Technology Plan

School District No. 46

February 2012

Setting directions for our future technological needs.

School District No.46 is committed to develop a 'living' district-wide Technology Education Plan, because we believe that 'Information and Communication Technology' is a means, not an end. When technology provides the most effective and efficient means to assist schools in meeting their goals for some or all students, then it should be utilized. Knowing when and how to use technology requires the same thoughtfulness, care and professional decision making that must be used for all other aspects of district operations and instructional practices.

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INTRODUCTION

The district's Strategic Plan review of Technology (October 2011) {Appendix A: Strategic Plan} established a need to develop a district-wide Technology Education Plan. The District Technology Education Plan will serve as a measurable and attainable guide to assist in improving the academic achievement of all students.

EXECUTIVE SUMMARY

This technology plan addresses six areas: infrastructure, computer hardware, other technology hardware, security, software and training/support. The plan encompasses ideas and suggestions gathered from many groups within the school community: teaching staff (limited due to job action), CUPE executive, administration and support groups including: office assistants from both elementary and secondary, teaching assistants and technicians. The plan also incorporates the initiatives from the Province of British Columbia's 'Ministry of Education for 21st Century Learning Plan'. This is considered a 'living' document with a need for regular review and revision as the changing technological times unfold and the needs of our students change.

The "network" or communication infrastructure is the cornerstone for enabling centralized shared resources: BYOD (Bring Your Own Device) technology, enhancing distance education, voice over IP, eliminating redundancies of services and lowering technology costs. We recognize that if our infrastructure cannot support the technology we have or desire, our technology is ineffective. A reliable, high speed Wide Area Network (WAN) will bring our schools and administrative sites together and strengthen our ability to enhance educational opportunities for our students. In addition, Local Area Networks (LANs) allow interaction, cooperation and teamwork amongst students and staff at any given site. More and more our communication network has to struggle with rapidly increasing volumes of data, video and multimedia traffic. Installing a new corporate model of wireless networks within our schools will help streamline data flow.

Our computer hardware collection at each school is aging. Currently we have approximately 1500 computers in our system. This does not include printers, servers, network devices and other technology related equipment. Most schools have at least one mobile cart of laptops; however, many of the carts are not full class sets and all the carts are more than three years old. Upgrading the memory on all laptops to make them usable for the short term is needed, but a comprehensive replacement plan needs to be established including the upgrade of all carts to 30 laptops. Of the three classroom labs remaining at the elementary level, one is more than six years old and the others are more than four. Although the hardware has been kept in good repair, the age and capability of the equipment is struggling to support current software, such as Microsoft Office. It is estimated that if we were to replace five carts per year on a four-year cycle,

the minimum cost to the School District for this initiative alone is approximately $30,000+ per lab. Extrapolating this to five carts per year would amount to over $150,000 per year. This does not include hardware and software in classrooms, libraries or administration. These support areas are included in subsequent years of the five-year plan. A new replacement model has to be considered in order to 'catch up', provide advanced applications and change our support model. BYOD policies may reduce the costs in the future, however, there is an immediate need for a comprehensive replacement strategy.

When it comes to other technology hardware, there are great discrepancies between schools. Smart boards, document cameras and FM systems are becoming the norm in many schools, rather than the exception. Libraries are looking into incorporating ebooks and ereaders into their systems. PACs (Parent Advisory Committees) have been involved in the funding of these types of technology. Other schools have opted not to invest in this type of technology due to lack of interest, lack of funding and greater student needs in other areas. It is hoped that with encouragement through showcasing amongst each Learning Community Team and visits to other schools, that teacher/school interest in this type of technology will spread to all schools. It is recognized, however, that budgetary constraints at the school level are a factor. We must also be conscious of the fact that the purchase of the hardware is only one aspect of successful use of technology. Software installation, updates and regular technician support are all additional costs often not considered at the outset. It is also recognized that there needs to be support for teachers who show initiative in terms of technological changes to improve student learning.

Security of our data needs to be frequently scrutinized within the Technology Education Plan. We have a responsibility to ensure our data meets the criteria with respect to privacy and safety set out in the Freedom of Information and Privacy and Protection Act (FOIPPA); this is not without a cost. Budgetary considerations need to ensure that our servers, switches and security software are up to date at all times. In addition, consideration needs to be given to appropriateness of materials found on the internet by our students and staff. Inappropriate use can lead to breaches in the infrastructure including bandwidth loss as well as virus attacks on our systems.

The choice of software to be used needs to be carefully examined. Consistency for clerical staff is important to ensure appropriate training. Selection of software for student use may change as software changes occur, and BYOD becomes acceptable practice within our schools. It is important for us to understand that the focus for teachers is not how well students' use software, but rather what pathways they have explored using the software.

Simply putting a connection and a computer on every teacher's desk will not intrinsically produce effective communications. Teachers require ongoing professional development and in-service. Administration and support staff will require training to make the most effective and successful use of the resources that will be available to them. Therefore, a critical component of our plan has to be effective training, in service and professional development structure. A significant portion of the budget in planning for technological change must be set aside to support and train our staff through in service, professional development, mentorship and training.

As technological change and it's complexity occurs so does the demand on our present technicians. A commitment by the district to provide the necessary training is essential for the technicians to be able to adjust to the quickly changing technology infrastructure demands they face. The funds for this training will ensure our networks and computers are running at optimum levels. We also need to regularly review the skillset of our present technology team to ensure we have adequate technology staff to meet the needs of the district.

"Nimble use of technology to expand learning frontiers: A growing number of highly effective classrooms are using technology to expand variables like time, space, mobility, expertise and opportunities to see practice and to collaborate. Gone are the days when "computers" was a class taught down the hall – or not at all – depending on your school, the resources available, and the staff. Today's learner doesn't see the computer, the tablet or other portable device as "technology" but simply as something they use to expand their world. As we take down the walls and restrictions related to "Bring Your Own Device" and other access initiatives, we also need to more broadly share how great teachers are embedding I.C.T. use in their kids' learning exploration… again leading students to embracing the challenges of higher order skill development."

