 - Depending on the extent of the wireless infrastructure – Internet access not restricted to specially equipped space (computer labs).

Professional Development

An upgrade to the current ICT infrastructure will be a necessary and important contribution to the school's 21st century learning initiative, however this upgrade alone will not be sufficient to move the teachers forward. For example, RWA appreciates the major investment in whiteboards that has been made by the school board. However, teachers do not feel that they are being used effectively as they are being used primarily for teacher-directed, whole class instruction. The staff needs further professional development so that they are able to use a more student-centred, integrative approach (as per the QEP).

Consequently additional funds will be solicited for professional development via the MELS' PDIG program. Various applications are currently being formulated and will be submitted for the 2013-2014 school year.

Prepared by the RWA ICT Planning Committee, March 27, 2013

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Appendix B: Minutes of first consultation with teachers facilitated by Harry Kirschner

Monday, March 25, 2013

Royal West Academy Technology Meeting Room 208 – 3:30 p.m.

I. Attendance:

Kirk Kelly, Irini Margetis (Vice Principal), Harry Kirschner

Teachers: Xavier Desilets (social sciences: geography, history, contemporary world), Francois Girardin (math), Milada Prachar (French), Jamal Zigby (physics, chemistry, science, math), Nathalie Cheff (French, geography), Akim Munro (science, math), Ana Cristina Almeida (Spanish, contemporary world, history)

II. Introduction: Harry Kirschner

III. Current usage, desires and criticism of technology in the building

a. **Claudia Gucciardi** : English and Computers

-Technology Support is something that needs to be more accessible. There is only one technician who comes in one day a week for 3 hours.

-Claudia does not use technology in her English classroom because there is no functional hardware available and rooms that do support technology are not available at the time slots that she needs.

-Claudia notes that it takes about an hour for the tech support person to update all the computers in a single lab; she doesn't like to ask for "menial" updates (like Flash Player for YouTube) as this cuts into too much of the tech support time meaning other teachers with more pressing needs don't see the tech support. There is no ability to feed updates from a central computer either in a lab or in the school as a whole.

-Claudia would like to be able to see students' desktops when they are working, currently not possible

-She would like to incorporate technology in a more accessible manner. She would also like more freedom when it comes to downloading programs and installing software.

-Also, a school wide portal where the students can upload their assignments would be wonderful. Something smaller and limiting than the board-wide portal and more complex than the online classroom created by an ex Royal West student would be ideal. **None of the current portal options are seen as "user-friendly."**

-Current network capabilities mean that there is no capacity to synch an iPad to a desktop as it would cause havoc with the network due to bandwidth problems.

-Overall, too many deterrents to use technology effectively in the classroom.

b. **Milada Prachar**: French

- Classroom Online. Milada uses it one-way only. She adds updates but the students do not. She would like to be able to check the students' work and have them update information on their own accord.

-Xavier, Francois and Milada use Classroom Online to post information, assignments and notes. They feel that it is useful for that purpose, but are limited to what they can use it for.

-Milada experiences frustrations incorporating material into her lectures, e.g., videos of French theatre pieces. Because YouTube Flash Player was not updated for three months, she had no access to these all fall.

-Milada uses a Smart Board and a laptop in her classroom. She does run into some access issues (blocked websites, updates that she didn't have the ability to download).

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- She would like to teach her students how to take notes and rely on technology. She would take her students to the lab but realized that none of the keyboards are in French. Tablets, e-readers and laptops would be ideal for her classroom.
- The idea of having e-readers appeals to her because the printed novels are abused and don't last very long. She would love to see students with their own tablets that contain their textbooks and novels.
- GPI is the system in which teachers must enter student marks. It is very difficult to transfer marks from other programs (GRICS) or paper into that system. It would be ideal to have programs that would link our term wide assessments to the final, end of term assessment **and avoid rekeying all the results.**
- Milada uses the Smart Board. They work on grammar and sentence structure and it allows them to manipulate the words and sentences as exam (or test) practice. This is very time saving because you can prepare a file ahead of time. The Smart Board is necessary for her; she uses it all the time. Milada did take an additional McGill Smart Board training course that the school board refused to fund.
- Smart Board training is desired by all teachers. The training offered to us is very basic and very difficult to obtain (full registration).

