Promoting ICT- supported Learning: Lessons from the BCT Network

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This eBooklet shares the lessons learned on six themes that proved to be important to the promotion of ICT-supported learning based on the experiences of teachers, administrators, consultants and university colleagues involved in the BCT Network over the past five years. The six themes are: shared vision, professional learning, leadership support, community of practice, IT support and ICT infrastructure and tools. URL links to examples of student and teacher projects, as well as, related resources are provided.

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Foreword

The "Building Community through Telecollaboration: The BCT Network" experiment has existed for five years now. It is conducted by CEFRIO and LEARN, its partner, and financed by the Ministère de l'Éducation, du Loisir et du Sport. It initially brought together primary schools from English school boards over the first three years to then concentrate on two of them since September 2010.

Fundamentally, the goal of the project was to develop teachers' skills to collaborate on using and learning about ICTs to in turn improve those same 21st century skills in their students, who them-selves need to learn to network.

In one step, both teachers' and students' embarked on the same journey.

It was thanks to this journey and the lessons learned that this e-booklet came to be. It acts as a record of this project, a project that has not always been smooth sailing. Its success depended on a team. This team, made up of lead teachers who are passionate about their work and driven by the desire to learn and experiment with new things, was at the heart of this project's success, and we sincerely thank them for that.

The supportive gardener: Dr. A.E. Ted Wall

This great achievement would not have been possible without the willingness, determination, sensibility and perceptiveness of an educator at heart. He is both the coach and the mentor of these dedicated teachers who participated in this project, notably the lead teachers whom he was able to inspire with his wisdom, who were confident that they needed to revisit their professional practices by basing themselves off exemplary practices of their own. By respecting trial and error, he was able to instil confidence in their educational endeavour.

The original perspective of a researcher: Dr. Alain Breuleux

Our research partner is also unique in that he does not put himself at the front of the stage. He knows how to transfer his knowledge and to first and foremost reap the benefits by applying his observation and listening skills. By constantly being very attentive to signs of innovation and of the renewed educational endeavour that are part of this practice, he was able to respect the leadership given to lead teachers. He merely intervened occasionally to reposition the debate to its basic bearings.

Thank you both for, with time, allowing this educational community to be built through collaboration (Building Community through Telecollaboration).

Now the challenge falls upon school boards to make this experiment durable so that it becomes common practice in their schools and so that it may spread elsewhere.

Vincent Tanguay
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Introduction

Hilary Clinton once quoted, an African proverb, that "it takes a village to raise a child". At the time, the statement in her insightful book, It Takes a Village: And Other Lessons Children Teach Us (1996), attracted attention and generated considerable discussion. However, in relation to education in the 21st century, we are coming to realize that student learning may actually take a host of villages, that is, an inter-connected "global village", to optimally educate our children. As Marshall McLuhan warned in his classic but often misunderstood book, Understanding Media: The Extensions of Man (1964), the "global village" consisting of television, and mass media devices has now dramatically transformed and augmented itself to include the Internet, email, cell phones, Smart Boards, iPads, YouTube videos, and a host of other social media and Web 2.0 vehicles that provide many potential benefits while posing some serious challenges to the education of our children.

Over the course of the last five years, teachers, consultants, educational leaders and university colleagues have collaboratively contributed to the development of the Building Community through Telecollaboration Network (BCT Network), which addressed a variety of questions related to the wise use of ICT-supported learning.

This eBooklet shares the challenges, learning experiences and products generated during that journey and some of the lessons that were learned on it.

Brief History of the BCT Network

Year One (2007-2008): 23 teachers in 11 schools; participating school boards: Central Quebec, Eastern Shores, Eastern Townships, English Montreal, New Frontiers, Lester B. Pearson, Riverside, Sir Wilfrid Laurier, and Western Quebec.

Year Two (2008-2009): 27 teachers in 10 schools ; participating school boards: Central Quebec, Eastern Shores, Eastern Townships, English Montreal, Lester B. Pearson, Riverside, Sir Wilfrid Laurier, and Western Quebec.

Year Three (2009-2010): 45 teachers in 14 schools; participating school boards: Central Quebec, Eastern Shores, Eastern Townships, English Montreal, Lester B. Pearson, Riverside, Sir Wilfrid Laurier, and Western Quebec.

- Introduction of classroom teachers as Cycle Leaders.

Year Four (2010-2011): 50 teachers in 18 schools; participating school boards: Central Quebec, Eastern Shores, Eastern Townships, English Montreal, Lester B. Pearson, Riverside, Sir Wilfrid Laurier, and Western Quebec.

Year Five (2011-2012): 53 teachers in 12 schools; participating school boards: Riverside and Sir Wilfrid Laurier.

- Focused implementation in two school boards to enhance role of school board personnel and increase the number of schools within each school board.

Digital Literacy and the Role of Educators

Our experience in the BCT Network is that teachers, educational leaders, and parents need to be aware of the benefits and challenges of using information and communication technology (ICT), and, whenever possible, guide the use of these powerful tools to educate students as fully as possible. We have found that students enjoy learning with the support of ICT tools; however, they need to become digitally literate so they can participate in the "global village" in a safe and ethical manner.

In learning to use these powerful learning tools, they need the guidance and support of their teachers. Experienced BCT teachers have observed that their students are more fully engaged when they are using ICT tools effectively. However, the teachers emphasize that the learning activities in which their students are engaged should be congruent with the curriculum as described in the Quebec Education Program. Most importantly, BCT teachers recognize that when used appropriately, ICT tools allow students to access and critically evaluate information from a variety of sources and, in many cases, individually and collaboratively create multi-media products that they can share with authentic audiences. Thus, students can become active creators of media rather than solely consumers.

Lessons Learned from the BCT Network

Promoting ICT- supported learning: Lessons from the BCT Network is based on the lessons learned from teachers in a wide variety of elementary schools in Quebec. Students, BCT teachers, in-school and school board administrators, RECIT animators and university personnel, have contributed to the ideas and strategies shared in this eBooklet. The central, over-arching message emerging from the BCT Network is that the widespread integration of ICT-supported learning cannot take place unless there is a coordinated, collaborative, effort across schools and school boards. Based on our experience in the BCT Network, Figure 1 presents the six interacting factors that need to be addressed if ICT-supported learning is to be widely implemented.

Figure 1: Six Ways to Promote ICT-supported Learning

Those responsible for promoting the use of ICT-supported learning should attempt to provide the leadership and support required in each of the components presented in Figure

1. Considering the lessons learned in the BCT Network related to each of the six components that are shared in this eBooklet may be of some help in doing so.

Theme One: Shared Vision of the BCT Network

Over the course of the past five years, the following shared purpose and objectives have gained the support of teachers and educational administrators within the Building Community through Telecollaboration Network (BCT Network).

Purpose and Objectives of the BCT Network

Purpose of the BCT Network: The purpose of the BCT Network is to encourage, facilitate, and support collaboration among students, teachers and educational leaders to enhance ICT-supported learning across the community. ICT- supported learning refers to the use of information and communication technology (ICT) to facilitate learning in personal, classroom and network situations based on current pedagogical and learning strategies.
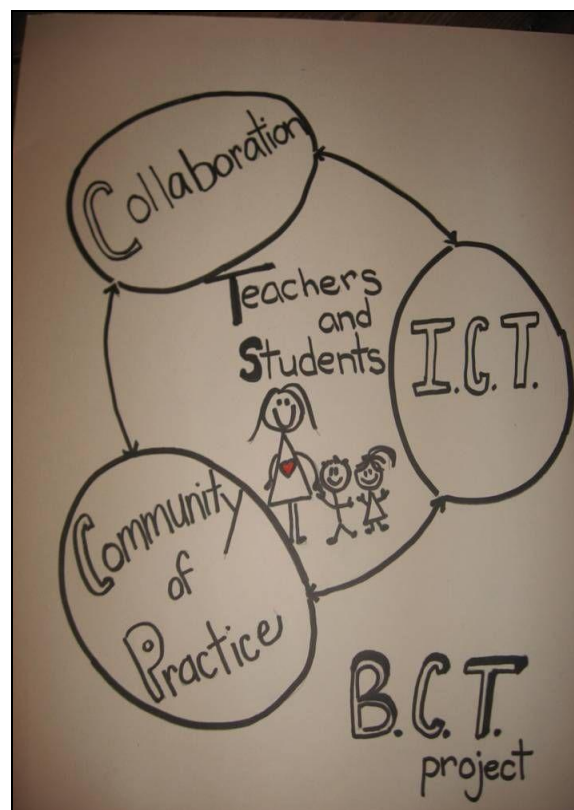
Figure 2: Themes of the BCT Network

Objectives of the BCT Network: Based on the above purpose and view of ICT-supported learning, the following objectives have been identified for the members of the BCT community of practice:

encourage the use of QEP-based, ICT-supported learning in classroom and online settings,

encourage the creation, implementation and evaluation of new activities, projects and practices based on ICT-supported learning principles,

facilitate the learning, use and evaluation of ICT-supported learning tools, and

provide professional learning opportunities within and across schools to share and reflect on ICT-supported teaching-learning activities supported by a community of practice.

Benefits of ICT-supported Student Learning: Based on our experiences in the BCT Network, we have seen that when implemented effectively ICT-supported learning allows students to:

- access and assess information and knowledge from a variety of sources,
- share in the creation of meaningful, knowledge-based, multi-media, projects,
- collaboratively shape such projects over distance and time,
- present their creations to authentic audiences, such as, parents and friends,
- become aware of the benefits and challenges of safely using ICT tools, and
- practice using ICT tools in ethical, sensible and learning-oriented ways.

Guiding Principles Related to Student Learning

BCT teachers and school administrators have taken into consideration a number of important factors regarding student learning within the BCT Network. Some of the most important ones are described below.

