School District 22

Innovation and Technology

Integration of technology into classrooms to support student-centered learning, ensure equity for all learners, and provide ongoing support for the school community.

Innovation, Technology and the Strategic Plan

Student Success:

- The Technology Plan supports student success by integrating technology into the classroom to provide personalized and flexible learning experiences that cater to the needs of individual students.

Leadership Excellence:

- The plan also prioritizes investments in hardware, infrastructure, software programs and applications that support student learning and provide teachers with the tools they need to inspire learning through engaging and interactive lessons.
- The Technology Plan supports leadership excellence by providing professional development opportunities for teachers and staff to ensure that they have the necessary skills to effectively integrate technology into the classroom.

Community Connections:

- The Technology Plan supports community connections by ensuring that all students, regardless of their background, have access to the tools they need to succeed creating a more connected community by providing equal opportunities for all students to succeed and engage with technology.

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1.0 - Executive Summary

The purpose of this plan is to ensure that the technology investments and activities have a positive impact on student learning. In general, technology for learning must be in alignment with Ministry, District, and school plans to help facilitate their goals. All technologies, both educational and administrative, need to be designed and implemented in a manner that ensures effectiveness, value, best practice, and safety.

This plan is broken into seven parts including sections on Learning, Assessment, Teaching Practice, Innovation (Research & Development), Infrastructure, Administrative Technology, and Leadership. The following are some overarching goals of this technology plan:

1. To ensure that technology services and investments in School District 22 link to current and future curricular goals and activities.

2. To ensure that the technology infrastructure has the capacity to support curricular goals, now and in the future. Also, to ensure that technologies are implemented with industry best practices in mind.

3. To ensure that technology supports the business needs of the organization. To assess current administrative technologies to ensure that they are cost effective, of a high quality, and meet the needs of the district.

4. To look at ways to improve productivity through technology, by challenging and revising learning and business processes. To ensure that educators in the district are fully supported and have professional development opportunities that will facilitate our building the classroom of the future.

5. To look at ways to improve cost effectiveness and quality of services by working with other districts and developing shared services.

It is also important that the Technology Plan be in alignment with, and support, other internal and external education related strategies / goals / artefacts including the following:

1. District Strategic Plan and curricular goals.
2. Indigenous Enhancement Agreement.
3. Local Education Agreement
4. BC Education Plan.
5. New formative-based assessments.
6. BC K-12 Innovation Strategy.
7. BC’s curriculum, assessments, and reporting.
8. The districts administrative and business technology needs.

1.1 Summary of Recommendations

The following is a summary of the key recommendations for actions contained in the Technology Plan.

Learning

1. ***It is recommended that the district continue to facilitate increased and equitable access to digital resources for teachers and students.***
2. ***It is recommended that the district continue to fine tune computer acquisition choices to ensure devices are function specific and that the best possible value is received from these purchases.***
3. ***It is recommended that the district set standards and develop approaches for teaching Digital Citizenship skills for students.***

Assessment

1. ***It is recommended that the district continue the development of a model for learning assessment that includes ongoing gathering and sharing of data for continuous improvement of learning and teaching.***
2. ***It is recommended that through research, thoughtful inquiry, and collaboration inside and outside the district, the district design and develops student analytics and learning dashboards.***

Teaching Practice

1. ***It is recommended that the district develop strategies for utilizing in-service and professional development to increase the technology capacity of educators.***
2. ***It is recommended that the district develop a common set of technology competency expectations for educators.***
3. ***It is recommended that the district undertake a survey where teachers' and administrators' current technology skills are to identify where gaps exist.***
4. ***It is recommended that the district continue to collaborate with other Districts in the region to engage in activities and events that elevate our capacity to leverage technology for learning.***

Innovation

1. ***It is recommended that the district continue to initiate, facilitate, and incubate practical research and pilot projects.***
2. ***It is recommended that the district develop approaches to measure the effectiveness of pilot projects, to ensure that lessons learned are communicated across the district, and to promote active dialogue regarding innovative practices around the district.***

Infrastructure

1. ***It is recommended that the district perform updates to their infrastructure on an ongoing basis in sync with Ed-Tech and administrative requirements throughout the district.***
2. ***It is recommended that the district continue to use processes that ensure infrastructure technologies provide value and are implemented and maintained using best practices.***
3. ***It is recommended that the district continue to develop and update an IT Risk Management plan that is in line with provincial guidelines and best practices.***

Administrative Technology

1. ***It is recommended that the district follow a value driven and best practice processes for decision-making and implementing administrative technologies.***
2. ***It is recommended that the district develop strategies for utilizing professional development to increase the technology capacity of administrative staff.***

Leadership

1. **It is recommended that the district continue with providing strategic and technical leadership in the IT area into the foreseeable future to ensure there is effective and strategic leadership.**
2. ***It is recommended that the district continue to investigate opportunities for shared service opportunities.***
3. ***It is recommended that the district work with appropriate stakeholders to develop school-based Ed-Tech plans to ensure that technology initiatives are directly connected to*** **education, in alignment with district strategic plans.**

Resources

1. ***It is*** **recommended** ***that the technology department continue to be provided with an operating budget to support the ongoing operating costs and that the annual transfer of $845,000 from operating to local capital continue for the technology and infrastructure capital costs.***

2.0 - Introduction

Technology is a powerful tool and when implemented correctly, can radically transform learning. A strategic approach to technology investments and activities at School District 22 can significantly contribute to the advancement of the relationships between teachers and students. In addition, technology can facilitate the innovation of new approaches to learning, assessment, teacher development and collaboration.