c. Xavier Desilets: Social Science

- Access to computers is very important. Mobile labs (one per floor or area) would be ideal. Also, proper support and maintenance of these labs would need to come with the labs. **But he points out that the lab concept is a disaster for student research as they are generally booked.**
- Tablets aren't something that he feels are necessary. It would be replacing one vice with another. Another issue is the damage that will happen to the devices and the number of replacements that would need to be made.
- The environmental aspect is very important to Xavier; he is currently trying to limit the amount of technology that is thrown out. Recycling these materials is difficult and the board sometimes makes it even more difficult to dispose of them in a responsible manner.
- Xavier is worried about how the students will rely on technology. Also, he felt that content should take precedence over fancy interfaces. **He suggested that there needs to be some statistical research to analyze actual student use of the current technology in the school.**
- Proper training is necessary for the technology that we plan on having in our school. The Smart Boards are not being used to their maximum potential because of limitations around teacher training, **instruction in how to develop lesson plans that incorporate technology**, time to become accustomed to the boards and network support.
- Presentation technology is something that is necessary.

d. Kirk: Royal West parent, Governing Board and Technology Committee member.

- Smartboards are a government initiative and it is now mandatory for schools to include them in the classroom.
- A survey will be sent out to parents, teachers and students to find out how they currently use technology for schoolwork and how they would like to use it.

e. Francois Girardin: Math

- He uses technology (Smart Board, Classroom Online) often during class but his students don't.
- All his notes are put online; students then have access from home. His online classroom is updated on a daily basis (notes, exercises)

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- Francois uses Math Help Services.com as well as Graphing function programs regularly.
- He uses the RWA online classroom to upload his class materials. It is time saving and paper saving to do it this way.
- Math Help Services is a math specific program that allows the teachers to prepare online assignments. Each student's assignment is different; you can store information and do all of your assessments directly on the website. You can also send notifications to parents directly. **Because assignments are marked automatically, students and the teacher know exactly how each student is doing.**
- François suggests that teachers need course-specific training in how to successfully incorporate technology in the classroom.

f. Jamal Zigby: Science and Basic (Cultural) Math

- 60's and 70's science related technology is used for experimentation in class (for example: chemical indicators versus PH programs, sensors...) and it is effective but it is not computer technology. It is limiting, you cannot develop an idea as fully with these older forms of experimentation. They are limiting, especially compared to the technologies available now. The technology that is more advanced is available in CEGEP and our students have the ability to catch up.
- The newer technology is very delicate, expensive and the technology is varied.
- Akim Munro: The science that is being taught now is not really technological yet but it would be great to have students to find answers on their own to the questions they don't know on a tablet for example.
- The devices (old ones) entail precision that the students might not have just yet.
- The expense of the newer technologies is worrisome to Jamal.
- Velocity meters (a newer technological device that is useful for him and the department).
- A mobile science lab would be great for lab reports. Mobility is important as the students would like to work on their labs as they are completing their experiments. **Having a lab on the third floor would greatly facilitate the use of technology in the science programs.**
- A great question the science department has is "how can we use technology the students already have (ie cellphones) in a way that would be beneficial to them?" **If experimental results are captured digitally, how does the teacher then share those results with the students? How can they begin to understand the depth of analysis that is possible with digital readings if they have no access to those readings?**
- High speed digital cameras could be used for looking at motion (physics class). Time lapse photography would also be interesting (although videos could be found on YouTube). Uploading the images and installing the software is what is difficult with technology like this.
- The science departments are equipped with Smart Boards and they are used in a variety of ways. Jamal does not like to post notes, he prefers his students to write by hand.

g. Nathalie Cheff: French

- Nathalie uses official websites to show images and videos. She would like to use more technology; she is not as eager but would love to incorporate it more.
- She would find a way to use a Smart Board if she had one.
- She currently uses a document camera to project documents onto a projector and she finds it extremely useful.

h. Akim Munro: Science, Math

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-He used a PowerPoint-like program in England that was part of the curriculum that had an interactive element. Board Works is the company who put these interactive lessons together. He feels as though he would never build lessons like this because of how lengthy the process is, but if they were made available to him it could become an essential tool.