Student Learning Activities Based on the QEP Curriculum: Since its inception, teachers in the BCT Network have tried to ensure that student learning activities were congruent with the prescribed curriculum of the Quebec Education Program. ICT-supported learning activities are viewed as central to the ongoing development of the students and they are not viewed as add-ons to the curriculum. The appropriate use of ICT tools is an important consideration in the pedagogical decisions that teachers make about the teaching-learning process. These tools are there to enhance and motivate students in order to foster a better understanding of the QEP curriculum.

Pedagogy Comes First When Designing ICT-supported Learning Activities: BCT teachers recommend initially identifying appropriate student learning objectives and then considering the potential ICT tools that might be used. Careful consideration of the pros and cons of using the various ICT tools should include the degree to which technical resources and support for their use is available and the readiness of the teacher and students to use them. In other words, pedagogical decisions always precede and guide decisions regarding the use of ICT tools.

Twenty-first Century Skills and the QEP: Trilling and Fadel (2009) in their book entitled: *21st Century Skills – Learning for Life in our Times,* discuss the importance of students' learning and using twenty-first century skills, which they describe under the following major headings:

- reasoning effectively,

- using systems thinking,

- making judgments and decisions, and,

- solving problems.

Given the demands of our knowledge-based society, they stress that students need to be able to communicate clearly and collaborate effectively with each other. In addition, they emphasize the importance of students being able to evaluate the information that they access and apply technology effectively as they organize knowledge and create relevant media products. The student learning activities that are used in the BCT Network attempt to incorporate these skills and encourage the students to share their creative work beyond their own classrooms. An examination of the 21st Century skills that Trilling and Fadel (2009) describe in relation to the knowledge and skills included in the Quebec Education Program indicate that to a large extent the skills are very similar.

Emphasis on Collaborative Student Learning: As noted above, the ability to collaborate with others is a valuable 21st Century skill; hence, BCT teachers encourage and facilitate the development of collaborative learning projects by the students in their classes. Using group collaboration strategies can facilitate the construction of knowledge and the sharing of it. Students can collaboratively access and assess the resources that are available on the Internet, as they become aware of how to evaluate such information, they become wiser consumers of information. They also become better prepared to produce relevant information. Such collaborative discussions are at the heart of the constructivist approach to learning that is recommended by the Quebec Education Program. The thoughtful use of ICT tools can enable students to construct and share their work with other students, as well as with family members.

Guiding Principles Related to Student Use of ICT

Accessing and Assessing Knowledge on the Internet: One of the strengths of ICT-supported learning is the availability of an impressive array of online teaching and learning resources that are available on the Internet. However, one of the greatest challenges for students is to learn to analyze and evaluate the quality and value of such information. BCT teachers routinely encourage students to search for and use such information while learning to evaluate the appropriateness of using it in their creative work. Some of the Digital Literacy Guidelines that are used in the BCT Network can be viewed at the following site: http://www.learnquebec.ca/en/content/pedagogy/cil/InfoLit/

Student Products Shared with Authentic Audiences: As noted above, teachers in the BCT Network have found that one of the benefits of the use of ICT-supported learning is that students are motivated by their ability to readily share the products of their work with authentic audiences, including other students, friends, and family. Students in all three cycles at the elementary school level have created and shared products they have created with ICT tools ranging from PowerPoint presentations to Videos, Voice Threads and Wikis. For examples of Student Learning Products in the BCT Network see http://bctbooklet.wikispaces.com/3.+Student+Learning.

Using the Internet Ethically and Safely: Students in the BCT Network are provided clear guidelines regarding the ethical and safe use of the Internet and they are continually prompted to use appropriate digital etiquette in their communications. BCT teachers discuss with students the importance of digital etiquette and remind them to use the Internet safely. As students acquire a deeper understanding of "digital etiquette", they appreciate the positive aspects of the digital world while learning how to handle the dangers that it can pose. Information is also provided to parents about digital safety and the Parental Permission Form reminds parents of their responsibilities in this area. See information on Digital citizenship and Internet safety at http://cybersmartcurriculum.org/safetysecurity/lessons/.

Five Key Lessons about Student Learning

ICT-supported learning should be based on the Quebec Education Program.

When planning learning activities, pedagogical decisions precede the selection of ICT tools to support them.

Students should be taught to use ICT tools creatively, ethically and responsibly.

Student collaboration can enhance ICT-supported learning.

Sharing the products of learning with authentic audiences has multiple benefits.

Theme Two: Professional Learning in the BCT Network

Professional learning is of fundamental importance in the BCT Network. During the past five years, a number of guiding principles have emerged related to the facilitation of professional learning. Our experience has shown that the professional learning process requires personal commitment, administrative and collegial support, and time dedicated to the learning of how to use ICT tools and apply them effectively in the classroom. In fact, integrating ICT-supported learning into the classroom requires that teachers progress through several stages before they feel comfortable enough to routinely use ICT tools in their teaching. Moreover, before they are willing to share their experiences with colleagues about the use of such technology, they must develop a minimal degree of competence and confidence in using it with their students.

Guiding Principles Related to Professional Learning

Some of the most important guiding principles related to the facilitation of professional learning are described below.

Recognition by Teachers of the Value of ICT-supported Learning: Over the course of the last five years, teachers have come to believe that the wise use of ICT-supported learning can enhance student engagement and learning in their classrooms. Appreciating the value of ICT-supported learning for their students is a critical motivating influence. If teachers do not believe that a new practice, such as the use of ICT tools, will benefit their students, they will not take the time nor invest the effort to change their teaching practices.

Ongoing Professional Learning Perspective: The BCT Network is based on the development of a community of practice in which teachers get to know each other, work collaboratively together, and develop a sense of collegial trust. A key feature of the network is that teachers have an opportunity to try different ICT tools and strategies in hands-on professional learning sessions, and then try using them in their classrooms. During the face-to-face sessions, they are encouraged to share and revise their teaching practices based on the collegial feedback they receive. The combination of face-to-face meetings with ongoing in-school support from colleagues, RECIT animators, and BCT Lead Team members is one of the major reasons for the success of the BCT Network. The multi-year design of the BCT Network underscores the importance of taking a long-term professional learning perspective when trying to encourage the adoption of new teaching practices.

The Professional Learning Process

Over the past three years, discussions with and observations of BCT teachers resulted in the identification of four stages of professional learning in what has come to be called – The BCT Professional Learning Journey. During the course of each school year, BCT teachers indicate where they feel they currently are in that journey.

Stages in the BCT Professional Learning Journey: The following four overlapping stages have been identified in the BCT Professional Learning Journey that reflect the increasing pedagogical and technical-operational expertise that is acquired by the teachers:

- Stage 1: Personal use of ICT tools,

- Stage 2: Use of ICT tools to support teaching,

- Stage 3: Facilitation of student use of ICT tools, and,

- Stage 4: Use of ICT tools to reflect on and share teaching practices.

Given the range of expertise within the BCT community of practice, over the course of the year, a variety of differentiated hands-on learning opportunities are provided to ensure that the teachers are comfortable in learning how to use increasingly sophisticated ICT tools to facilitate more complex learning activities in their classrooms. In addition, teachers are encouraged to ask for and expect the support of their BCT colleagues. Beginning teachers are advised not to attempt to learn too many skills at one time. In fact, one of the mottos of the BCT Network is "remember to take baby steps"!

Figure 3 presents individual cut-out figures that represent the position of individual teachers on the BCT Learning Journey Map. Experience has shown that it takes several years for teachers to move through these stages. For the past several years, during the final face-to-face session, teachers are clearly pleased when they move their cut-out figure indicating the progress that they have made on the journey.
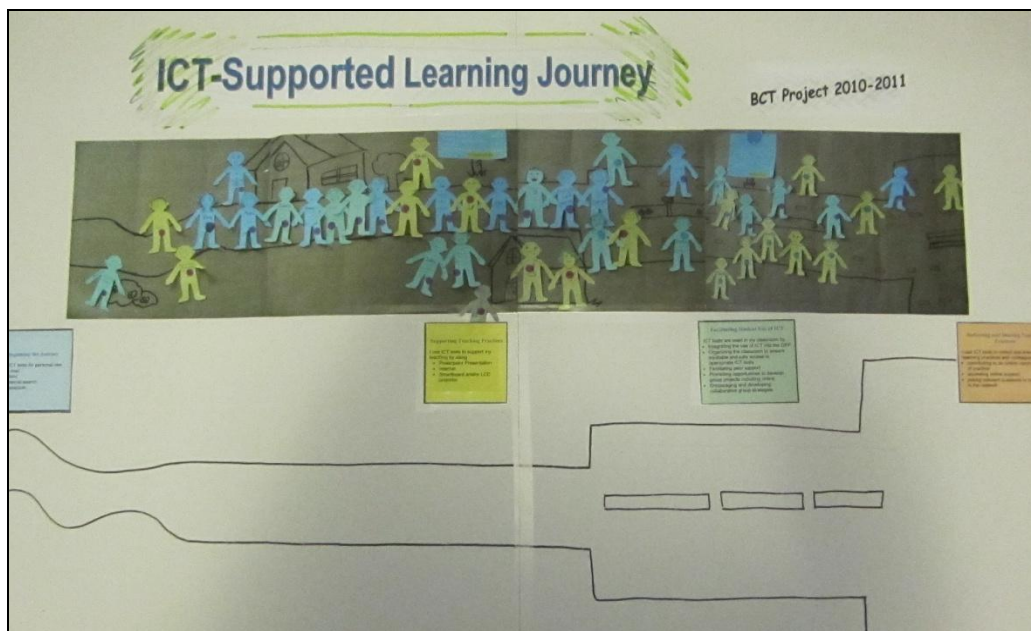
Figure 3: The BCT Professional Learning Journey Map

Progressive Professional Learning Experiences: Teachers in the BCT Network are encouraged to focus on learning one or two ICT tools at any one time. Thus, in a typical situation, a teacher may be introduced to a new ICT tool such as Voice Thread at a face-to-face meeting, contextualized in a classroom learning activity, and then begin to experiment with it on their own. Once they feel comfortable with using it they then can plan how to use it with their students. One of the major benefits of being a member of the BCT Network is that during this learning process they can access just-in-time help from colleagues in their school or online from members of the BCT Lead Team or other BCT teachers. Along with receiving some much needed encouragement along the way.