In SD 22, we are evolving technology services through the lens of the district's strategic plan and goals, school-based Ed-Tech plans, the BC Education plan, the provincial curriculum, and the industries best thinking and research into the classroom of the future. Current technology infrastructure is rapidly changing whereby devices are becoming more function specific and specialized. Cloud services are presenting many viable (and better) options for hosting, data storage, and disaster recovery. BC's Next Generation Network is providing opportunities and futurity for high speeds through their fibre-based network.

The purpose of this plan is to build on and support the district's current vision for transforming our classrooms and educational practices. It is essential that technology services and investments be in alignment with Ministry, districts, and school plans. In addition, technology needs to be implemented and maintained with best practices in mind.

2.1 About This Plan

The primary purpose of this document is to develop, and continually refine long-term recommendations to ensure that technology in the district is directly connected to learning and assessment activities in classrooms, and to best practices for administrative technologies. Working from a *Technology Plan Framework*, the plan addresses numerous Ed-Tech related questions that build on the existing vision and goals for technology. IT related activities and projects specifically connect to the recommendations in this plan.

In addition to the above, the long-tern plan to focusses on specific Ed-Tech areas as follows:

Learning:	Includes curricular goals & activities, education software, access to technology, FOIPPA and safety.
Assessment:	Formative & summative assessment, assessment 'of' and 'for' learning, and analytics.
Teaching:	Transforming the classroom, building learning communities, capacity building, assist in informing teaching practice.
Productivity:	Opportunities for collaborating with other school jurisdictions; enabling personalized learning.

Research & Development:	Initiating and facilitating pilot projects, fostering innovation, communication of results, continuous elaboration of a district vision and tech plan.
Infrastructure:	Analysis and planning for current and future infrastructure including device management, network, on premise services, cloud services, and disaster recovery. Also ensuring best practices around infrastructure and security.
Administration	All business-oriented technologies related to administration of the District.

This plan is broken into seven parts including sections on Learning, Assessment, Teaching Practice, Innovation (Research & Development), Infrastructure, Administrative Technology, and Leadership. As mentioned, it is critical that this technology plan reflect a District consensus on how to ensure that our technology services line up with curricular goals, and with activities in our schools and classrooms. The following are some overarching goals of this technology plan:

1. To formally assess how technology services in School District 22 link to current and future curricular goals and activities. From a technology standpoint, we need to determine where we are now and consider where we want to be in the future.

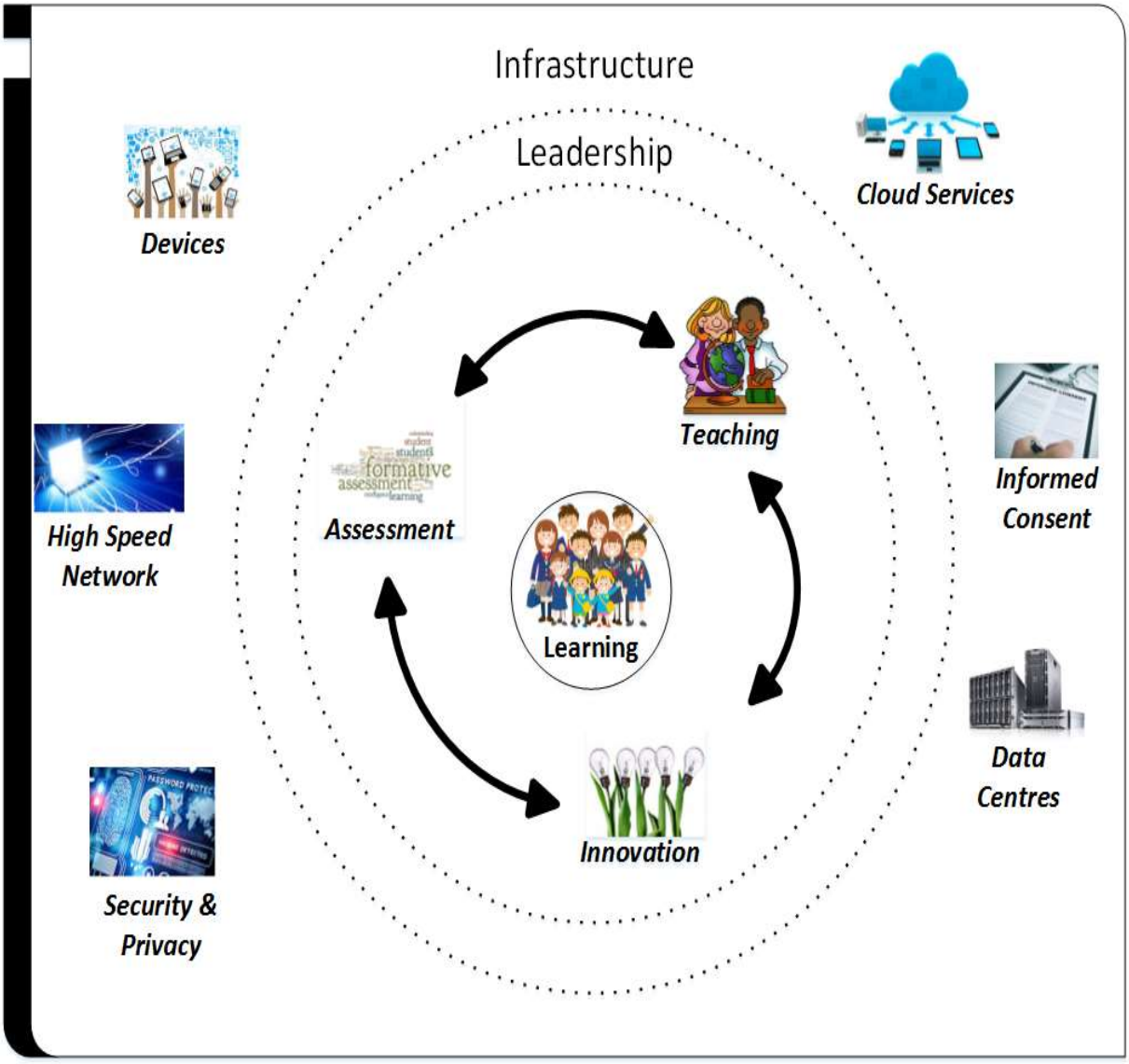
2. To ensure that the technology infrastructure has the capacity to support curricular goals, now and in the future. Also, to ensure that technologies are implemented with industry best practices in mind.