(from: Mike McKay (Superintendent Surrey School District) Blog post, 'Higher Order Skills: the New Essentials' Feb 7th, 2012)

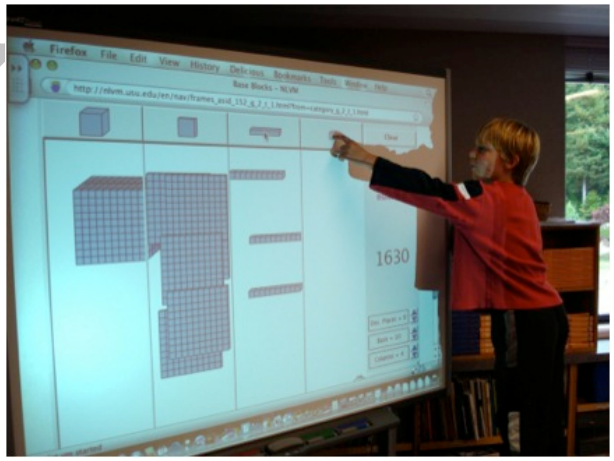
If you have any questions regarding the Technology Education Plan or you wish to see the supporting documentation, please contact Phil Luporini, District Principal, at pluporini@sd46.bc.ca.

DISTRICT TECHNOLOGY FUNDING AND TECHNOLOGY BUDGET

Technology is a strategic resource. An investment in technology will support a Universal Design for Learning (UDL) environment, which will in turn enhance student engagement and achievement. The spreadsheet on the next page shows the expected expenditures during the next 5 years if this plan is fully supported. Adaptions to the plan will have to be made if this amount changes and/or as technological needs change within the district. Included in each years plan is a continuation of the present Technology budget, as that is needed for the general operation and repairs within the school district. No staffing is included within this budget.

If we think we know what tools we will need in 5 years, we are probably wrong. But, to do nothing to improve the technological learning experiences of students is even more wrong. We need to spend wisely for today while ensuring our infrastructure will meet the changing needs of tomorrow.

THIS PLAN IS DESIGNED TO BE REVIEWED YEARLY



Proposed SD46 Technology Budget

	INFRASTRUCTURE	COMPUTER HARDWARE	OTHER HARDWARE	SECURUTY / ACCESS	SOFTWARE	TRAINING / SUPPORT	REGULAR TECH BUDGET	TOTAL	Brief Description
iMMEDIATE	$160,000	$15,000			$10,000	$5,000		$190,000	Infrastructure and wireless network improvements throughout the district, training for new infrastructure. Web site development for all schools, training and support
YEAR 1		$150,000	$25,000		$20,000	$20,000	$85,000	$300,000	Replace oldest lab with laptops plus a balencing of numbers of laptops at a few schools, replacement of 3 mobile labs with redeployment to other facilities. Video conference classroom set up at each highschools, training and support.
YEAR 2	$10,000	$100,000	$50,000	$15,000	$20,000	$20,000	$85,000	$300,000	Replacement of 3 mobile labs with redeployment to other facilities, Clerical replacement of computers, preparing for BYOD full deployment, other technological initiativess, training and support
YEAR 3		$100,000	$30,000		$15,000	$20,000	$85,000	$250,000	Replacement of 3 mobile labs with redeployment to other facilities, admin/library replacemnt of computers, other technological initiativess, training and support
YEAR 4		$100,000	$15,000	$15,000	$15,000	$20,000	$85,000	$250,000	Replacement of 3 mobile labs with redeployment to other facilities,district server replacemnts, other technological initiativess, training and support
YEAR 5		$100,000	$30,000		$15,000	$20,000	$85,000	$250,000	Replacement of 3 mobile labs with redeployment to other facilities,district server replacemntss, training and support

TECHNOLOGY PLAN ACTION ITEMS

AREA	ACTION	TIMELINE
INFRASTRUCTURE	School District 46, in conjunction with the Provincial Learning Network, work at addressing the bandwidth needs of the district WAN. We need to work towards building and maintaining a network infrastructure that provides seamless and secure access to the type of resources and data that students and staff will require both now and in the future.	Ongoing
	School District 46 needs to incorporate a new Wireless Network based on an enterprise network solution with the number of APs based on what is described in Figure 2.0 above. Exact AP numbers will be determined at time of installation.	Fall 2012
	School District 46, in cooperation with PLNet services, continue to monitor and block SPAM to the best of its ability. In addition, the district needs to explore and educate staff on the expanded use of Firstclass in the development of Professional Learning Community collaboration spots and other interactive communication options.	Ongoing
	School District 46 continue with the implementation / development of new school websites to enhance communication to and from our educational.	Spring 2012
COMPUTER HARDWARE	The school district will embark on a 4-year replacement plan to replace 3 mobile carts per year. In the interim, laptops should have their RAM upgraded. It is recognized that the technology may change over the next 4 years with the potential to replace laptops with other devices. This decision should be addressed as the Tech Plan in future years. The desktop labs at the elementary level should be phased out with the replacement of mobile laptop carts. In addition, replacement of the remaining non-Intel based labs at the elementary level and developing an action plan for the replacement of secondary non-Intel based labs is necessary	starting Fall 2012
OTHER TECHNOLOGICAL HARDWARE	Schools will continue to purchase other technological solutions to aide in the improvement on student learning. Standardization on purchases will aide in the capability to provide training and support and will be encouraged. The district needs to embark on an education of various new technologies to show teachers and support staff of the potential to support student learning. District Support Services will conduct a review and make recommendations on appropriate FM systems to allow for standardization in the future. School librarians need to have input into the selection, use and distribution of ebooks.	starting Fall 2012
SECURITY	The district technology department continues to ensure our data is protected and will make recommendations when needed. The Technology Committee needs to review and finalize their draft Technology Acceptable Use Policy started last year. The district will develop an acceptable use policy for BYOD technology by spring of 2013.	Winter 2012
SOFTWARE	The district will continue to use mostly proprietary software at this time, especially for our clerical staff. It is recognized that students may not have the software that the schools are using, but Open Source software options allow for translations and conversions of software in most cases. As technology demands and advances occur, reviews will be made on the most appropriate type of software. For clerical staff, schools should only use the standard software provided with the computer. As district software decisions occur, the district will provide the appropriate training and support. Schools should purchase software coordinated through the technology department to ensure there is an up to date inventory in the district, allowing best bulk purchase price for updates and renewals.	ongoing
TRAINING AND SUPPORT	The district needs to develop a training/professional development/support model to ensure that an investment in technology will support student learning. The district will work on showcasing the many resources that are presently available within the district to administrators, teachers and support staff.	Fall 2012