The Four A's to Mastery - Learning to Use ICT Tools: Over the course of the past few years, the following professional skill learning model has provided direction and support to those learning to use ICT tools in support of student learning. Our experience has shown that being aware of the following four stages can help facilitate the learning of ICT tools:

- Awareness of the need to develop new skills,
- Attempting to learn new skills,
- Acquiring new skills through deliberate practice,
- Adapting skills by using them in increasingly more difficult situations, and
- Mastering our skills so they routinely become part of our daily pedagogical practice.

As Figure 4 shows, performance on any professional skill usually increases with time and practice. However, it should be noted that the four stages leading to mastery overlap and there often are "dips" in performance as one acquires a given skill or set of skills.
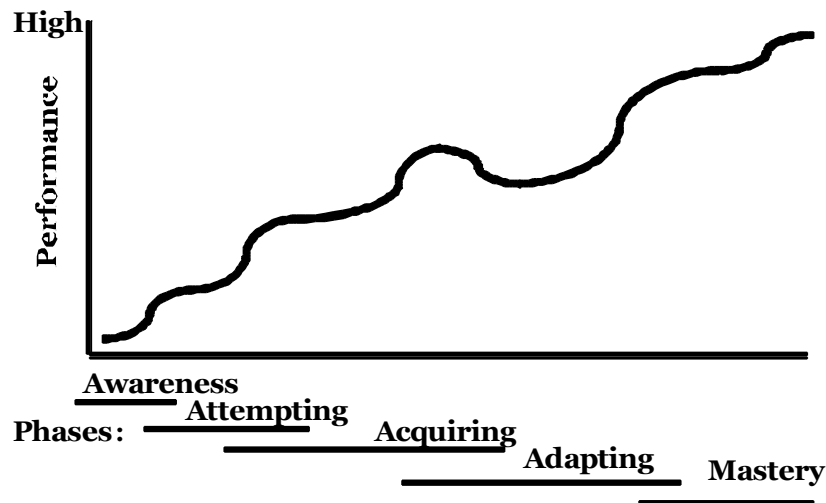
Figure 4: Stages in Professional Learning

Let us consider each of the above stages in the process and consider suggestions that might help in the learning of ICT tools at each stage.

1. AWARENESS: The Initial Stage of Learning

Awareness of the need to learn a new ICT tool is an essential first step in acquiring it. Personal reflection, conversations with colleagues and involvement in a community of practice can often lead to an awareness of the value of learning how to use a new ICT tool. One of the advantages of participating in the BCT Network is that one becomes aware of effective ICT tools that one may want to learn.

Awareness Stage Suggestions

Completing an ICT skills inventory can help identify relevant ICT tools to learn. Reviewing the ICT tools categorized in the BCT Resource Guide can be especially helpful at this stage. Information on the Learn Quebec (http://www.learnquebec.ca) and BCT website (http://bctcollaboration.wikispaces.com) can also increase awareness about relevant ICT tools. Talking with colleagues is one of the best ways to identify new ICT tools to use or to learn. The key is to be open to considering new ICT tools that might help facilitate student learning and taking the time to consider when it is sensible to learn them.

2. ATTEMPTING: The Planning Stage

An important early step in the learning process is thinking about how one can best learn how to use a new ICT tool. Does one have to consult or model others, read books or resource guides, access instructions from the Internet or practice on one's own? At this stage, the key point is that one has to be willing to try to learn and plan the learning process. Very often, people forget to spend some time thinking about how they will learn and this can delay or hinder the learning process.

Attempting Stage Suggestions

Focus on learning one or two ICT tools at a time. Take the time to identify colleagues within your school who can facilitate your learning. It is very helpful to access digital or print instructions from the Internet. Many people have found that conducting a Google or YouTube search has helped them find valuable digital resources on how to learn to use new ICT tools. Accessing BCT Network resources (http://bctcollaboration.wikispaces.com/ICT+Tutorials) and using the BCT Resource Book in your school can be especially helpful as there are many excellent suggestions in it. Finally, establish a sensible timeline for learning to use the new ICT tool, one of the basic principles of the BCT Network is to take "baby steps".

3. ACQUIRING: The Deliberate Practice Stage

Acquiring the ability to use a new ICT tool usually involves a certain amount of deliberate practice, that is, actually practicing the skill while following a set of key cues or instructions that remind one how to initially use the ICT tool. Practicing using the ICT tool in a supportive environment can help build competence and confidence. Receiving encouragement and supportive feedback from a colleague or friend can be invaluable at this point.

Acquiring Stage Suggestions

Review written, digital, or video skill cues or instructions on using the ICT tool – print or copy them for easy access. Deliberately practice with the learning cues in hand. Ask a colleague for help during initial attempts. Make notes (skill cues or key steps in the process) for yourself to enhance your learning. Encourage collegial feedback and suggestions. Remember to take "baby steps," but practice!

Figure 5: BCT Resource Binders

4. ADAPTING: The Transferring Stage

This stage involves adapting our skills by performing them in increasingly more complex environments. Using our new ICT tools in "deliciously uncertain" environments (just hard enough to provide a challenge but not so hard as to lead to failure). As competence and confidence increase, trying to use our skills or new tools in more challenging situations.

Adapting Stage Suggestions

Consider when and where you can use the ICT tool to facilitate student learning. Initially, use the ICT tool when there is minimal time pressure and the environment is a supportive one. Brainstorm or discuss with colleagues how the ICT tool can be used or adapted for use. Over time, consider what other tools and instructional strategies would complement the use of this ICT tool. Share your experiences with colleagues and encourage their feedback and suggestions.

5. MASTERING: The Automatic Stage

This is the ultimate stage where our skills and use of ICT tools become relatively automatic so that we don't have to think about how to use them effectively and efficiently. The path to mastery varies in length but the four stages of learning are usually involved. However, performance dips and difficulties should be expected. The key to mastery is to develop a personal style based on a relevant set of automatized skills.

Mastering Stage Suggestions

Develop a personal inventory of the ICT tools you have mastered or are acquiring. Be open to identifying, via professional contacts, your BCT Network colleagues, or Internet searches, other ICT tools to learn. Share your ICT-related expertise with colleagues and students.

Professional Learning Related to Student Learning

In addition to the ICT tools that are introduced and practiced during face-to-face professional learning sessions, BCT teachers are also encouraged to consider using several acronym-based planning processes designed to facilitate the creation of effective ICT-supported learning activities. Two of those planning processes are presented below.

Creating ICT-supported Student Learning Activities: Teachers in the BCT Network use a variety of methods when planning ICT-supported learning activities for their students. Considering the following questions during the planning process, based on the acronym - CREATE, has proven to be helpful, especially for those just beginning to integrate the use of ICT tools into their teaching.

Choose an appropriate learning activity:

- Does the activity fit into the QEP Program?
- What content and skills are the students going to learn?
- Is the topic appropriate for the developmental level of the students?

Review the appropriateness of the learning activity:

- What are the potential learning objectives?
- Are the learning objectives appropriate for the students in my class?
- What adaptations are needed to address the differential learning needs in the class?
- What ICT tools can be used to support student learning?

Establish the learning objectives, materials and ICT tools that will be used:

- What are the specific learning objectives for the activity?
- Are the learning materials readily available, if not can they be obtained?
- What ICT tool or tools should be used?
- Are the students prepared to use these ICT tools, if not what can be done to help them learn to use them?

Arrange the learning environment:

- How should the classroom be set up to facilitate learning?
- Will the students work individually, in pairs or in groups?
- Do they have access to the computers and software they require?
- How can the available computers be shared?
- What "operational support" system will be used for students to help and support each other?

Try to implement the learning activity:

- Did the students understand the learning objectives and the learning progression?
- What clarifying questions did they ask?
- Are they engaged in the activity?
- What additional support do they need to facilitate learning?

Evaluate the learning activity:

- What went well?
- What could be improved?
- What were the lessons learned?

For an example of the process for developing a Collaborative Learning Environment, see at http://www.slideshare.net/bctquebec/four-stage-process-to-develop-collaborative-project

Designing a Collaborative Student Learning Project: BCT teachers have developed a number of processes to encourage and develop group collaboration skills. The COLLABORATE process described below is one of the processes that has proven to be very successful.

Collaboration amongst teachers encourages the sharing of best practices, cooperative knowledge building and the development of support networks. For students, collaborative projects allow them the opportunities to practice their creative, research and writing skills, as well as learning to use the latest information technology to share the products of their work with authentic audiences. This could include fellow students and teachers as well as families and friends.

Steps in the Collaboration Process: The acronym "collaborate," which is described below, is designed to remind us of some of the important steps in the process that facilitates the building of collaborative teacher and student learning projects. As in any group or team process, the following steps are simply reminders of aspects of the project planning, monitoring and evaluation process. It is not expected that they will be followed in lock-step order, but rather, groups working together will review and revisit different aspects of the project as it develops and takes shape. Each of the steps encourages people to contribute their ideas and take responsibility for completing different tasks in the project building process.