3. To ensure that technology supports the business needs of the organization. To assess current administrative technologies to ensure that they are cost effective, of a high quality, and meet the needs of the district.

4. To look at ways to improve productivity through technology, by challenging and revising learning and business processes. To ensure that educators in the district are fully supported and have professional development opportunities that will facilitate our building the classroom of the future.

5. To look at ways to improve cost effectiveness and quality of services by working with other districts and developing shared services.

Figure 'A' below depicts the relationships between the key elements of technology plan that is educational focussed and agile. Time for something new here


Infrastructure
Leadership
Devices
Cloud Services
Teaching
Informed Consent
High Speed Network
Assessment
Learning
Data Centres
Innovation
Security & Privacy

Ed-Tech Planning

Over the past several years, each school has developed their own technology plan. This process has substantially broadened educator stakeholder involvement and has ensured that plans are unique and relevant for each school. In completing these plans, over 240 educators have been engaged in the tech planning process. The key to this process is that the school-based tech plans largely inform the districts investment in core infrastructure including devices, servers, and wireless networks.

The following summarizes the desired outcomes for school-based Ed-Tech planning:

1. Ensure that Ed-Tech plans and investments are connected to school based curricular plans and goals,
2. To ensure that Educational Technology is connected to the Districts' Strategic plan.
3. To ensure that Educational Technology is connected to the Districts' Tech plan.
4. Ensure that that there is broad based, on-going educator involvement with Ed-Tech planning,
5. Ensure that culture, strengths, weakness, and opportunities are addressed within the plan for each individual school.
6. Raise the capacity of Educators in terms of understanding how Technology can be leveraged for student learning.
7. Ensure that there are appropriate school and district resources in place to realize the goals described above.
8. Ensure that school-based Ed-Tech planning process is on-going and iterative.

3.0 - Learning

Outside of school, most students have ready online access to information and resources. They participate in social networks, collaborate with people from all around the world, share ideas, and learn new things. Students are free to pursue their own interests and passions in their own way and at their own pace. The challenge for education is to mirror this to create engaging, relevant, and personalized learning.

Over the past 7 years, the district has made on-going improvements and upgrades to technology with the goal of student learning at the centre. A full report on technology activities can be found in ***IT Activities and Projects: 2021/22***. The report also shows how these activities specifically related to the District Tech Plan.

Access to Technology

Students and Teachers will require increased levels of access to technology, and to on-line and on-premises resources. There are numerous shifts in the classroom than can be expected in the short term, medium term, and long term. These shifts include the following:

i) Teachers will be encouraged to adopt technologies in their classrooms for content delivery, learner support, and learner assessment.
ii) Teachers will be encouraged to gain and develop the skills required to adopt the technologies described above.
iii) Teachers will be encouraged to collaborate with other teachers and professionals inside and outside their school and district.
iv) Students will be encouraged to use a variety of technologies to socialize, organize, and engage in learning activities both formally and informally. This will occur during and beyond the traditional school day.
v) As classrooms continue to evolve and shift, classroom pedagogies could include online learning strategies and increased collaboration in the classroom. Hybrid learning models could allow teachers to engage students in a variety of ways. 'Flipped classrooms' could facilitate group work and project-based activities during the day. Other learning activities such as reading, viewing educational videos, and consuming other content will occur outside normal classroom hours. This will effectively extend the learning day.
vi) 'Bring your own device' (BYOD) provides the potential for providing more access to online resources for students and teachers. Currently, all schools have been configured to utilize BYOD services.
vii) It is anticipated that traditional libraries will transform into a 'Learning Commons' for students and teachers. The idea of a learning commons is to create a shared space for information technology, remote /online education, tutoring, collaboration, content creation, meetings, reading, and study.
viii) In the past, the approach to computing device selection is best described as 'one size fits all'. This led to significant over purchasing of computing power. Currently, district-based

device purchases are based on the intended specific function. For example, students needing only access to the Internet require inexpensive light weight machines such as a Chromebook or Windows based mobile device. These devices provide value, and are cost are more cost effective than a traditional laptop.