-Multi-media projection is usually what he uses the Smart Board for.

-The Smart Board laptop is very slow. The connection is slow and not reliable which he finds troublesome.

-Linux club: the students built 4 computers from scratch, but they cannot have internet on them because the board prohibits it. Linux is not supported by the board. Perhaps a second wireless network would be appropriate for this club that he started. **He suggests that iPads could also be on that network.**

i. Irimi Margetis : Vice Principal

-We are **one of only a few** schools in the board with technology in our mission statement but we are limited because we have the same funding as any other school. Our expectations are different but our funding is the same. **All initiatives are held back by lack of support.**

-She would like to use an iPad to access student files (Hall Monitor is a program that files all student information and makes it very accessible) but she can't access them everywhere in the building because of our weak connectivity. She currently has access to this software, but can't use it effectively because of the connectivity problems.

-RWA's system is frequently swamped and some teachers cannot check their email or access the bulletin at the time they need it for which is extremely problematic since the majority of the communication between teachers and administration is done via email.

-Her biggest problem is when teachers cannot use resources available to them because they don't have the training or because the system crashes.

-It is difficult to schedule training sessions and professional development workshops when we are limited with time. There aren't very many available pedagogical days for this sort of mass training.

-Funding is limited (from the board) but the parent population may be willing to donate and raise money (a positive).

-A computerized attendance system would be great but we run into problems when putting that information into GPI.

-A mass notification system is currently being used with GPI but is limited and does bug from time to time.

-RWA uses a program called Constant Contact to communicate with parents on a regular basis. It does work but it not the most user-friendly of systems. Kirk mentioned that he hadn't received anything from the administration.

-File Maker Pro is used for the admissions process. She finds it archaic, the school board is even surprised that it is still being used. The board proposed a possible update but they have not followed through on this (possibly because of the common delays we experience with tech support... or lack thereof). The school programmer inputs the information (she also does all the scheduling) manually, sometimes over 700 applicants.

-The classroom technological issues are definitely the priority over the admin issues.

-Bottom line, the school says it is one thing but it really does not live up to those claims currently.

j. Ana Cristina Almeida : Spanish, history, contemporary world

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-Unlike many of the other teachers at the meeting, she does like GPI because it will allow you to leave an assessment blank without it skewing your calculations (unlike Excel).

-She would like to use technology more often as it can be very useful for second language learning.

-It is difficult to prep her courses because she does not have her own classroom and the technology from room to room is inconsistent. **If she planned to incorporate something from the Internet in a lesson,** one section of Spanish could miss out while another would benefit depending on the room they are in.

-She loves the idea of a technology refresher (during a spare period): once a week a specialist came in to update teachers in terms of technology (something she experienced while working at a private school).

IV. Publish minutes to teachers who have not come and who would potentially have varying concerns/opinions.

V. Adjournment- 6:00 p.m.

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Appendix C: Results of Mr. Kirschner's analysis of the meeting on April 25 with teachers