The purpose of the process is to encourage collaboration and team work that leads to deeper learning on the part of those involved. It is important also to remember that collaboration amongst students does not happen naturally. It becomes essential for the

teachers, before starting this process, to guide and model what collaboration looks like and sounds like in real situations.

Steps in the COLLABORATE Process

- Consider topics
- Outline the purpose
- Listen to each other
- List the key features
- Assessment
- Build a project outline
- Organize into support teams
- Review progress
- Assemble the project
- Technology in action
- Evaluate the project and share it

Consider topics: Topics that are...

- relevant and interesting
- related to the QEP

Outline the purpose:

- Establish a clear purpose for the project so everyone has a common understanding

Listen to each other:

- to further develop and shape/reshape the project
- to ask any clarifying questions

List the key features:

- Outline the main elements of the project

Assessment:

- Is the project doable or is it unrealistic?
- How will student learning be assessed?

Build a project outline:

- Teaching activity
- Learning process
- Sharing

Organize into support teams:

In your interest group find someone,

- who will encourage you
- help you throughout the project by e-mail

In your school, find another participating teacher. In your class, train a student

Review progress:

- Continuously communicate using e-mail
- Lean on people in your school and board
- Ask questions

Assemble the project:

In your class, follow through with the steps as outlined in your planning

Technology in action:

- Integrate technology tools to take your project one step further
- Warning! The waters will not always be smooth with technology. Your teammates are there to help when the waves hit.

Evaluate the project and share it:

- Encourage your students to share their learning with others!

See http://bctcollaboration.wikispaces.com/Designing+a+Collaborative+Project

Facilitating Teacher Collaboration

At the heart of collaboration is the sharing of tasks, experiences, and knowledge. But this sharing amongst professionals doesn't happen automatically. We have found that it benefits from deliberate efforts to create an atmosphere of authentic trust and from carefully crafted facilitation processes. Over the course of the past five years, several acronym-based processes to facilitate teacher collaboration have been used within the BCT Network. Two of these processes, LEARN and SHARE, are presented below.

LEARN: Reminders on Effective Group Participation: Research on professional learning shows that teachers usually require some time meeting together before they are willing to share their teaching-learning experiences with colleagues. Over the past several years, during the initial face-to-face sessions, the following set of reminders designed to encourage effective group participation have been presented, discussed and utilized by the teachers. As an initial step towards increased teacher sharing the LEARN reminders have proven to be quite effective.

- Listen for understanding
- Encourage others to contribute
- Ask questions and limit "air time"
- Review progress at key times (use flip charts!)
- Note results and celebrate them

The SHARE Process: In addition to the above process designed to encourage group participation, the following group process was developed to foster ongoing, job-embedded, professional learning within the BCT Network. It was designed to encourage teachers to share their teaching and learning experiences and by doing so learn from each other.

Based on the work of Bambino (2002), Easton (2002), and Killion & Roy (2009), the acronym SHARE helped remind people of the key steps in this process:

The SHARE Process

- Select a relevant teaching-learning activity to be shared
- Highlight the key aspects of the experience
- Ask clarifying questions
- Reflect on the experience
- Evaluate the lessons learned

Let's take a look at each phase in the SHARE process.

Select a relevant experience to share:

The presenter selects a meaningful teaching or learning experience to share:

- At first, it is important to share successful experiences
- The group needs to understand and follow the phases in the Share process

Examples:

- Using PowerPoint in class
- Using a You Tube video
- Introducing flip camera use to students
- Introducing the use of Voice Thread

Highlight the key aspects:

The presenter briefly explains:

- the purpose of the session,
- the teaching-learning process,
- the ICT tools used, and
- results that were obtained

The presenter can also highlight other important aspects:

- What special techniques were used?
- How did the students respond?
- How was the learning evaluated?
- What surprised you?
- How did you feel? etc.

Ask clarifying questions:

Group members ask questions to fully understand the activity so they can respond:

- "How were the students organized?"
- "How long had the participants been learning about the topic?"
- "Were you interrupted or pressed for time?"
- "How were students used to help other students?"
- "Did you have technical problems?" etc.

Reflect on the teaching or learning activity:

Group members reflect on and react to the presenter's ideas on the activity by commenting on its strengths, posing questions about it, and making suggestions

- Be specific about the aspects of the activity that were positive –
- "I liked the way you . . ."
- "Why did you organize the groups that way?"
- "Did you ever try . . ."

N.B. Try to give more warm than cool feedback!

Evaluate the lessons learned:

After the group feedback, the presenter summarizes the lessons learned

- "I was interested in the point you made, I never thought about it that way . . ."
- "I appreciated the suggestion you made, I will try it the next time I teach this topic"
- "I got some great 'gold nuggets' from your comments, they have got me really thinking"

The SHARE process was initially used in face-to-face meetings; however, it has also been successfully used during online sessions. Using the process has encouraged teachers to reflect on their teaching-learning experiences, especially those that involved the use of ICT tools. By providing a clear and safe structure, it increased the amount of sharing both in small and larger group sessions.

BCT Lessons Learned Related to Professional Learning

The following lessons have been learned in relation to ongoing professional learning within the BCT Network:

- differentiated support is needed as there is a wide range of experience and expertise within the BCT community,
- beginning teachers appreciated being able to take "baby steps" and benefited from just-in-time support from their colleagues,
- experienced BCT teachers provide support and collaborate with others,
- there is a danger of "overloading" teachers, their primary focus must be on the learning and development of the students in their classroom,
- there needs to be a flexible time window for making contributions to the BCT Network given the demands placed on teachers over the course of the year,
- involvement should blend work and learning - it should not be an add-on, and
- teachers need time to meet, plan and share within the school day.

In addition, experienced BCT teachers:

- stressed the importance of being willing to take risks,
- emphasized that it takes time to become competent in ICT literacy, and
- encouraged new teachers to reach out for support from colleagues in face-to-face situations or online.

Figure 6: BCT Network Face-to-face Meeting (1)

Figure 7: BCT Network Face-to-face Meeting (2)

Five Key Lessons Learned about Professional Learning

1. Ongoing professional learning supports the integration of ICT into classroom practices.

2. Collegial encouragement and support facilitates professional learning.

3. Collegial collaboration and sharing enhances the craft knowledge of teachers.

4. Professional learning is an ongoing journey that takes commitment, time and support.

5. An active community of practice can support the growth of ICT-supported learning.

Theme Three: Leadership Support

As noted in the introduction to this eBooklet, one of the key factors in the promotion of ICT-supported learning is the role that leaders in different organizations play in the development of an effective community of practice. Specifically, our experience has shown that the following five types of organizations have played significant leadership roles in developing and sustaining the BCT Network: in-school administrators, BCT Lead Team, school board administrators, BCT Steering Committee, and External Support Agencies – Cefrio, Learn Quebec and Ministère de l'Éducation, du Loisir et du Sport (MELS). Let us consider each of them in turn.

Professional Support of In-School Administrators

Educational leaders at the school level play a crucial role in supporting the involvement of teachers in the BCT Network. Based on discussions with BCT school principals and vice-principals, it is clear that they provide support to BCT teachers in a variety of ways, some of the most important ways they do so are described below.

Encourage, empower and enable BCT Teachers: As teachers are acquiring the pedagogical and technological skills that they require to integrate ICT tools into their classrooms, it is important for administrators to continually encourage them, especially during the inevitable ups and downs of the learning process. Openly encouraging risk-taking and indicating that it is all right to fail are other ways administrators can support the ongoing professional learning process.

Provide common release time: Designing the teaching schedule so that teachers can get together to share ideas and develop collaborative projects is one of the most practical ways that administrators support the BCT initiative. Arranging for teacher release time on face-t0-face professional learning days is another key way that in-school administrators support the network.

Support collegial collaboration: Schools that have been successful in encouraging the integration of ICT into classroom practices report that an important factor has been the energy and input provided by teacher leaders. A key factor in the success of these teacher leaders has been the ongoing support that they, in turn, have received from in-school administrators to "run with the project." Identifying potential Go-to teachers and encouraging them to take the lead is also an important way that administrators promote ICT-supported learning. Hence, in-school administrators play a significant role in the capacity building objectives of the BCT Network.

Reinforce that ICT Use is Not an "Add-on": Experienced BCT teachers and educational leaders continually emphasize that the use of ICT tools should not be viewed as an "add on," rather it should be seen as an integral part of QEP-based teaching and learning.

In-school administrators play a key role in fostering the implementation of this pedagogical guideline and communicating it to parents and teachers.

Model the use of ICT Tools: Experienced BCT administrators report the value of using ICT tools to demonstrate how it helps them handle their own work more efficiently. By modeling the use of technology and expecting others to use it, they are encouraging their colleagues to do so.

Administrative Support of In-School Administrators
In addition to providing direct professional support to BCT teachers, in-school administrators play a significant role in developing and sustaining an appropriate information technology infrastructure and ensuring that it is maintained. Some of the strategies they use include the following:

Establish a School ICT Coordinating Committee: One of the most important ways a school administrator can promote ICT-supported learning is to establish and support such a committee. The mandate of the committee would be to analyze ICT teaching needs and recommend, based on input from the teaching staff, the hardware and software that should be purchased. The committee would be responsible for considering long-term plans so as to ensure that the ICT infrastructure within the school meets ongoing student learning needs. Clearly, the school principal has control of the school budget; however, obtaining information and recommendations from the ICT Coordinating Committee can be a great help to the principal when planning the school budget. Taking a multi-year perspective when planning for the development of an effective ICT infrastructure has proven to be very useful.

Strategically use ICT support funds: Given the financial constraints under which schools are working, it is important to judiciously use the funds available for ICT equipment and resources so that they have as positive an influence as close to the classroom as possible. The ever-changing multi-media technology environment makes such strategic planning difficult; however, staying abreast of IT developments and new ways to facilitate ICT-supported learning has proven to be important both in terms of cost as well as its impact on student learning.