ix) Both Google and Microsoft provide excellent collaboration, application, and file drive space for education.
    a. Google for Education is a core suite of productivity applications that Google offers to schools and educational institutions. These communication and collaboration apps include Gmail, Calendar, Drive, Docs and Sites, and a Google account unlocks access to dozens of other collaborative tools. All these applications exist completely online (or in the cloud), meaning that all creations can be accessed from any device with an Internet connection.
    b. Office 365 for Education is a collection of services that allows students and teachers to collaborate and share files. It is available under our current eDesktop licensing contract from Microsoft. The service includes online versions of Word, PowerPoint, Excel, and OneNote, and 1TB of storage in OneDrive. It also provides access to hundreds of on-line educational applications.

Improved Communication between Home and School

A technology enabled school and classroom will provide considerable opportunities for improving communications between home and school. The trends in this area include the following:

i) There is a clear shift in education from reporting at a moment in time (snapshot) to reporting ongoing learning. There are several evidence-based reporting tools currently being utilized in the school district to assist teachers with communicating learning to students and parents.
ii) Numerous other informal communications can be facilitated though discussion forums, hangouts, and the MyEd BC family portal.

Protection of On-Line Privacy

Digital Citizenship is the body of knowledge related to safe online behavior and includes security, privacy, personal information, use of photographs, digital property rights and protection from viruses and malware. Digital Citizenship is a way to prepare students for a society full of technology. Digital citizenship represents the norms of appropriate and responsible technology use.

Bridging the Digital Divide

Not all students have the same access to technology. Social, economic, and other barriers give rise to disparities between different groups and create a ‘digital divide’. The district needs to continue to

be aware of this and to develop strategies to ensure that all students have equal access to the technologies that are facilitating learning in the classroom and at home.

3.1 Recommendations for Action: Learning

Overall, the mission of the Vernon School District is ***to inspire and develop lifelong learners who can communicate, think creatively, problem-solve, collaborate, and understand their personal and social responsibilities.*** The recommendations in the plan reflect this and are consistent with the district's vision and goals.

1. **It is recommended that the district continue to facilitate increased and equitable access to digital resources for teachers and students.**

   There is a proliferation of Internet and Cloud based resources and services that are relevant for K-12 education. These include web-based applications, digital resources, open-source resources, services such as Google for Education and Office 365.

2. **It is recommended that the district continue to fine tune computer acquisition choices to ensure devices are function specific and that the best possible value is received from these purchases.**

   Computing device acquisitions need to be educationally effective, function specific, affordable (sustainable), and manageable.

3. **It is recommended that the district set standards and develop approaches for teaching Digital Citizenship skills for students.**

   It is critical that teachers understand privacy, security, and safety concerns and to impart this to students through digital citizenship education.

4.0 - Assessment

Assessment plays an important role in student achievement. Assessment is the process of gathering evidence of what a student knows, understands, and can do. It can also help to identify students' learning needs. To makes these assessments, teachers must rely on numerous inputs including their insights, knowledge about learning, and experience with students, and prescribed learning outcomes.

There has been much discussion in recent years regarding the use and effectiveness of different types and approaches to student assessment. It can be expected that technology will play an important role in supporting current and future types of student assessment. Current research (see

Bibliography) in this area includes the following observations:

1. *Districts and schools need new and better ways to measure what matters; diagnose strengths and weaknesses of students; involve multiple stakeholders in the process of designing, conducting, and using assessments.*

2. *Student-learning data can be collected and used to inform teaching practice, continually improve learning outcomes and productivity. For example, learning data could be used to create a system of interconnected feedback for students, educators, parents, school leaders, and district administrators.*

Technology and Assessment

While the focus on student assessment is not new, the instructional technology tools to help implement meaningful assessment and feedback are. Modern technology offers educators a variety of new tools that can be used in the classroom. Technology can help teachers track and assess their students' progress, as well as their own. Technology can also be used to facilitate communication between students, teachers, and parents and to create digital records of student growth and development that can easily be passed along from grade to grade.

Other ideas, observations and shifts that have come through discussion with educators in our District, and other research, can be summarized as follows:

i) Assessments delivered using technology can provide a complete and more comprehensive picture of student needs, interests, and abilities as compared to traditional assessments. This allows educators an opportunity to personalize learning.

ii) Student dashboards can be developed and implemented to provide the real-time feedback described above and allow teachers to take more immediate action.

iii) Technology has the potential to move assessment from disjointed separate measures of student progress to an integrated system of assessments and personalized instruction to meet the needs of the learner. Technology can help to integrate student classroom experiences, homework assignments, and formative and summative assessments.

iv) There is clear evidence that centralizing student assessment information from disparate sources including external tests, internal standardized assessments, student information systems and learning management systems will provide a much deeper look into student learning. Currently, the school district is mapping out the details on how to centralize and display this information to discover patterns and learning preferences and to store this over time. Next year, the district will implement EdPlan Insight which will provide functionality to meet these needs.