P15 ¹	EMSB	Attendance System - A computerized attendance system would be great but we run into problems when putting that information into GPI	
P5	Learning	Classroom online - The online classroom created by an ex Royal West student is too simplistic, not user-friendly (but it allows 2-way sharing?)	
U1	Learning	Classroom Online to post information, assignments and notes	
N3	Learning	Classroom Online. Milada uses it one-way only. She adds updates but the students do not. She would like to be able to check the students' work and have them update information on their own accord.	
N15	Network	Computers - Be able to use a networked computer anywhere in the school (ex. Hall Monitor)	
P3	Learning	Computers - Claudia does not use technology in her English classroom because there is no functional hardware available and (?) rooms.	
P2	Learning	Computers - Claudia would like to be able to see students' desktops when they are working in the lab, currently not possible (only 1-way viewing)	
I2	Learning	Computers - Configure computers for French characters	
N5	Learning	Computers - E-readers would be useful as hardcopy books are often damaged	
P19	Learning	Computers - It is difficult to prepare courses using technology because teachers do not have their own classrooms and the technology from room to room is inconsistent. (Ex. 2 sections of the same course)	
P9	Learning	Computers - Keyboards are not in French	
N6	Learning	Computers - Mobile computer labs (one per floor or area) would be ideal (but needs to come with technical support)	
P7	Network	Computers - Slow network means there is no capacity to synch an iPad to a desktop, as it would cause havoc with the network due to bandwidth problems (why would you want to?)	
N7	Learning	Computers are needed by students to perform research (but they are generally unavailable)	
P17	Communication	Constant Contact used to communicate with parents works but is not user-friendly, and parents don't always receive communications.	
U7	Learning	Document camera to project documents onto a projector	
P14	Network	Email - RWA's system is frequently swamped and some teachers cannot check their email or access the bulletin at the time they need it for which is extremely problematic since the majority of the communication between teachers and administration is done via email	
P18	Administration	File Maker Pro used for the admissions process is old. The	

¹ P = Problem, N = Need, U = Useful (Currently), I = Improvement (Planned, Possible)

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		school programmer inputs the information, does the scheduling, all manually sometimes over 700 applicants.	
N14	Funding	Funding - We are one of only a few schools in the board with technology in our mission statement but we are limited because we have the same funding as any other school.	
U9	Funding	Funding is limited from the board but the parent population may be willing to donate and raise money	
P16	Communication	GPI - A mass notification system is currently being used with GPI but is limited and does bug (?) from time to time.	
P11	Process Time	GPI / GRICS - Student information should be automatically transferred between various systems such as GRICS and GPI. Same for student term assessments transferred to year-end	
U10	Administration	GPI is useful because it allows blank assessments without producing skewed calculations (unlike Excel)	
P10	Process Time	GPI the system in which teachers must enter student marks times out and data is lost if teacher does not remember to save often	
N10	Communication	Math Help Services - Send notifications to parents directly of student results (as in Math Help Services)	
U4	Learning	Math Help Services allows the teachers to prepare online assignments. Each student's assignment is different; you can store information and do all of your assessments directly on the website.	
U5	Communication	Math Help Services: You can also send notifications to parents directly	
U6	Learning	Math Help Services: Auto-correction of assignments	
P6	Network	Network is too slow – can transmit as low as 5 MB per sec where today 100 MB / sec is slow for many applications	
N2	Learning	School wide portal where the students can upload their assignments	
P4	Communication	School-wide portal (?) for information sharing is 1-way, not user-friendly (teachers to students)	
P13	Learning	Science Instruments - The old science technology (analog measuring tools) we have is limiting compared to the tools currently available in CEGEPs. Idea cannot be developed as fully with the newer tools used in experimentation.	
N12	Learning	Science Instruments - Velocity meters is an example of a useful digital tool	
N13	Learning	Science Instruments / Computers - Using technology the students already have (ie cellphones)	
P12	Training	Smart board - Training, as for Smart board, is provided by the EMSB but is too basic and difficult to obtain	
U8	Learning	Smart Board – useful for Multi-media projection	
U3	Learning	Smart board training is available at McGill	
U2	Learning	Smart boards – to prepare work file ahead of time for class use	
N1	EMSB	Software Installation - More freedom when it comes to downloading programs and installing software.	
N8	Learning	Statistics - There needs to be some statistical research to	

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		analyze actual student use of the current technology in the school	
I1	Learning	Survey - A survey will be sent out to parents, teachers and students to find out how they currently use technology for schoolwork and how they would like to use it	
N11	Training	Teachers need course-specific training in how to successfully incorporate technology in the classroom.	
P1	EMSB	Technician - There is only one technician who comes in one day a week for 3 hours – not enough time to attend to all needs (Flash Player install took 3 months))	
N9	Training	Training - Instruction in how to develop lesson plans that incorporate technology	
P8	EMSB	Websites that are useful are often blocked	
N4	EMSB	YouTube - Would like to incorporate YouTube videos into presentations	

Appendix D: Text of the various versions of the survey instruments

To come