INFRASTRUCTURE

Without an infrastructure in place to manage our technological needs, any technology plan will be hard to implement. This can be broken down into four main areas: The Wide Area Network (WAN) with bandwidth being the main concern, the Local Area Network (LAN) with wireless being the main concern, our e-mail system and our district websites. These areas are all considered to be an integral part of our infrastructure.

Bandwidth and our Wide Area Network

There has been great concern about the bandwidth within the school district. It is worried that our current bandwidth is not meeting our needs now, never mind the future technological needs of our students. To help understand our present bandwidth, Figure 1.0 illustrates our current level at the various sites.

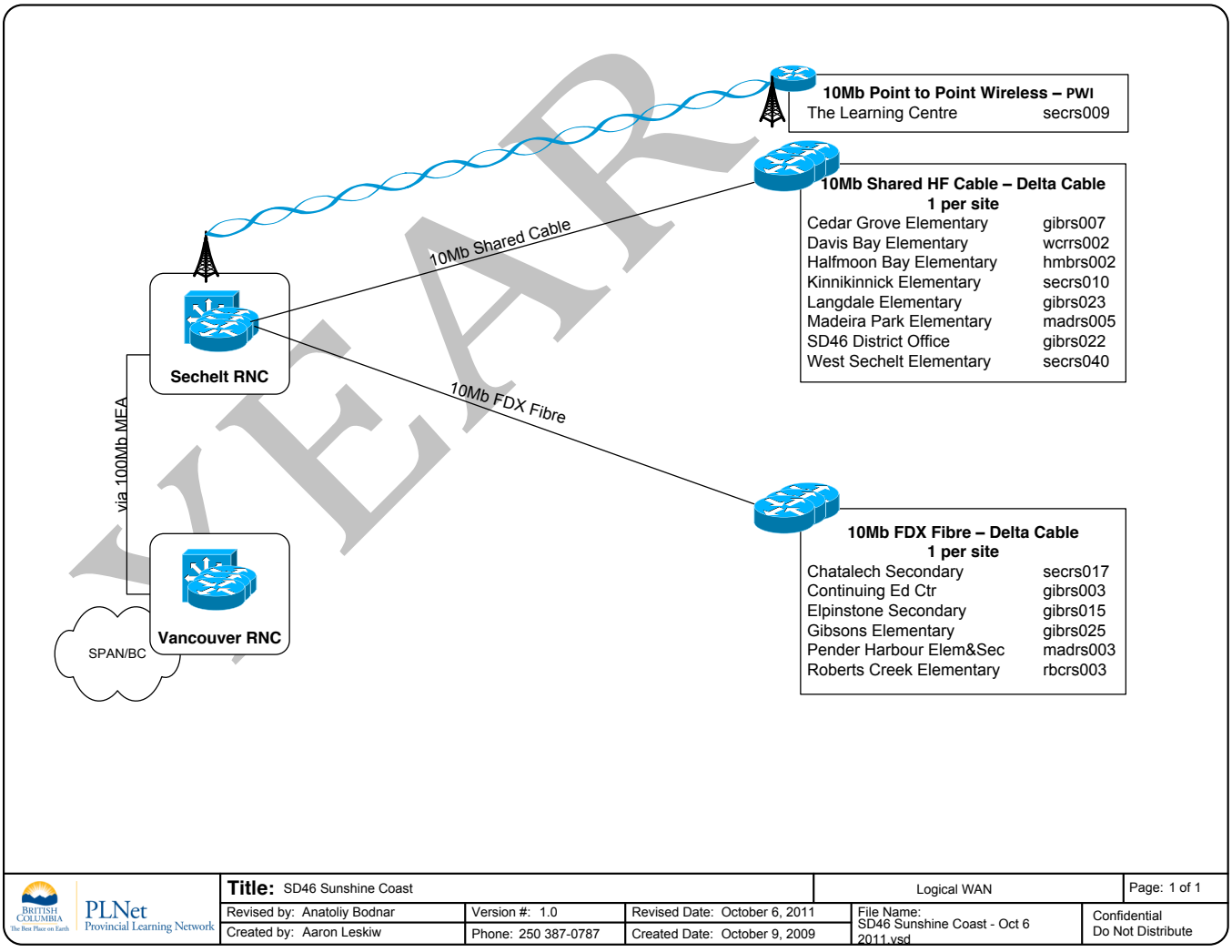


Figure 1.0

One of our sites, the Sechelt Learning Centre has a 10Mb microwave direct link to the Sechelt Region Network Centre (RNC). Chatelech Secondary, the Continuing Education Center, Elphinstone Secondary, Gibsons Elementary, Pender Harbour Elementary & Secondary and Roberts Creek Elementary are on 10Mb Fibre connections directly to the RNC. Cedar Grove Elementary, Davis Bay Elementary, Halfmoon Bay Elementary, Kinnikinnick Elementary, Langdale Elementary, Madeira Park Elementary, SD46 District Office and West Sechelt Elementary share a 10Mb cable connection to the RNC. This means that these eight schools share the same connection and the bandwidth is dependent on the demands at each site.