4.1 Recommendations for Action: Assessment

The recommended overall goal is to develop assessment technologies and analytic systems that will leverage the power of technology to measure what matters and use assessment data to improve learning. The following are specific recommendations in this area.

1. **It is recommended that the district continue the implementation of a model for assessment practices that includes ongoing gathering and sharing of data for continuous improvement of learning and teaching.**

   This will require the design and implementation of processes for the integration of data from disparate sources. This also implies that we continue with practices and events that increase the capacity of teachers, and other education personnel, to understand and design assessment strategies.

2. **It is recommended that through research, thoughtful inquiry, and collaboration inside and outside the district, the district design and develops student analytics and learning dashboards**

   The district currently has the technologies to store, manipulate and analyze student data. Our server infrastructure and web technologies will allow for reliable storage and access to this information year over year. Web technologies currently implemented will allow for analysis and display of relevant student analytics. The biggest challenge facing the district is to develop appropriate business processes for collecting and inputting data, and for formulating relevant questions to inform teaching practices.

5.0 - Teaching Practice

Over the past 25 years, the world has changed faster and with more complexity than ever before. Some of the most significant advancements include ubiquitous access to the internet, the proliferation of cloud-based platforms, and the explosion of applications that run on mobile devices. We need to find ways to continually evolve K-12 teaching approaches that are in sync with these on-going technological changes.

<u>Building Teacher Capacity</u>

Technology offers the opportunity for teachers to become more collaborative and extend learning beyond the classroom. Educators can create learning communities composed of students, fellow educators in schools, outside experts, and a myriad of external educational resources. Technology

can be implemented to access after-school programs, experts from around the world in all disciplines, and members of community organizations.

The availability of technology-based learning tools gives educators a chance to be co-learners alongside their students and peers. Educators cannot be expected to know everything in their disciplines. On the other hand, they can be expected to know and model how to leverage available tools to engage content and access other learning resources.

To realize this vision, the district will need to support teachers in accessing needed technologies and in learning how to use it effectively. They will also need continuous, just-in-time support that includes professional development, mentors, and informal collaborations.

Model for Connected Teacher

Educators can collaborate far beyond the walls of their schools. Through technology, educators are no longer restricted to collaborating only with other educators in their schools. They now can connect with other educators and experts across their communities or around the world to expand their perspectives and create opportunities for student learning. They can connect with community organizations specializing in real-world concerns to design learning experiences that allow students to explore local needs and priorities. All these elements make classroom learning more relevant and authentic.

Other ideas, observations and shift that have come through discussion in our District, and other research, can be summarized as follows:

i) *Developing the capacity of educators needs to be compelling for teachers. Essentially, this means that educators need to see the endeavour is useful. Teachers need to be attracted to the approach as opposed to the approached being promoted.*

ii) *Raising the capacity of teachers will require awareness that some teachers still have considerable fear and misunderstanding of the nature and role of technology in education.*

Digital Transformation and COVID-19

The world is deeply involved with Digital Transformation, and this is especially true in the Education Sector. While School District 22 has made significant progress in this area, we still have tasks to do to keep us moving forward. Perhaps the best way to describe our current status is that we are very well equipped now with Technology but only *partially adopted and partially understood* (***Gura 2018***).

The outbreak of COVID-19 presented the district with numerous educational challenges which included the need for rapid adoption of digital tools and technologies. The district has rose to the challenge very well. The silver lining with our present situation is that we have been forced to adopt digital platforms such as Office 365 and G-Suite, digital resources, and collaboration tools.

In 2022-23 the district will continue its digital transformation journey armed with the positive outcomes from the COVID crisis and allow us to continue our focus on elevating the *adoption* and *understanding* of digital tools.

5.1 Recommendations for Action: Teaching Practice

The recommended overall goal is to ensure that educators will be supported, and professionally developed in a way that will allow them to leverage technology to connect to people, data, content, expertise, learning experiences and other resources. With this support, it is expected that teachers will be empowered to provide more effective teaching for all learners. The following are specific recommendations for this area.

1. **It is recommended that the district develop strategies for utilizing in-service and professional development to increase the technology capacity of educators.**

   The purpose of professional development is to raise the capacity of teachers to improve their overall ability to use technology inside and outside the classroom. In turn, this will enable them to create compelling educational activities that improve learning and teaching, assessment, and instructional practices.

2. **It is recommended that the district develop a common set of technology competency expectations for educators.**

   Like all school districts, there is a considerable difference in the Ed-Tech skills that teachers bring to the classroom. These differences relate to different formal education backgrounds, different philosophies, and different levels of experience with technology. While levelling the technology competencies is a long-term task, articulating expectations now can help teachers better understand where gaps and exist and how to set about closing these gaps. Common technology competencies can also be used to communicate and provide input into post-secondary institutions where teachers are educated.

3. ***It is* recommended *that the district undertake a survey where teachers' and administrators' current technology skills are to identify where gaps exist.***

   This process will assist in determining what types of professional development activities are needed for teachers to better utilize technology for instructional practices and assessment. This will inform the district for developing strategies to create professional development activities.