Provide a suitable professional learning environment: Teachers need to have appropriate technical resources and time to actually practice using the ICT tools that they will use in their classrooms. Again, trying to provide professional learning time and an appropriate location for teachers to do so is an important administrative support strategy.

Arrange for technical support: Facilitating the access to technical support has been shown to be of great importance in motivating teachers to integrate ICT into their classroom practices. Given the increased use of ICT, trying to ensure prompt technical support can be a challenge; however, experienced in-school administrators recognize that

it is one of the most important ways that they can support BCT teachers. Building ongoing relationships with technical staff and providing up-to-date computers and accessories are two ways to reach this goal. Another is to follow the procedures that have been set within the school board to access such support.

Leadership of In-school Administrators – Parents and the Community

In-school administrators play an important role in communicating the goals and objectives of ICT-supported learning initiatives by educating parents and the community regarding the benefits, challenges, and practices associated with the ethical and safe use of the Internet. Some of the ways that BCT administrators do so are described below.

Advocate for ICT-supported learning to parents and the community: Providing opportunities for parents to understand and observe the ways their children are using ICT tools to support learning is a valuable way that administrators can enhance support for the wise use of ICT. Openly discussing Internet safety guidelines and the ethical use of information technology tools has been shown to be an effective way to garner increased parental and school board understanding and support. In-school administrators can also encourage the safe use of ICT tools by ensuring that parents are aware of Internet safety guidelines and by requiring them to sign the parental permission forms related to the posting of student work on the Internet.

Showcase the products of ICT-supported student learning: Experienced administrators report that face-to-face and online opportunities that allow students to demonstrate the planning, implementation, and evaluation of ICT-supported projects is an effective way to increase public understanding and support. Organizing parents' nights during which students can share their multi-media creations has been an especially effective way of garnering support for ICT-supported learning. Another is to ensure that up-to-date learning projects are posted on the school Web site and the school board portal for parents to access.

Leadership of BCT Lead Team Members
Over the past five years, the BCT Network has benefitted from the leadership of colleagues from Learn Quebec, McGill University and classroom teachers from the Eastern Shores, Riverside and Sir Wilfrid Laurier School Boards. The collaborative contributions of each of these people enhanced the development of the network.

Year One (2007-2008): Christianne Dufour and Susan van Gelder – Learn Quebec Animation and Support Team

Dr. Gyeong Mi Heo and Dr. Alain Breuleux - McGill University Research Team

Dr. Ted Wall – Administrative Coordinator

Year Two (2008-2009): Christianne Dufour and Susan van Gelder - Learn Quebec Animation and Support Team

Dr. Gyeong Mi Heo and Dr. Alain Breuleux - McGill University Research Team

Dr. Ted Wall – Administrative Coordinator.

Year Three (2009-2010): Donna Anderson (ESSB) and Dorothy Taker (ESSB) – Cycle One Leaders, Mary-Helen Goyetche (SWLSB) – Cycle Two Leader, Karen Rye (RSB) – Cycle Three Leader

Dr. Gyeong Mi Heo - Community of Practice Coordinator

Dr. Alain Breuleux - Research Coordinator

Dr. Ted Wall - Coordinator

Year Four (2010-2011): Veronique Lemay (RSB) – Cycle One Leader, Mary-Helen Goyetche (SWLSB) – Cycle Two Leader, Karen Rye (RSB) – Cycle Three Leader

Dr. Gyeong Mi Heo - Community of Practice Coordinator

Dr. Alain Breuleux - Research Coordinator

Dr. Ted Wall – Coordinator

Year Five (2011-2012):
- **BCT-RSB Lead Team:** Veronique Lemay, Michelle Verreault and Karen Rye (RSB Recit)
- **BCT-SWLSB Lead Team:** Nancy Bennett, Tim Foreman and Peter Bilodeau (SWLSB Recit)

Dr. Gyeong Mi Heo - Community of Practice Coordinator

Dr. Alain Breuleux - Research Coordinator

Dr. Ted Wall – Coordinator

Over the past three years, the leadership of the BCT Network has been strongly supported by the leadership of classroom teachers and administrators who have been given one day each week of release time to provide guidance and support to their colleagues. Working in conjunction with colleagues from McGill University, they have worked closely with RECIT

animators in each school board to facilitate the growth and development of the BCT Network. Over the past three years, the inclusion of teachers and school administrators who are close to the classroom on the BCT Lead Team has made a major contribution to the leadership of the BCT Network.

Over the last several years, depending on the formal role of each person, the responsibilities of the members of the BCT-Lead Team have evolved to include:

- developing a personal professional practice and serving as a model, mentor and support person for other teachers in the network,
- collaborating regularly with the other members of the BCT Lead Team,
- "utilizing" an online space of practice so that others see what it means to be a BCT teacher:
  - sharing, discussing, reflecting and creating artefacts in ways that are visible to others,
  - making regular online contributions,
  - sharing teaching-learning practices and encouraging others to do so,
- providing realistic advice about classroom teaching and learning practices,
- in cooperation with the BCT Lead Team, planning face-to-face meetings,
- helping monitor progress with the BCT Lead Team on a regular basis,
- helping build realistic expectations with the Lead Team for BCT teachers and helping to clarify the expectations of BCT participants, and
- contributing to the evolution of the BCT Network.

Leadership Support of School Board Administrators

During the first four years of the BCT Network, at the beginning of the school year, school board administrators were involved in the initial planning of the network within each school board. However, due to the fact that there were as many as five or six school boards involved in such planning the degree of direct involvement of school boards administrators varied considerably across school boards. In August 2011, it was decided to narrow the focus of the BCT Network to include two school boards, Riverside School Board and the Sir Wilfrid Laurier School Board. Based on an important article by Bryk, Gomez, Grunow (2010) entitled: *Getting Ideas into Action: Building Network Improvement Communities in Education*, it was decided to utilize their *Plan, Do, Study and Act Model* that emphasized the importance of embedding network initiatives within specific school boards. The purpose of the *Getting Ideas into Action* framework was to encourage increased local input and the

sharing of resources in order to increase the sense of school board ownership and the potential sustainability of the network. With the above information in mind, let us consider some of the important ways that school board administrators contribute to the BCT Network.

Membership on the BCT Network Steering Committee: During the past year, Gerald Robillard, Director of Educational Services for the Sir Wilfrid Laurier School Board and Lisa Rae-Nutter, Assistant Director of Educational Services for the Riverside School Board served as members of the BCT Steering Committee. During each of the three meetings of this committee, they contributed important information regarding the strategic plans and major goals of their school boards, provided insights regarding the financial constraints and human resources within their school boards, and reported on the ways that the RECIT animators and other consultants contributed to the BCT Network. As Bryk, Gomez, Grunow (2010) indicated, inasmuch as each school board operated within its own culture and socio-cultural environment, it was not surprising that the evolution of the BCT Network within each school board had some unique features; however, they also had some common ways of responding to the challenges that they faced. The encouragement and support of the school board administrators facilitated the successful developments of the BCT-SWLSB and BCT-RSB Networks.

Based on our experience this year, it is very clear that close collaboration between the members of the BCT Lead Team, the BCT Steering Committee, and school board administrators is essential. Most importantly, such collaboration increases the impact and sustainability of the network.

Linking the BCT Network to related professional learning initiatives: During the past year, school board administrators in both school boards have encouraged RECIT animators, educational consultants, and technical staff to contribute to the promotion of ICT-supported learning within the BCT Network. In addition, professional learning initiatives to encourage the integration of information technology into the classroom in schools that are currently not within the BCT Network have also met with considerable success.

Leadership Support of BCT Network Steering Committee

The purpose of the Steering Committee is to provide strategic guidance and review progress related to the activities of the BCT Network so as to enhance its viability and sustainability. The committee meets on three occasions during the school year. Representatives from the participating school boards, Riverside School Board and Sir Wilfrid Laurier School Board, as well as, members from Cefrio, Learn Quebec and the BCT Lead Team serve on the committee. The professional advice and strategic guidance of the Steering Committee has been an important factor in adapting and sustaining the BCT Network.

Support of External Agencies

The BCT Network has benefited from the leadership and support of the following external agencies. Each of them has played a significant role in the development and sustainability of the network.

CEFRIO: Vincent Tanguay, Vice-President, Cefrio, Knowledge Transfer, has provided strategic direction and organizational support since the inception of the network. In conjunction with his colleagues at Cefrio, he has also provided up-to-date knowledge related to advances in the use of information and communication technology and provided important information on the development of effective communities of practice. Liane St. Amand, Director of Finance, has provided valuable support related to accounting and financial matters related to the network. The link to Cefrio is http://www.cefrio.qc.ca/

LEARN QUEBEC: Michael Canuel, CEO of Learn Quebec, has served as an advisor to the BCT Project/ Network since its inception. In fact, in collaboration with Vincent Tanguay, he developed the initial vision of the BCT Project and he has provided valuable strategic guidance and support in its development since that time. Bev White, Director of Studies and Community Development, has also provided important administrative support to the network and facilitated significant input from her colleagues at Learn Quebec for the past five years. Bev White also generously facilitated the input of Recit Animators since the start of the BCT Project. Tom Stenzel, for several years as Recit animator for the Riverside School Board and more recently in his role as "critical friend" at Learn Quebec has been an important enabler of the growth of the network. The link to Learn Quebec is http://www.learnquebec.ca.