Direct links are the best option for fast service, with the microwave link being the fastest (and newest) connection in the district. However, there was concern that the fibre direct links still do not meet the needs of the two big high schools: Bandwidth utilization graphs {Appendix B: Bandwidth Utilization Charts} (incoming and outgoing) for each site were compared. Six sites were of concern due to present bandwidth demands: Chatelech Secondary, Elphinstone Secondary, Gibsons Elementary, Roberts Creek Elementary, Continuing Ed (where our servers are) and the SD46 District Office.

It is also recognized that if the district is to consider Voice over IP (VOIP) technology for our phone systems in the future, then all of our sites need to have a minimum of fibre direct connection. The new Telus Initiative contract may bring us closer to this. Another concern of the Wide Area Network (WAN) bandwidth is the 'pipe' off the course where all Internet traffic for the Coast's government agencies flow. At present this is 100Mb. Initial inquiries indicate that our backbone is meeting the need, but more analysis needs to take place to see if the daily peaks cause slowdowns (Figure 1.1 & 1.2). PLNet is looking into peek slow downs.

Monthly Counts: January 2012						
	Average	Bytes	Frames	Errors	Discards	FECN / BECN
Receive	6.93%	773.3G	1.2G	0	0	BECN 0
Transmit	5.10%	581.5G	1.2G	0	86	FECN 0
Delay	4 ms					
Specified Range: 8am - 6pm Mon, Tue, Wed, Thu, Fri						
Receive	13.95%	459.7G	606.9M	0	0	BECN 0
Transmit	5.32%	175.6G	485.9M	0	21	FECN 0
Delay	4 ms					

Figure 1.1

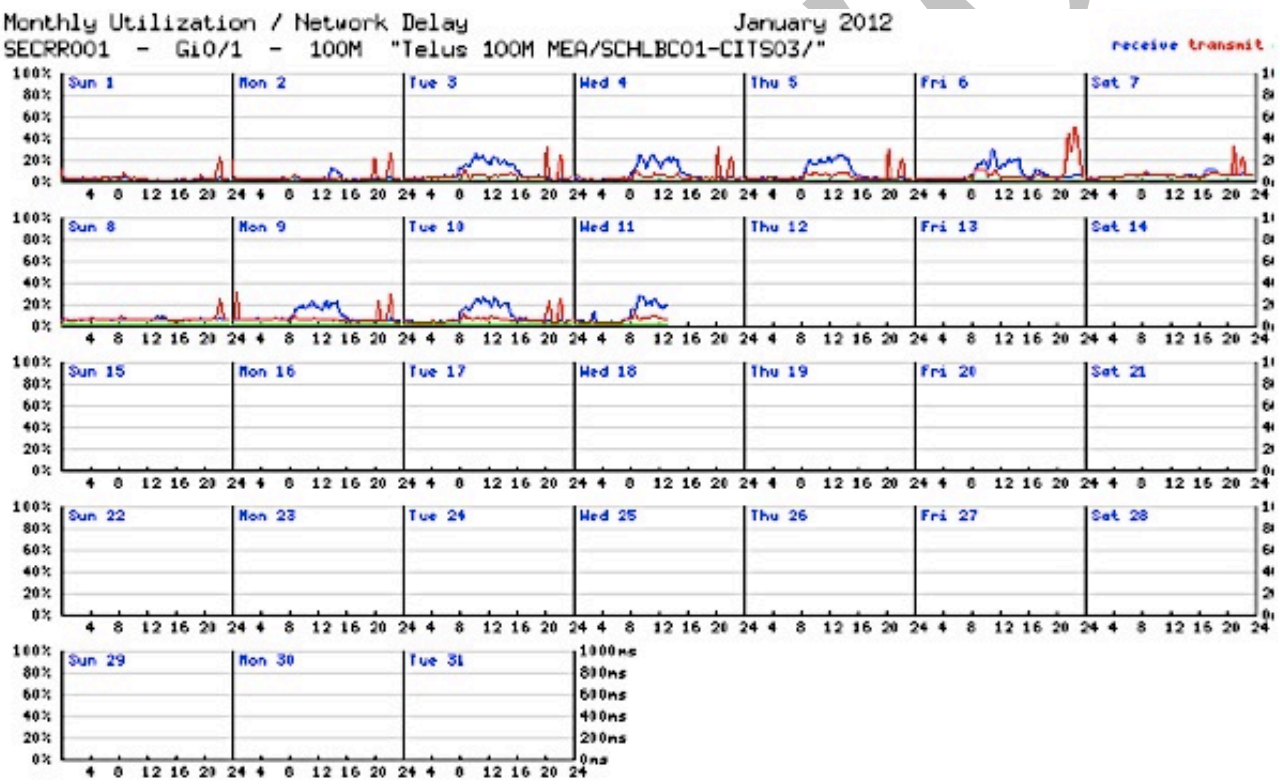


Figure 1.2

ACTION:
School District 46, in conjunction with the Provincial Learning Network, work at addressing the bandwidth needs of the district WAN. We need to work towards building and maintaining a network infrastructure that provides seamless and secure access to the type of resources and data that students and staff will require both now and in the future.