4. **It is recommended that the district continue to collaborate with other Districts in the region to engage in activities and events that elevate our capacity to leverage technology for learning.**

   Professional development is an inherently difficult and expensive proposition. Many high-quality conferences are in the USA and this severely limits the number of teachers that can be exposed to this type of development. At the same time, with changing education approaches, changes in assessment and ongoing changes to technology, there is a very high demand for quality professional learning opportunities. This is an issue for all Districts in Canada.

6.0 Innovation (R & D)

While Canada's education systems are among the best in the world, there is still a need to engage in practical research and to develop innovative ways to do better. There are significant and widespread changes going on in BC Education including a clear shift towards developing personalized learning approaches; a comprehensive vision for the future of education in BC as articulated in the BC Ed plan; a provincial curriculum that provides teachers with the flexibility they need to personalize their students' learning experiences; and changes to approaches to student assessment.

Much of the changes that are occurring within the BC education system have been articulated at a high level and without specific approaches for changing instructional practices. There is no instruction manual on how to move personalized learning from concept to everyday practice. As a result, districts, schools, and educators will need to innovate to move personalized learning from concept to the classroom.

In School District 22, we are currently sponsoring numerous innovative projects that relate to shifting instructional approaches, and to assessment. As the district progresses in this area, it will need to continue to develop a culture of innovation and allow educators opportunities to explore new ways to deliver education.

6.1 Recommendations for Action: Innovation

The overall recommended goal is to continue to develop a healthy culture of innovation in the school district, to continuously analyse the success of these projects, and to adopt practices emanating from these projects where appropriate. Specific recommendations for actions include the following:

1. **It is recommended that the district continue to initiate, facilitate, and incubate practical research and pilot projects.**

   The district is well on its way for developing a healthy innovative culture that encourages exploration, development and learning of new and innovative ways to deliver education, and to assess learning. This culture will also help to develop and operationalize formative assessments, and approaches to embed assessments into everyday classroom activities. The work of the ***Technology Innovation Coordinators*** has been extremely successful for supporting Teachers and for initiating and facilitating innovative practices throughout the district.

2. **It is recommended that the district develop approaches to measure the effectiveness of pilot projects, to ensure that lessons learned are communicated across the district, and to promote active dialogue regarding innovative practices around the district.**

   Measuring the effectiveness of a pilot project is largely uncharted territory, especially considering that it is difficult to come up with objective measures. Notwithstanding this, approaches through discussion, collaboration, and qualitative analysis will need to be developed to determine the long-term viability of learning approaches and assessment that are being trialed in pilot projects. Currently there is a registration process in place that requires the sponsor of the pilot to develop metrics for determining the effectiveness of the project.

7.0 - Technology Infrastructure

IT infrastructure refers to the composite of hardware, software, network resources and services required for the existence, operation, and management of an enterprise IT environment. It allows an organization to deliver IT solutions and services to its employees and students.

IT infrastructure consists of all components that together play a role in overall IT service delivery. In addition to hardware and software, infrastructure also includes the people and processes that deliver IT services. Preparing students to be successful for the future requires a robust and flexible learning infrastructure capable of supporting new types of engagement and providing ubiquitous access to the technology tools that allow students to create, design, and explore. The essential components of an infrastructure capable of supporting transformational learning experiences include the following:

Ubiquitous Connectivity: To prepare for the future, all schools and classrooms require persistent access to high-speed Internet in schools. During the District's refresh project all physical cable runs

were brought up to Category 6e standard. In addition, the district's switches and wireless infrastructure were updated and will meet current and medium-term needs.

Function Specific Devices: Students, Teachers and other district staff require access to devices that connect them to applications, files, and to the vast educational online resources and applications.

There is a broad range of computing requirements throughout the district. In general, there are some groups who have very 'light' computing requirements, some who have 'average' requirements and of course those that are high end users and require considerable computing power.

Bring Your Own Device (BYOD): There has been much talk over the years about the possibility of students using their own devices in the classroom. BYOD access has been enabled throughout the district. Each school is developing their own approach to BYOD through their school-based Ed-Tech plan.

On Premise vs Cloud Services: Historically the district applications and or services reside on desktops or on servers in one of the district's data centres. Over the past several years, a significant number of IT services in the district have been migrated to the cloud to take advantage of better services, lower maintenance, and lower costs.

The Classroom of the Future

Classrooms continue to evolve in concert with changes in instructional practices, assessment, teacher knowledge, and technology. In most recent history classrooms have been equipped with Wi-Fi, Smart Boards, computing devices, LCD projectors and other learning devices. The district has looked at the profile for the design and structure of the classroom of the future to match up with changes to learning and assessment.

Risk Management

IT risk is the organizational risk related to the use, ownership, and operation of Information Technology in the District. These risks specifically relate to events that could potentially impact the technology services that could in turn impact delivery of education. Examples of risk such as viruses, malware, and natural disasters. There are also compliance type risks such as FOIPPA, informed consent, and best practice standards.

The analysis of all IT risks in the district, and planned responses to risk events should consider the following principles:

1. Risk analysis and responses need to be done within the context of the district's strategic plan and educational goals.
2. Risk analysis and proposed responses need to consider the overall costs and benefits of the response.
3. All risks and planned responses need to be communicated across the district.