Quebec Ministère de l'Éducation, du Loisir et du Sport (MELS): The BCT Project and more recently the BCT Network has received ongoing financial and professional support from the Ministère de l'Éducation, du Loisir et du Sport du Quebec. Initially, Noel Burke and subsequently Leo LaFrance, as Associate Deputy Ministers, provided strong support for the vision of the network and facilitated ongoing financial support for it. More recently, the network has benefited from the support of Elaine Roy from the Services to the Anglophone Community. In addition, Laurent Trudel has been an advocate for the network since the submission of the initial Research Report entitled: *IT Supported Learning and Networking in the Anglophone Educational Community* (2006). The link to the Cefrio Report is http://www.cefrio.qc.ca/fileadmin/documents/Projets/ITSupportedLearningNetworking VFinaleanglais.pdf

The link to the Secteurs des services à la communauté anglophone, affaires autochtones et Plan Nord is http://www.mels.gouv.qc.ca/ministere/ministere/index_en.asp?page=secteur_services

Five Key Lessons Learned related to Leadership Support

1. Leadership support is required from a host of stakeholders, including external agencies, if ICT- supported learning is to be widely implemented.

2. In-school administrators are an essential source of support.

3. Experienced BCT teachers provide valuable face-to-face and online support to their colleagues.

4. BCT Lead Team members provide meaningful support by listening to teachers and trying to meet their classroom-based needs.

5. School board administrators play an important coordinating and guiding role in facilitating ICT-supported learning.

Theme Four: The BCT Community of Practice

Communities of practice (CoP) are "groups of people who share a concern, a set of problems, or a passion about a topic, and who deepen their knowledge and expertise in this area by interaction on an ongoing basis" (Wenger, McDermott, & Snyder, 2002). Communities of practice work well when people have expertise in a domain of knowledge, such as ICT-supported learning, and they can readily communicate with each other. They work especially well if people are willing to share their knowledge and take the time to learn and solve problems together. Effective communities of practice use a variety of communication processes, within the BCT Network teachers use email, Skype conversations and other Internet-based means to communicate with each other.

Evolution of the BCT Community of Practice

Benefits of participating in a community of practice: Participation in a community of practice is completely voluntary, so people can choose their degree of involvement, for example, depending on the topic, a member can be a frequent or occasional contributor. Some of the short-term benefits for participants include help with challenges, access to expertise, meaningful collegial support and having fun with colleagues. The long-term benefits that members report are opportunities for personal and professional development, enhanced professional identity, networking and relevant knowledge-building (Wenger, McDermott, & Snyder, 2002). A consideration of the above benefits associated with communities of practice and the factors that contribute to their development indicate that the teachers involved in the BCT Network meet all of the key characteristics for developing, over time, into an effective community of practice.

Participating in the BCT Community of Practice: Wenger, McDermott, and Snyder (2002) indicate that communities of practice usually have three main levels of participation; namely, a small core group, an active group, and a group of peripheral members. The people in the small core group are at the heart of the community and actively participate by attending meetings and participating in discussions. These people share information related to the topics that interest them and learn from the input of other members. At times, they work collaboratively on projects and share the results of their efforts with the broader community. Wenger, McDermott, and Snyder (2002) indicate that this small core group usually consists of 10-15% of the community of practice.

People in the active group attend face-to face and online meetings and occasionally participate in discussions. They are not as fully involved as the core group; however, they do contribute to the viability of the community. It is estimated that this group usually consists of 15-20% of the community. Thus, in most communities of practice, it is only about 25–35% of people who are actively involved (Wenger, McDermott, & Snyder, 2002). However, in addition to the above two groups, there usually is a group of peripheral

members who rarely participate but they are aware, at least to some extent, of the activities of their more centrally engaged colleagues. These members may not be interested in the topics under discussion or they may not have the time to actually participate in the community. Some of them also may identify only partially with the community because of their professional role or status. However, they may become involved in some of the collegial conversations and some of them may, in fact, become active members.

The evolution of the BCT community of practice was based on an initial set of face-to-face meetings where the teachers had an opportunity to get to know each other, support each other in hands-on learning sessions and develop student collaboration projects. Our experience has shown that at first teachers are quite reticent about sharing their ideas and teaching practices; however, with time and involvement in the network they become increasingly more willing to share their thoughts and strategies and discuss the successes and challenges that they face.

An important aspect in the process of developing the BCT community of practice was encouraging the teachers to share their successes and challenges. A number of procedures were used to facilitate such face-to-face communication, including the LEARN and SHARE processes described in the section on "Facilitating Teacher Collaboration".

Six Phases in the Development of the BCT Community of Practice

Developing an active online community of practice takes considerable time and support. Our experience in the BCT Network indicates that developing such a community of practice can be enhanced if the following six phases are recognized and supported. Moreover, it should be noted that developing an active community of practice usually takes several years of commitment and encouragement.

Shaping the Vision of Student Learning: Over the course of the past five years, teachers in the BCT community of practice have contributed their ideas and provided thoughtful feedback to develop a common vision of student learning within the BCT Network. In addition, they have responded to questionnaires related to the benefits and challenges of using ICT-supported learning, shared the student learning projects they have created, and provided specific suggestions on how ICT-supported learning might be more effectively integrated into classrooms. Quite simply, BCT teachers collectively shaped the current vision of student learning that is described in the initial theme of this e-Booklet.

Participating in Face-to-Face Professional Learning Opportunities: A central feature of the BCT Network has been the ongoing opportunity for BCT teachers to meet three or four days each year. During these face-to-face sessions, the teachers had the opportunity to learn how to use ICT tools in hands-on sessions, employ a variety of collaborative procedures to share their ideas, as well as, plan classroom learning activities or online student learning projects with their colleagues. After each face-to-face session an

Appreciative Inquiry process was used in which teachers used post-its to share the specific benefits gained from their involvement. The results indicated that the teachers felt that the opportunity to meet and share with their colleagues was one of the most important benefits of these meetings. Moreover, one of the consistently posted suggestions under the "Even Better If" section of the Appreciative Inquiry process was that the number of face-to-face sessions should actually be increased! Unfortunately, financial constraints have limited acting on this suggestion, however, it does underscore the value that BCT teachers place on having the opportunity to collaborate, learn and share with each other.

Personal Practice with ICT Tools: New BCT teachers report that they experienced the greatest success when they selected one, or at most two, ICT tools to learn and then deliberately practiced using these tools on their own time. As noted above, a well-known mantra across the BCT Network is for beginners to "take baby steps". Based on the stories shared by many of the BCT teachers, it is clear that the wisest strategy during the first year is to attempt to learn only a few ICT tools at any one time.

BCT teachers report that the opportunities to practice selected ICT tools in the hands-on sessions during face-to- face meetings was a significant factor in acquiring their first few ICT tools. They stressed the importance of practicing the use of these tools on their own time. They also noted the value of the support they received from their colleagues, especially the Go-to teachers in their schools. Being aware of the suggestions on professional learning described in the Four A's to Mastery Pathway was also of help to them: awareness of the need to learn a particular ICT skill, attempting to learn it in an efficient way, acquiring the new skill through deliberate practice with collegial support, adapting the skill to their own situation, and then reaching the mastery stage.

Classroom Use of ICT Tools: It takes some courage to actually use ICT tools for the first time in the classroom. Many of BCT teachers report that it was the encouragement and support of their colleagues that started them on the road to ICT-supported learning. Some of the practical hints that their experienced BCT colleagues shared with them included: willingness to take risks, teaching some of their students how to help other students, and having a backup plan when the inevitable technical difficulties arise!

Very often, beginning BCT teachers found that using ICT tools to enhance learning was easier than they initially thought it might be. Moreover, they found that their students were eager to use ICT tools and they seemed to be more fully engaged when they were using them. Encouraging their students to help each other often allowed some of their "quiet" students to show their own special talents. Clearly, beginning to use ICT tools in the classroom took more planning, a willingness to take risks and the confidence to allow their students to take on a greater share of the responsibility for their own learning; however, on the whole, these first experiences were often very positive and motivated beginning BCT teachers to try using other ICT tools that were recommended by their colleagues.

Adaptation to Classroom Needs: As BCT teachers gained more confidence and competence in using ICT tools, they found new ways to use these tools and adapt them to the learning needs of their students. In a similar manner, as students became more confident and competent in the use of ICT tools, the teachers were often impressed by the creative ways the students used these tools.

BCT teachers have also reported that students with special needs have clearly benefited from the support provided by ICT tools. For example, shy students have enjoyed contributing their ideas and opinions via Voice Thread and Audacity software and students with handwriting difficulties have found computer software has helped them overcome their presentation challenges. In other cases, BCT teachers indicated that their students with special needs have developed effective multi-media presentations that have impressed their peers and contributed to the development of their self-confidence.

Sharing with Colleagues: An integral component of the BCT Network is the collaborative learning and professional sharing that goes on within it. Initially, new members are relatively reticent about sharing their teaching-learning experiences; however, our experience indicates that after sharing their ideas with colleagues in face-to-face settings, BCT teachers become increasingly more willing to share their teaching experiences with others and benefit from the support, feedback, and encouragement of their colleagues. As they gain more experience, teachers are more willing to use the SHARE process to highlight what they have done, share their experiences with others, and benefit from their own reflections and the feedback of their colleagues. In addition, teachers become more willing to post comments on the BCT Wikispaces website and submit their ICT–supported learning projects to the online BCT Network Archive so others can benefit from them. Most importantly, by participating in all six phases of the building of the BCT community of practice, we have been able to generate many lessons learned that we hope will encourage other teachers to use ICT-supported learning activities in their classrooms.