Wireless and our Local Area Network

Our wireless system began less than 10 years ago with a need to connect up a few computers to the network using wireless technology. Connecting involved using a few wireless Apple base station Access Points (APs) where needed. As the need grew so did the number of AP base stations to fill the gaps within each site. These APs are not meant for industrial applications and the number of devices we are attempting to connect to them is slowing down performance. We also have 'dead spots' within individual schools, which results in poor or no connectivity to the Internet. A more robust enterprise-class model (industrial versus residential) needs to be considered.

Other school districts use various hardware options including: Ruckus, Cisco, Aruba and HP options. The Wi-fi Review {Appendix C: Wi-fi review} gives a comparison of the various systems. Ruckus has had success in school settings due to its successful connectivity with a large number of devices, especially Apple products. The Delta School District is an example of a district that has been using Ruckus for several years with great success.

To determine the number of base station APs needed to cover each site, a private company developed Wireless Site Plans based on site floor plans {Appendix D: School District Wireless Plan}. Elphinstone Secondary's site plan was expanded in more detail {Appendix E: Elphinstone Wireless Proposal}. Local knowledge of room use and student access was then used to develop a rough AP and pricing chart (Figure 2.0).

	Number of APs	M7962 APs	M7363 APs	AP Cost	Base Unit	Base Unit Cost	Switches	Installation Costs	Service Cost	Total Cost
Elphinstone	20	15	5	$11,924.20	1125	$2,652.78	$1,325.73	$8,000.00		$23,902.71
Chatelech	20	15	5	$11,924.20	1125	$2,652.78	$1,325.73	$8,000.00		$23,902.71
Heritage Building	4	4		$2,650.12	1106	$795.83		$1,500.00		$4,945.95
SBO	2	2		$1,325.06	1106	$795.83		$1,000.00		$3,120.89
Gibsons	8	6	2	$4,769.68	1112	$1,326.39	$1,325.73	$4,000.00		$11,421.80
Roberts Creek	8	6	2	$4,769.68	1112	$1,326.39	$1,325.73	$4,000.00		$11,421.80
Halfmoon Bay	6	4	2	$3,444.62	1112	$1,326.39	$1,325.73	$3,000.00		$9,096.74
Kinnikinick	7	5	2	$4,107.15	1112	$1,326.39	$1,325.73	$4,000.00		$10,759.27
West Sechelt	6	4	2	$3,444.62	1112	$1,326.39	$1,325.73	$3,000.00		$9,096.74
SCAS (Sechelt)	4	4		$2,650.12	1106	$795.83		$2,000.00		$5,445.95
Pender Harbour	6	5	1	$3,709.90	1112	$1,326.39	$1,325.73	$3,000.00		$9,362.02
Madeira Park	4	3	1	$2,384.84	1106	$795.83		$3,000.00		$6,180.67
Langdale	4	2	2	$2,119.56	1106	$795.83		$2,500.00		$5,415.39
Davis Bay	3	1	2	$1,457.03	1106	$795.83		$1,000.00		$3,252.86
Sechelt Learning Centre	3	1	2	$1,457.03	1106	$795.83		$1,000.00		$3,252.86
								$49,000.00		$140,578.36

plus taxes

Figure 2.0

Concerns about wireless safety in schools were briefly discussed. It was decided to refer concerns to Burnaby School District's review of Wireless Networks {Appendix F: Wireless Networks in SD41}.

ACTION:
School District 46 needs to incorporate a new Wireless Network based on an enterprise network solution with the number of APs based on what is described in Figure 2.0 above. Exact AP numbers will be determined at time of installation.

District Email/Firstclass

Our present e-mail system is an integral part of the communication network within and out of the school district; this is why it is being considered within the Infrastructure section. Figure 3.0 is a typical representation of current email traffic within the district. Of the more than 140,000 emails sent to SD46 employees each month, 75% of the total is considered SPAM (junk mail) and is blocked. This large volume of SPAM is typical in most districts and represents the massive amounts of unsolicited advertising that takes place. Unfortunately we cannot block all SPAM as companies have been creative to get past filtering systems. We also have no control over incoming emails after someone gives their email address out to private companies and businesses.

Date/Time: September 1, 2011 00:00:00 to October 1, 2011 00:00:00

Customer	Blocked Viruses	Blocked Spam	Administrative Blocks	Misc Undelivered	Delivered	Total
SD46	164 (0.11%)	106726 (72.81%)	236 (0.16%)	2554 (1.74%)	36902 (25.17%)	146582

Figure 3.0

Our district has used Firstclass as our mail system for more than 10 years. Incorporated into Firstclass are the capabilities for on-line conferencing and development of electronic Professional Learning Communities. We recognize there is a need to educate schools and district staff of it's potential.

ACTION:
School District 46, in cooperation with PLNet services, continue to monitor and block SPAM to the best of its ability. In addition, the district needs to explore and educate staff on the expanded use of Firstclass in the development of Professional Learning Community collaboration spots and other interactive communication options.

District Websites

Communication is a cornerstone to success for the Sunshine Coast educational community students. Our websites need to be clear and easy to navigate so our students, parents, staff and the community are able to find pertinent information. One aspect in improving communication was the development of a new district website. It went live in the late spring of 2011. After much discussion between management and administrators, it was decided to move forward with redesigning our school websites using the backbone of our FirstClass system and mirroring a similar layout to the district site. The school sites need to be easily linkable to the main district website. The information in each website needs to be relevant and up to date. Following along with this will be the ability for teachers and principals to create their own websites and blogs built into their Firstclass email. This continues to be in the implementation and development stage.