4. Risks and planned responses need to be continuously analysed and elaborated, as necessary.
5. The district needs to adopt appropriate policies & standards to help avoid and/or mitigate risk events.
6. Risk management also needs to ensure the safeguarding of company assets.

7.1 Recommendations for Action: Infrastructure

Overall, students, educators, administrative staff, and board staff will have access to a robust and comprehensive infrastructure when and where they need it for learning and other business and administrative tasks.

Specific recommendations are as follows:

1. **It is recommended that the district perform updates to their infrastructure on an ongoing basis in sync with Ed-Tech and administrative requirements throughout the district.**

   Doing a little bit each year is more sustainable and affordable in terms of the overall investment in Information Technology. It also provides the district considerably more flexibility and agility to adopt and leverage new technologies as they occur for the betterment of facilitating education.

2. **It is recommended that the district continue to use processes that ensure infrastructure technologies provide value and are implemented and maintained using best practices.**

   Technology infrastructure is extremely expensive to acquire and to implement. Due to these factors, it is very easy to get locked into specific technology decisions because of the significant barriers to implementing new applications and services. Notwithstanding this, it is a key success factor that technology be rooted in education and to be of high value. Therefore, the District should be always on the lookout for finding better, less expensive alternatives to serve education better.

   Investment in devices should focus on purchasing 'just enough' computing power for the specific function that the device is intended to be used for, be educationally relevant, sustainable, and manageable.

3. **It is recommended that the district continue to develop and update an IT Risk Management plan that is in line with provincial guidelines and best practices.**

   It is recommended that a comprehensive approach be adopted for the analysis and response to potential IT risk events. Specifically, it is recommended the district adopt a recognized 'best practice' framework that is in line with the Provincial OCIO Defensible Security recommendations.

8.0 - Administrative Technology

There are many technology services in the district that are primarily administrative in nature. While they support education activities in schools and classrooms, they are not directly linked to learning and/or assessment. Examples of Administrative technology include accounting systems, student information systems, device management applications, infrastructure technologies, IT support functions, and day-to-day business processes. Many administrative technologies are expensive to implement and support year over year. In many cases this is unavoidable. At the same time, they should be continually challenged, and consideration needs to be given to ways that we can do things better, and more cost effectively. Administrative technologies need to provide value and be rooted

8.1 Recommendations for Action: Administrative Technology

1. **It is recommended that the district follow a value driven and best practice processes for decision-making and implementing administrative technologies.**

   The process should be rooted in a proper business case approach that identifies the specific functional requirements first, selects vendors to do presentations based on their specific ability to meet the requirements, and then perform an analysis that weighs both qualitative and quantitative factors. To the extent possible, all relevant stakeholders should be included in the process and have significant input into the final decision.

2. **It is recommended that the district develop strategies for utilizing professional development to increase the technology capacity of administrative staff.**

   The purpose of professional development is to raise the capacity of employees to improve their overall ability to use technology in a productive way.

9.0 – IT Organizational Structure

IT leadership in School District 22, and in most other school districts, is a business-oriented function to ensure that there is alignment between IT and the mission and goals of the district. This is a crucial role that requires a deep understanding of technology, leadership, and project management within an educational organization. The IT organizational structure in SD 22 is consistent with this description.

The following chart depicts the IT structure in SD22:

Education needs to be at the centre of all technology initiatives. In fact, there should not be any ***Technology Initiatives*** per se, only ***Education Initiatives***. Every dollar that is spent with respect to technology should be demonstrably linked to education or to an education initiative. The only way to achieve this is to develop an intensive partnership and collaboration between Education and Information Technology activities in the district. The formal and informal organizational structure describe above ensures that this intense collaboration occurs in the district.

In addition to the above, there are several ways to ensure that both Education and Information technology work closely and effectively together. These can be summarized as follows:

i. *Develop broad education stakeholder collaboration with respect to technology planning to ensure that all technology is rooted in educational thinking and practice. Work with stakeholders at each school to ensure that there is appropriate collaboration and allowance for different needs and cultures.*
ii. *Ensure that Information Technology leadership occurs at the senior level in the district to guarantee that there is a continuous and shared vision for technology, and that all technologies are aligned with Ministry, school and district plans, and best practices.*

Just as specific technologies have rapidly changed over the past 25 years, so has the need for IT Leadership. Traditionally, IT has been managed by senior technical staff, teachers, principals, or by the business function in the district. With the current challenges, changes and complexities facing districts today, none of these approaches provides all the necessary skills and experience demanded of this position. IT departments require business level leadership to provide the appropriate balance and depth in the areas of leadership, technical savvy, and relevant experience to connect IT services to education.

In addition to getting things done in a cost-effective manner, the purpose of this role is to provide vision, leadership skills, team building and collaboration abilities, communication skills, and project management expertise. Above all, an IT leader needs the ability to understand and align technology initiatives with the districts and regions' education goals and initiatives.