Facilitating Online Participation in the BCT Community of Practice

In their article, Wenger, McDermott, and Snyder (2002) emphasized the importance of providing a mix of activities and the use of a variety of communication vehicles. Thus, as noted above, BCT teachers initially participated in the community of practice in face-to-face sessions and as they gained competence and confidence in the use of ICT tools some of them also communicated with each other via email, telephone, Skype (http://www.skype.com), as well as with the Live Classroom and Zenlive platforms (http://zenlive.learnquebec.ca/Zenlive.html) provided by Learn Quebec. For several years, Learn Quebec's Sakai Portal (http://sakai.learnquebec.ca/portal) facilitated the sharing of materials and resources. In addition, the sharing of student learning projects and related resources as well as information on the use of a variety of ICT tools has been available online at the BCT Network website (http://bctcollaboration.wikispaces.com/), which has

proven to be an important source of ongoing professional support to the teachers. During the current year, school board portals have also facilitated the sharing of student and teacher products and professional learning materials. Further details on Wenger's practical suggestions on the development of communities of practice are available at http://www.ewenger.com/theory/start-up_guide_PDF.pdf

Research Based on the BCT Network Community of Practice

Members of the BCT Community of Practice have contributed to a variety of research publications and presentations about the BCT Network: (http://bctcollaboration.wikispaces.com/About+BCT) including the following:

1. Wall, A. E., Breuleux, A., Heo, G. M., Rye, K., Goyetche, M-H., & Lemay, V. (2011). Teacher-based inquiry in the BCT Project. Learning Landscapes, 4(2), 325-344. (http://www.learninglandscapes.ca/images/documents/ll-no8-final-lr.pdf)

2. Heo, G. M. & Breuleux, A. (2011). Online communication and collaboration in a community of practice for teachers' professional development. Proceedings of the 9th International Conference on Computer Supported Collaborative Learning (CSCL) 2011, Hong Kong, China.

3. Heo, G. M. & Breuleux, A. (2011, April). Participatory design research in Building Community through Telecollaboration (BCT) Project. Paper presented at the AERA 2011 Annual Meeting, New Orleans, Louisiana.

4. Heo, G. M., Anderson, D., Goyetche, M-H., Taker, D., & Breuleux, A. (2011). Distributed leadership facilitating collaboration in a teacher community of practice. Proceedings of the Society for Information Technology & Teacher Education International Conference (SITE) 2011, Nashville, Tennessee, US.

5. Breuleux, A., Heo, G. M., Wall, T., Morgan, L., & Flores, L. (2009). Building Community through Telecollaboration (BCT) Project in Quebec. Proceedings of the SITE 2009 (Society for Information Technology & Teacher Education International Conference), Charleston, South Carolina.

Five Key Lessons Learned about the BCT Community of Practice

1. An active community of practice takes time to develop due to its voluntary nature.

2. Personal and professional factors affect the degree to which teachers can participate.

3. Opportunities for teachers to meet in face-to-face situations can develop professional trust, which facilitates the growth of the community.

4. Over time, the degree to which teachers participate will vary with the topics under discussion and their interest in them.

5. As teachers get to know each other, the use of online tools can facilitate collaboration across the network.

Theme Five: IT Support

Providing appropriate technical support to teachers is a significant administrative, financial and organizational challenge. Given the increase in the use of ICT tools, it has become increasingly difficult to provide prompt and reliable technical support. Quite simply, insufficient funds have been allocated for technical staff, which has resulted in unrealistic demands being placed on them.

Increased Pressures on IT Support Staff

The growth in the number of computers and related ICT hardware in relation to the amount of available funding for technical staff has resulted in unrealistic demands for support. The continued growth in the use of ICT tools by students, teachers, in-school administrators, and school board administrative staff has dramatically increased the pressures on these colleagues. Clearly, teachers in their classrooms want and need to have technical support provided as quickly as possible; however, our experience has shown that a reasonable timeline should be established for such technical support to be made available. BCT teachers and administrators recognize the unrealistic expectations that are often placed on IT support staff. Several strategies have been implemented to reduce the impact of this problem. In the case of other initiatives, such as the "École éloignée en réseau" (http://www.eer.qc.ca), limiting the ICTs to only two generic but powerful tools (for example a desktop video conferencing and KnowledgeForum) has simplified the issue of IT support (see Allaire et al, 2006).

Importance of Following Procedures to Access IT Support

BCT teachers and school leaders have recognized the value of following established school board procedures for accessing IT support. Given the demands on technical staff, experience has shown that following such procedures results in faster and more efficient support being provided at the school level. When such clear procedures have not been available, taking the time to collaboratively create them has proven to be beneficial.

Importance of Pedagogical-IT Support Collaboration

One of the most important lessons learned has been the value of establishing and maintaining an ongoing discussion-dialogue among BCT Network leaders, school principals, and IT support staff. School board administrators have facilitated such discussions and they have resulted in a deeper appreciation of the challenges created by the pedagogical and technical-operational demands stemming from the increase in ICT-supported learning in classrooms across school boards.

Student Operational Support

BCT teachers have found that student support can be very useful if student helpers are trained to handle routine operational issues that might arise based on the following guidelines:

- Students should not be expected to deal with technical issues that the IT department should be requested to handle.

- Student support works best when the classroom teacher can comfortably perform routine operational procedures so they can train selected student helpers.

- Taking the time to train student helpers in how to help their fellow students with basic operational or software issues has proven to be very effective in classrooms ranging from grade one to six. Student helpers have proven to be especially useful in relation to the setting up of equipment as their involvement decreases the amount of time the teacher needs to spend in this routine aspect of the class.

- BCT teachers report that some of the student helpers have benefited from playing this role in terms of their self-esteem and confidence in the classroom.

Five Key Lessons Learned Related to IT Support

1. Teachers appreciate receiving IT support within reasonable timelines.

2. The growth of ICT supported learning has increased demands and pressures on IT departments.

3. The updating of computer equipment and related resources can decrease the demands placed on IT departments

4. Ongoing communication between pedagogical and technical colleagues can lead to more effective and efficient IT support.

5. Establishing and following guidelines for accessing IT support can also facilitate required services.

Theme Six: ICT Infrastructure and Tools

Based on the five years in which the BCT Network has been operating, it is very clear that when a sound ICT infrastructure is in place and teachers have the computer and equipment they need then considerable progress can be made related to the integration of ICT tools into the classroom. If the teachers do not have suitable computers and less than reliable access to the Internet, then we have found that little progress can be made in relation to the promotion of ICT-supported learning. The following lessons learned related to budget planning and building a reliable infrastructure have proven to be helpful.

The number of software programs that can be used to support learning is increasing at an exponential rate. The final section of this theme describes some of the ICT tools that BCT teachers have used with links to online examples of how students have used them along with related online resources developed by Recit animators to support their use.

Planning a Reliable Infrastructure

A basic given regarding the promotion and widespread use of ICT-supported learning is that the computer hardware and accessories related to their use must be available and updated on a regular basis. The financial demands of providing an appropriate ICT infrastructure are an ongoing challenge for the Quebec government and school board officials. Multi-year planning is required and strategic objectives need to be set to ensure that the funds available are used in an effective and efficient manner. Our experience has shown that budget and financial constraints are a reality and pose serious challenges; however, careful planning at the school level and coordinated planning at the school board level can significantly reduce the impact of these challenges. Encouraging teacher input related to the learning needs of their students, requesting advice from the RECIT Animators and technical staff, can also be of considerable help in this planning process.

Building and Maintaining a Reliable Infrastructure

Discussions with BCT teachers, in-school administrators and IT support staff indicates that building an effective and efficient infrastructure requires careful multi-year planning. As noted elsewhere in this document, the establishment of an ICT Coordinating Committee can help facilitate such planning. The need for ongoing coordinated collaboration among in-school administrators, school board officials, and IT department leaders is required. A basic lesson learned over the past five years is that coordinated planning, implementation and monitoring of the six factors described in this eBooklet is essential if ICT-supported learning is to be effectively promoted.

ICT Tools and Examples of Their Use

A variety of ICT tools have been used by BCT teachers and their colleagues. Some of the most common ones are briefly described below with URL links to BCT examples of their use.

Blabberize (http://blabberize.com/) is a flexible, online, ICT tool in which characters in a drawing or a picture can be made to talk, simply by adding sound. Student creations can be shared online with private or public audiences. The video production can be embedded in a blog, wiki, or website. BCT examples of the use of this ICT tool:

- Author Study Projects (Cycle 1)
- Biography Project (Cycle 2)
- March Break Adventures (Cycle 2)
- Through the Eyes of the Character (Cycle 3)
- Pen Pal Projects (Cycle 3)

Voice Thread (http://voicethread.com/) allows students to create and share multimedia slide shows that include documents, pictures, images, and videos. People who watch the production can make comments via audio, text, or video. BCT examples of the use of this ICT tool:

- ABC Project (Cycle 1)
- Author Study Projects (Cycle 1)
- Voicethread Projects (Cycle1)
- We Love our MOMS (Cycle 1)
- Penguin Information Parade (Cycle 1)
- Mrs Arhin Hillcrest Academy Elementary Invention Poetry (Cycle 2)
- Flat Stanley and other projects (Cycle 2)
- Stepping into the Character's Shoes (1/2) (Cycle 2)
- Stepping into the Character's Shoes (2/2) (Cycle 2)

Slideshare (http://www.slideshare.net/) is an online service in which students can upload files using a variety of formats including: PDFs, PowerPoint, or Keynote. The slides that are uploaded can be embedded in blogs, wikis or websites. A BCT example of the use of this ICT tool:

- [Community Google Wave Project (Cycle 1)](#)

Blog (http://www.blogger.com): A blog is an online journal usually created by one person, or at times, by a small group, that is published over the Internet. The latest "posting" appears at the top of the blog followed by other posts sequenced according to the date posted. BCT examples of the use of this ICT tool:

- [Terra's blog from Metis Beach School](#)
- [Donna Anderson's kindergarten blog: Little Ones Learning](#)
- [Dorothy Taker's class blog: Our Wonderful Class](#)
- [Mary Ellen Lynch's class blog: Look What's Happening in Room 102](#)

Wiki (http://www.wikispaces.com/): A wiki is an online website where students can contribute content and then add, delete or revise it using basic editing tools. Wikis are particularly appropriate for encouraging students to work collaboratively on projects and then sharing them with authentic audiences. BCT examples of the use of this ICT tool:

- [Oceans and Waterways Projects (Cycle 1)](#)
- [Book Talk (Cycle 3)](#)
- [Pen Pal (Cycle 3)](#)
- [Olympic Day (Cycle 3)](#)
- [Our Communities (Across Cycles)](#)

Google docs (https://docs.google.com/), now known as Google Drive, is an online service where people can create, edit and share a variety of documents in real-time with other registered users. Up to 10 GB of data storage is available. BCT examples of the use of this ICT tool:

- [Collaboration](#)
- [Parent Permission Letter](#)

Audacity (http://audacity.sourceforge.net/) is an adaptable audio editing software that allows students to record a sound track and modify its volume and add different components and layers to it. There are many options that can be used to enhance audio tracks and share them with a variety of audiences. BCT examples of the use of this ICT tool:

- [Reader's Theatre (Cycle 2)](#)
- [Interviews Based on: Underground to Canada (Cycle 3)](#)

Prezi (http://prezi.com) is an online program that is available for free. Students can use it to make slide shows, impressive presentations and movies. It is a super-charged PowerPoint program.

Skype (http://www.skype.com) is an Internet-based voice-over service that allows people to communicate with other Skype users for free via voice, video and instant messaging. It has a variety of other features some of which require payment of a fee.

BCT teachers and lead team members have routinely used this service. More BCT examples of the use of ICT tools are available at http://bctcollaboration.wikispaces.com/Projects+by+ICT+Tools

Teacher Online Support

Peter Bilodeau the RECIT Animator for the SWLSB and a member of the BCT-SWLSB Lead Team has compiled an excellent set of online resources for teachers that includes information and suggestions on ICT software and tools, student projects, Web 2.0 Internet-based sites and activities as well as relevant articles related to ICT-supported learning. These resources can be accessed via the following link: http://www.swlauriersb.qc.ca/schools/recit/bct/

Five Key Lessons Learned Related to Infrastructure

1. The availability of functional computers and reliable access to the Internet are of crucial importance.

2. Effective multi-year planning is the key to developing an effective IT infrastructure.

3. Establishing an ICT coordinating committee can facilitate the planning, purchasing and sharing of computer equipment and related resources within a school.

4. New equipment should be purchased after considering the degree to which it will impact student learning.

5. Government support for increased capital expenditures in ICT equipment should be accompanied by increased resources for IT support.

Summary and Key Lessons Learned

Promoting ICT-supported Learning: Lessons from the BCT Network

Shared Vision of the BCT Network:
The purpose of the BCT Network is to encourage, facilitate, and support collaboration among students, teachers and educational leaders to enhance ICT-supported learning across the community. Promoting ICT-supported learning effectively requires that the following six themes be addressed in a coordinated manner: student learning, professional learning, leadership support, a community of practice, IT support, and a reliable infrastructure.

1. Student Learning
In designing ICT-supported learning activities, BCT teachers selected QEP curriculum objectives and then considered the pedagogical strategies they should use to teach them. Only then did they choose an ICT tool to enhance the learning experiences of their students. In selecting learning objectives, the teachers were aware of the goals of the Quebec Education Program as well as the array of twenty-first century skills that ICT-supported learning techniques can support. Within the BCT Network, the use of ICT is viewed as a way to enhance student learning based on effective teaching and developmentally-appropriate curriculum objectives.

Five Key Lessons about Student Learning

1. ICT-supported learning should be based on the Quebec Education Program.

2. When planning learning activities, pedagogical decisions precede the selection of ICT tools to support them.

3. Students should be taught to use ICT tools creatively, ethically and responsibly.

4. Student collaboration can enhance ICT-supported learning.

5. Sharing the products of learning with authentic audiences has multiple benefits.

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2. Professional Learning
Our experience indicates that teachers will only devote the time and effort to use ICT-supported learning if they believe that it will enhance the learning of their students. Hence, taking the time to discuss the benefits and challenges of using ICT tools is important so that

teachers can make the professional decision that it is sensible to do so. When teachers made a commitment to facilitate ICT-supported learning they also recognized that they are embarking on a multi-year learning process that BCT teachers refer to as stages in the following professional learning journey:

- personal use of ICT tools
- use of ICT tools to support teaching,
- facilitation of student use of ICT tools, and,
- use of ICT tools to reflect on and share teaching practices.

During the professional learning journey, BCT teachers learned to use planning processes to design ICT-supported student learning activities including collaborative projects that were completed within the classroom or with classes in other schools. In addition, several teacher collaboration processes were used to encourage teachers to share their experiences and expertise with their colleagues.

Five Key Lessons Learned about Professional Learning

1. Ongoing professional learning supports the integration of ICT into classroom practices.

2. Collegial encouragement and support facilitates professional learning.

3. Collegial collaboration and sharing enhances the craft knowledge of teachers.

4. Professional learning is an ongoing journey that takes commitment, time and support.

5. An active community of practice can support the growth of ICT-supported learning.

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3. Leadership Support

In-school administrators supported BCT teachers by providing common release time and a suitable professional learning environment. They also encouraged Go-to teachers who were willing to provide support to their colleagues. Establishing an ICT Coordinating Committee and implementing a multi-year planning process proved to be especially beneficial. In-school administrators also ensured that parents and community members were informed about the benefits and challenges of ICT-supported learning. Important leadership and support was also provided by school board administrators, especially in relation to strategic planning and the coordination of pedagogical and technical support services.

Members of the BCT Lead Team have played a central leadership role by providing relevant information on the changing demands of the classroom and the differential learning needs of students. In addition, they designed collaborative group processes, classroom-based ICT-supported learning activities, and facilitated hands-on training during face-to-face sessions. They also provided ongoing support to their BCT colleagues via a variety of personal and online vehicles.

Finally, the BCT Network has benefited from the deep commitment and strong support of the following external agencies: Learn Quebec and Recit animators, Cefrio and the Ministère de l'Éducation, du Loisir et du Sport du Quebec.

Five Key Lessons Learned related to Leadership Support

1. Leadership support is required from a host of stakeholders if ICT-supported learning is to be widely implemented.

2. In-school administrators are an essential source of support.

3. Experienced BCT teachers provide valuable face-to-face and online support.

4. BCT Lead Team members provide meaningful support by listening to teachers and trying to meet their classroom-based needs.

5. School board administrators play an important coordinating and guiding role in facilitating ICT-supported learning.

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4. The BCT Community of Practice

Meeting with colleagues during face-to-face sessions provided the initial opportunities for BCT teachers to begin the development of a community of practice. At first teachers were reticent about sharing their ideas and teaching practices; however, with time and involvement in the network they became increasingly more willing to do so. Our experience has shown that it takes several years for teachers to feel sufficiently comfortable to contribute regularly to the online community of practice. In addition, we found that our community of practice evolved through these phases: shaping a common vision of student learning, participating in face-to-face professional learning opportunities, deliberately practicing the use of relevant ICT tools, using ICT tools in the classroom and reflecting on their use, adapting the ICT tools to classroom needs, and sharing experiences and expertise with colleagues. A variety of tools were used to facilitate collegial collaboration including the Learn Quebec's Sakai Portal, Live Classroom, and Zenlive programs as well as email, Skype and the telephone!

Five Key Lessons Learned about the BCT Community of Practice

1. An active community of practice takes time to develop due to its voluntary nature.

2. Personal and professional factors affect the degree to which teachers can participate.

3. Opportunities for teachers to meet in face-to-face situations can develop professional trust, which facilitates the growth of the community.

4. Over time, the degree to which teachers participate will vary with the topics under discussion and their interest in them.

5. As teachers get to know each other, the use of online tools can facilitate collaboration across the network.

5. IT Support

The exponential increase in the availability and use of ICT tools to support teaching and learning has significantly increased expectations and demands related to IT support. Our experience indicates that understanding the pressures placed on IT technical support staff, following the established procedures to request and receive support from them , and developing an ongoing dialogue between pedagogical and technical support colleagues has proven to be beneficial. In addition, training and mobilizing students to provide operational support has also been helpful.

Five Key Lessons Learned Related to IT Support

1. Teachers appreciate receiving IT support within reasonable timelines.

2. The growth of ICT supported learning has increased demands and pressures on IT departments.

3. The updating of computer equipment and related resources can decrease the demands placed on IT departments

4. Ongoing communication between pedagogical and technical colleagues can lead to more effective and efficient IT support.

5. **Establishing and following guidelines for accessing IT support can also facilitate required services.**

6. Infrastructure

The first five themes discussed in this eBooklet are of central importance in the promotion of ICT-supported learning; however, establishing and maintaining a reliable ICT infrastructure is absolutely essential. Establishing an ICT Coordinating Committee, taking the time to develop a sensible long-term plan, involving teachers in the planning process, and coordinating the plan with school board priorities have all proven to be helpful in developing an accessible and reliable infrastructure.

Five Key Lessons Learned Related to Infrastructure

1. The availability of functional computers and reliable access to the Internet are of crucial importance.

2. Effective multi-year planning is the key to developing an effective IT infrastructure.

3. Establishing an ICT coordinating committee can facilitate the planning, purchasing and sharing of computer equipment and related resources within a school.

4. New equipment should be purchased after considering the degree to which it will impact student learning.

5. Government support for increased capital expenditures in ICT equipment should be accompanied by increased resources for IT support.

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