ACTION:
School District 46 continue with the implementation / development of new school websites to enhance communication to and from our educational. (Spring 2012)

COMPUTER HARDWARE

The district's computers are almost all Mac configuration with the exception of a few PC computers in specialized programs, maintenance and the district office. There are approximately 1500 computers in our system, as well as printers, servers, network devices and other technology related equipment (Figure 4.0). These computers are of various vintages ranging from new to more than seven years old. There has not been a district based computer replacement for about three years. The ideal ratio of students to computers would be 1:1, however, the committee felt there should be a goal of a minimum ratio of 2.5:1. At present only 3 schools meet the goal of 2.5:1.

Technology Inventory in Schools
Updated December 2011

	Desktop C	Laptops	IPADs	Smart Boards	Projectors	Doc Camera	Student to Computer Ratio
CGE	46	35		2	3	3	**2.9**
DBE	34	3		1	2		**1.2**
GES	45	20		2 SmartBoards	10	8	**4.3**
HMB	35	36		7	3	11	**2.7**
KES	42	12	15	4	2	3	**3.5**
LES	11	30		3	1		**2.3**
MES	6	34			1	1	**2.7**
RCE	33	60		1	3		**2.8**
WSES	8	42		4	7	5	**3.9**
PHSS	52	36	2	3	8	2	**1.3**
ESS	135	100	1	2	18 mted, 2 port	7	**2.6**
CSS	107	73		3	16	6	**3.4**
SCAS	66	65		3	6	1	**2.7**
Total:	554	546	18				

TEACHER LAPTOP PROGRAM: 282 computers

NOTE: This spreadsheet is a constantly changing inventory as computers come into the system (school purchases) or leave the system as they become non fixable

Figure 4.0

Learning in the 21st century recognizes that students should be able to select the technology device (laptops, tablets, phones, etc.) that best fits their need for the given task. This is a very different approach to the way most teachers view technology (which involves using class sets of computers). In the future, we need to recognize the need for adding different devices to schools with tech initiatives (technology support) that support a teacher's desire to use various technological devices.

Desktop Computers

There are only three desktop computer labs left at the elementary level: Gibsons Elementary, Davis Bay Elementary and Kinnikinnick Elementary. One lab (Gibsons) is more than six years old while the other labs are less than four years old. Although the hardware has been kept in good repair, the age and capability of the equipment is struggling to support the most current software, especially the non-Intel based machines at Gibsons. In addition, there are other non-Intel based computers situated around the district at both elementary and secondary levels that are used in pods for general word processing. These computers continue to meet the needs for this purpose but may not be capable of using the latest versions of software in the very near future.

At the secondary level, there are 2 labs that are using non-Intel based desktop computers. In addition, there are large pods of computers within the libraries/career planning room at Chatelech and Elphinstone that are also using non-Intel based computers. A review of their use and needs has not been completed at this point.

Laptops

Most schools have at least one mobile cart of laptop computers. The number of laptops in each cart range from 8 to 31. Computer memory ranges from 512Mb RAM to 1Gb RAM. They all work on the network, however, due to slow processor speed and the limited amount of memory (RAM, Random Access Memory) on the laptops, access can sometimes be challenging; in fact, the newest version of Office recommends 2Gb of RAM to operate effectively. There is a need to upgrade the memory on all laptops to make them usable for the short term (as a replacement plan is developed), but a comprehensive plan needs to be established including the completion of all carts to 30 computers in the long term.

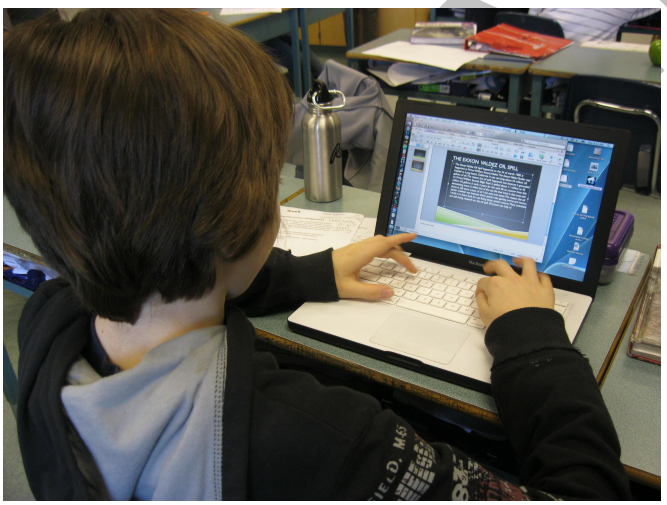
The teacher laptop program provided teachers with a laptop computer to support instructional practices. The term of this lease program was four years and will expire this fall. Management will decide in the near future if this program will continue.

BYOD Technologies

BYOD (Bring Your Own Device) policies may reduce district technology costs in the future. Their potential cannot be addressed until the infrastructure is in place and the district is able to develop policy on their use. Some of the key issues that will need to be addressed include security, connectivity and liability. (Suggested reading – Appendix G: BYOD Considerations)

ACTION:
The school district will embark on a 4-year replacement plan to replace 3 mobile carts per year. In the interim, laptops should have their RAM upgraded. It is recognized that the technology may change over the next 4 years with the potential to replace laptops with other devices. This decision should be addressed as the Tech Plan in future years. The desktop labs at the elementary level should be phased out with the replacement of mobile laptop carts.

In addition, replacement of the remaining non-Intel based labs at the elementary level and developing an action plan for the replacement of secondary non-Intel based labs is necessary.