Effective leadership is an essential component of Educational Technology, administrative technology and for managing district infrastructure. The following are some benefits to having on-going senior leadership for the technology function in the district:

i. *To ensure that all existing technologies (administrative and educational) are managed and maintained daily.*
ii. *To ensure that projects are managed using recognized traditional and Agile methodologies.*
iii. *To ensure that technologies are refreshed and budgeted for on an annual basis.*
iv. *To ensure that district staff technology needs & issues are completed on a timely basis.*
v. *To ensure that tech staff are properly trained and professionally developed for current and future technologies.*
vi. *To ensure that technology projects are managed in an efficient, effective, and cost-effective way.*
vii. *To ensure that there are tested plans for disaster recovery and business continuity.*
viii. *To ensure that all technologies relate to education and education initiatives. Specifically, to implement the facilitating technologies related to school's strategic education plans.*
ix. *To provide strong technical leadership throughout the district.*
x. *To ensure that there is a continuous vision for technology and education for the future.*
xi. *Raise the overall service maturity level of participating districts in response to internal and external expectations for security and privacy. This could be achieved through alignment with industry published industry standards including ITIL, ISTM and ISO 20000.*

xii. *To provide a structured approach to initiating and managing IT projects that addresses change, implementation, and operation.*
xiii. *Preparing and managing annual budgets for sustaining the IT function.*
xiv. *Develop relationships with external vendors and service providers to ensure high quality and cost-effective outsourced solutions (where required).*
xv. *To build effective relationships throughout the district and education communities to remain current with educational initiatives in other jurisdictions, to remain current with all relevant technologies, and to ensure that the district can leverage all the above to their advantage.*

Collaboration with Other Education Jurisdictions

School districts are faced with ongoing challenges related to the overall leadership, investment, implementation, and management of Information Technology. These challenges are particularly true for small and medium sized districts. Technology has become extremely diverse and is increasingly relied upon by stakeholders throughout the organization. At the same time, technology has become more complex, specialized, and is ever changing. This leaves districts with insufficient resources to deal with these realities including budget shortfalls; service gaps; knowledge gaps for education, admin, and technical staff; and insufficient resources to raise the overall tech capacity of the district.

For the above reasons, it makes sense for districts to develop and pursue shared services by collaborating with other Districts. The following are some compelling reasons for this:

i. *For many districts, there is insufficient knowledge or experience at the senior staff level to make fully informed decisions regarding the choice and 'flavour' of technologies. External vendors are often relied upon to fill the gap in this area, which is helpful, but not always in the best interests of districts/schools/students. This often results in one or more issues:*
    a) *Over investment in technology; this includes investment in the wrong technology, and / or too much investment in specific areas.*
    b) *Under investment in technology; this includes not enough infrastructure to handle the load and demands of the district and / or gaps and bottlenecks in areas that are critical to education.*
    c) *Undue reliance on outside vendors to perform a specific IT service.*
    d) *Not enough reliance on outside vendors where the nature of the technology and implementation make outsourcing a logical option.*
ii. *A significant proportion of IT work is involved with the initiation of new technologies and with managing the change that accompanies these implementations. Leadership and management of these tasks have evolved into a specific specialty known as 'Project Management'. The benefit of professional project management lies with organizing,*

planning, and controlling tasks including the management of budget, timelines, risk, quality, and change.

iii. *Our understanding of how children learn has led to new ideas on how to evolve our classrooms, and to personalize learning. Technology has a significant role to play in these changes; it is both the medium AND the message. IT departments need to keep up with changes to pedagogy to help facilitate the delivery of education. They also need to provide technology mentorship to educators so that they can reflect its rapidly changing nature in the classroom. It is critical that IT departments be in alignment with these educational changes.*

9.1 Recommendations for Action: Leadership

The overall recommended goal is to ensure that there is effective and strategic leadership of the IT function and to ensure that education is technology-enabled throughout the district.

1. **It is recommended that the district continue with providing strategic and technical leadership in the IT area into the foreseeable future to ensure there is effective and strategic leadership.**

   The leadership function should be tasked with day-to-day leadership of the IT department, managing infrastructure and Ed-Tech projects, facilitating communication and collaboration amongst internal and external stakeholders for all technology initiatives, and establishing relationships inside and outside, and ensure that technology investments provide strategic value. It is also critical that technology investments be sustainable, secure, robust, and cost effective.

2. **It is recommended that the district continue to investigate opportunities for shared service opportunities.**

   The district is currently participating in the province wide initiative - the *Technology Leadership Advisory Committee*. In addition, the district will continue to pursue opportunities directly with other districts, particularly in shared leadership.

3. **It is recommended that the district work with appropriate stakeholders to develop school-based Ed-Tech plans to ensure that technology initiatives are directly connected to education.**
4. **It is recommended that the district develop and monitor specific Ed-Tech goals and related metrics that will provide insight and guidance into the effectiveness of technology investments and implementations, in alignment with district strategic plans.**

10.0 – Required Resources

Department Budget

The technology department is funded through the operating budget to support staffing costs and service and supply costs including software licensing, NGN network charges, and travel and training.

Technology / Infrastructure

The district currently annually transfers $845,000 from operating to local capital to support the capital costs of refreshing of computing devices and back-end technologies. These transfers provide sufficient funds to maintain and improve our district technology and infrastructure needs expected over the next five years.

10.1 Recommendations for Action: Required Resources

1. **It is recommended that the technology department continue to be provided with an operating budget to support the ongoing operating costs and that the annual transfer of $845,000 from operating to local capital continue for the technology and infrastructure capital costs.**

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