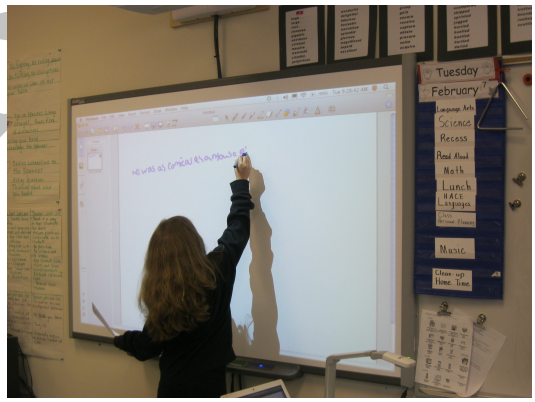


OTHER TECHNOLOGY HARDWARE

There are many differences between schools in terms of what other technology that has been acquired over the years. In Figure 4.0 we showed the breakdown of technology as of December 2011. Other types of technology include: 'smart board' technologies, projectors, document cameras and FM systems. The technology purchases have come about from school-based budget decisions, PAC purchases, grants or a combination of funding sources. A school's decision not to invest in technology comes from different levels: lack of interest at this time, lack of funding (budget constraints), greater student needs in other areas. District funds have traditionally not purchased this type of hardware.

It is hoped that encouragement through showcasing amongst Learning Community teams, PLC's, visits to other schools, that teacher/school interest in various types of technology will spread to all schools. It is recognized that there needs to be financial inservice for teachers who show initiative in terms of technological change to improve student learning.

'Smart Board' Technologies



Interactive white boards (commonly called 'Smart Boards') are bought by schools based on specific interests of schools and/or teachers. We currently have three types of interactive boards. SMART board units use touch technology where contact is made as two membranes on the white board connect. The white board and software connect up to a normal data projector. This involves electrical hardwiring for both the projector and the whiteboard. INTERWRITE (two units at Pender) uses magnetic technology where a magnetic pen makes contact with the hard white board. This also involves electrical wiring for both the projector and the whiteboard. BRIGHTLINK uses a specialized pen that sends its signal back to the projector to display what you are drawing on the wall. This involves electrical wiring for only the projector. All three units use their own interactive software. Three different types of 'Smart Boards' have raised concern regarding training and support. Schools, however, have managed to use each other to gain the necessary training when needed; therefore the tech committee felt that standardization in this area was unnecessary.

Projectors

A video projector takes a video signal from a computer or video player and projects the image to a projector screen using a lamp and lens system. Over the years the technology department, when requested, has purchased projectors based specifically on what the school requests (exact model). This year we have standardized the type of projector being purchased. This is in an attempt to be able to assist in the setup of projectors with the potential to have a spare bulb within the district when bulbs burn out. It was agreed that we would continue to follow this practice when practicable.

Document Cameras

Document cameras (also called data cameras) are real-time image capture devices for displaying an object to a large audience. Like an opaque projector, a document camera is able to magnify and project the images of actual, three-dimensional objects, as well as paper transparencies. There are two types of data cameras. Some units need to connect up to a computer before displaying to a projector; others can connect directly to a projector. The direct connect units we are presently buying also have data storage and time lapse capabilities. However, these units are much more expensive. Again, no standardization of make and model means limited support from our tecnicians. It has been recommended for schools to purchase the more expensive units when possible as they provide the most flexibility in usage. It was agreed that we would continue to follow this practice when practicable.

FM Systems

Schools have deployed FM systems as needed by student recommended adaptions within an individual's IEP (Individual Education Plan). Other schools have placed FM systems in all classrooms based on research {Appendix H: FM Systems Review} and funds available. FM systems can either be individual or speaker based. The FM speaker systems are mostly 'wired' systems with various models being used. Units have been purchased by individual schools, Garibaldi Health and District Support Services. One of the issues that arise with so many types of devices is that teachers need to wear multiple transmitters. District Support Services will be reviewing and making recommendations on a standardized FM system for future purchases with the hope that that these systems can link into one controller.

Ebooks and Ereaders

The move towards ebooks and ereaders (Kindle, Kobo, etc.) needs to be reviewed carefully as there are many format options. Until this review takes place we should be cautious in our purchase of this type of technology as described in ERAC's, white paper on ebooks. {Appendix I: ebooks.webarchive}

Other Technologies

Schools will use other types of technologies as they become available to aide in student learning. The key to proper implementation is recognition of adequate training for both the teacher and the technicians to ensure appropriate implementation to suit student needs.

ACTION:
Schools will continue to purchase other technological solutions to aide in the improvement on student learning. Standardization on purchases will aide in the capability to provide training and support and will be encouraged. The district needs to embark on an education of various new technologies to show teachers and support staff of the potential to support student learning. District Support Services will conduct a review and make recommendations on appropriate FM systems to allow for standardization in the future. School librarians need to have input into the selection, use and distribution of ebooks.

SECURITY

Security concerns can be divided into two main areas: protection of our data and appropriate use.

Protection of Data

Security protection of teacher information and office data was deemed to be extremely important by the committee. Confidentiality of student and staff information is covered under the Freedom of Information and Protection of Privacy Act (FOIPPA). Personal information is to be kept secure and not visible to the general public. Individual passwords are assigned for the student information database and access is restricted on a need to know basis. Concern was expressed about students and public accessing information by watching over someone's shoulder, by 'hacking' or by gaining access when information is not left secure. It was recommended that the district complete an acceptable use policy for technology to minimize inappropriate activity. A policy is in the draft stage of development after taking input from staff and students last year {Appendix J: Info Tech DRAFT}.

Appropriate Use

There are four main technology distractions that can hinder student success while using a computer: instant messages, email, social networking and gaming. To address these distractions and the inappropriate use of them at school, manyschool administrators have access to 'Remote Desktop' to view/control a student's computer screen. At the four high schools the 'Radius' server restricts access and filters content as needed. PLNet also filters inappropriate access to the internet using certain key words. With BYOD (Bring Your Own Device) technology coming to schools an action plan for access will need to be developed. PLNet has two documents that reflect acceptable use of internet and wireless that districts are to use in setting their acceptable use policy {Appendix K: Acceptable Use Standards} & {Appendix L: Wireless LAN Access Policy).

ACTION:
The district technology department continues to ensure our data is protected and will make recommendations when needed. The Technology Committee needs to review and finalize their draft Technology Acceptable Use Policy started last year. The district will develop an acceptable use policy for BYOD technology by spring of 2013.

SOFTWARE

Most software used in the district is proprietary user licensing. Volume purchase licensing occurs when available. We belong to ERAC (Education Resource Acquisition Consortium), which can sometimes provide more competitive prices on software and videos. Only software provided within the ERAC licensing is provided free to schools. Other software is installed based on cost of the product requested by individual schools. Many companies have their own educational licensing plans that provide school districts with discounts.

The school district's clerical staff generally uses Microsoft Office (Word, Excel, Powerpoint) and accounting solutions as defined by the district. Concerns occur when a school decides to use another piece of software to design documents for example, a newsletter. Relief clerical are trained for only certain pieces of software and thus if they go into a school that is not using that software there is often difficulty in producing the newsletter. It was recommended that schools continue to only use the software provide at the district level for word processing and newsletters. The student management system used by our clerical support is BCeSIS. This student information system is slated for replacement in three years and training will be required as this transition occurs.

To support our students with learning difficulties the district uses many types of software depending on the technology device used and the individual support requirements of the student. Two programs used extensively in the district are Kurzweil (reading/writing) and Dragon Dictate (speech to text). The district special education team has a technology coordinator to give technological support to schools for students with learning difficulties.

Individual teachers have made decisions to enhance their classes with specific software choices such as Word, Pages and sometimes Open Source solutions to complete assignments. A student/parent common complaint occurs when a student attempts to take a computer assignment home. and is unable to open the document due to not having the same version of software as the school or not even the correct software at all. There was discussion contemplating the switch to Open Source software to minimize this problem. Most Open Source software has converters that go back and forth between different proprietary software. However, as technology and BYOD technological devices become more prevalent in schools teachers may need to become more flexible in their

requirements for use of specific software. After all, in most cases, it is not the use of a particular piece of software that is important, but the content and student's presentation of the material to demonstrate their understanding of a topic/subject.

Schools have sometimes made decisions to purchase software specific to their staff's individual skills. This is fine as long as the teacher remains at the school. However, this becomes a challenge when the teacher moves to a new school where the software does not exist or for a new teacher that does not know the particular software. There may be no solution to this, as we do not want to discourage teachers from using a variety of software.

The purchasing of software is of concern. Although recommended, software is not always purchased through the technology department. This can sometimes result in software that cannot run on the current hardware a school may have or there may be a licensing violation. Keeping an accurate district inventories become a challenge as software is lost resulting in unnecessary duplicate purchases.

ACTION:
The district will continue to use mostly proprietary software at this time, especially for our clerical staff. It is recognized that students may not have the software that the schools are using, but Open Source software options allow for translations and conversions of software in most cases. As technology demands and advances occur, reviews will be made on the most appropriate type of software. For clerical staff, schools should only use the standard software provided with the computer. As district software decisions occur, the district will provide the appropriate training and support. Schools should purchase software coordinated through the technology department to ensure there is an up to date inventory in the district, allowing best bulk purchase price for updates and renewals.

TRAINING AND SUPPORT

The key to the implementation of new technology is a well thought out plan, which includes training and support. Teachers require ongoing professional development and in-service to effectively use technology to support and enhance student learning. Administrative and support staff require training to make the most efficient and successful use of the hardware and software resources that are available to them.

Our present technology staff includes three technicians. We need to review our present technology team structure to ensure that we have enough staff to meet the needs of our students and staff. We also need to invest in training to support our present technicians to work with new technology.

At present many of our teachers have their own blogs, wikis and web pages. They have created these communication tools using different software available on the web. Many of these communication resources are available in house, including our media, blog, wiki and web server capabilities. By creating our technology endeavors on a more consistent platform we will allow for a better opportunity to expand our training to others who may be keen to learn and use technology regularly. This will create a larger teacher base of resident experts to provide support for each other.

District technology staff are not experts in the use of technology to aide in student learning. They can give the initial support and training to support a teacher connecting a piece of technology or installing a piece of software. It is the teacher who uses the technology every day that needs to quickly develop the skills necessary to assist in the learning process for students; they will quickly see what does and does not work. We need to recognize and use the teacher's expertise to assist others to use technology hardware and software effectively. Teacher initiatives need to be supported and showcased to get others interested in using technology. In addition, ongoing professional development, training and support will provide the opportunities for teachers to support learning through technology (both software and hardware).

ACTION:
The district needs to develop a training/professional development/support model to ensure that an investment in technology will support student learning. The district will work on showcasing the many resources that are presently available within the district to administrators, teachers and support staff.

CLOSING SUMMARY

This Technology Plan is the first step towards investing in the future to further assist in student learning within School District 46. To use technology effectively we must regularly integrate it into school renovations, special education, curriculum, and professional development plans developed both at the school and district level. Technology must be viewed as providing tools to aide in reaching educational goals, not as defining a new, separate set of goals.

The Technology Plan needs to reflect the needs of our students and teachers both now and into the future. It must also reflect the cultural diversity of the Sunshine Coast as the community plays a large role in the education of our students. For example, we can also use technology to communicate the distinct language, culture and family support present in our district for our Sechelt Nation student population.

The Technology Plan and action items need to be reviewed and refined annually and there needs to be a commitment to investing in technology to support student learning. "Commitment" not only includes investing in the purchase of technology, but also in providing the professional development, training and support needed. This will help us ensure technology is used effectively and efficiently to support engagement and student learning.

APPENDICES

*To view the Appendices electronically please visit:

http://wikis.sd46.bc.ca/groups/itdepartment/wiki/0b0fa/Tech_Report_Supporting_Documents.html