Video Conferencing at McBride Secondary School:

A report of building rural educational capacity

Executive Summary

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Acknowledgements

During the winter of 2007, the research team visited schools and community institutions in McBride and Prince George to conduct interviews as part of the "Video Conferencing at McBride Secondary School Project". We wish to express our appreciation to all the individuals who took time out of their schedules to participate. Thanks to the teachers, educational community members, and community groups who helped out. Their response and enthusiasm demonstrates the importance of this issue within the community. The insights provided through these findings will support a better understanding of distance education in the rural and small town places in northern BC.

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Rosemary Raygada
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Availability

Copies of all reports associated with the "Video Conferencing at McBride Secondary School Project" are available in a number of locations. In McBride, copies have been deposited with the Village Office and the public library. Copies of this report have also been sent to McBride Secondary School, Prince George Secondary School, Kelly Road Secondary School, and the Robson Valley Home Support Society. At the University of Northern British Columbia, copies have been deposited at the Weller Library or can be accessed on the Community Development Institute website: http://www.unbc.ca/cdi/research.html.

Project Reports

- Executive Summary
- Methodology Report
- McBride Case Study and Recommendations

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Executive Summary

1.0 Project Description

Technology plays a crucial role in the transformation of society. Communities are integrating the tools of these technologies in their own development processes. The education sector – one of the cornerstones of society's development – uses these tools to enhance the process of teaching/learning, and to address the educational needs of those who are unable to attend schools, universities, and other educational institutions for various reasons.

Schools in northern British Columbia, as in other rural locations in Canada, have the capability to use video conferencing as a tool to reach students in remote locations and to provide them with the same opportunities for learning as students in urban centres. However, it is important to understand how video conferencing contributes to student learning, to teaching methods, and to community capacity building.

This project assesses a video conferencing pilot project started by McBride Secondary School in conjunction with Prince George Secondary School and Kelly Road Secondary School. The project operated for four years between 2003 and 2007. Teachers involved in the project have been working to overcome a number of challenges associated with video conferencing classes. Aside from the provision of technology, there has been limited support from School District #57. They have been faced with many technical challenges, have invested much of their own time in adapting materials from traditional classes to video conferencing, and have tried to motivate and involve students without any special training.

This report includes a summary of key findings, including methodology details and results from key informant interviews in McBride and Prince George.

2.0 Methodology

A case study methodology was used to explore how a small town secondary school organized with schools in a larger regional centre to deliver / receive courses in real time using video conferencing. Three schools were involved in this research, including McBride Secondary School, Kelly Road Secondary School (KRSS), and Prince George Secondary School (PGSS) – all of which belong to School District #57 and were involved in a partnership to deliver education through video conferencing. This partnership was spearheaded by McBride Secondary School with KRSS and PGSS joining as partners in 2003.

Data for this exploratory research was collected through:

- in-depth, key informant interviews;
- a review of the Robson Valley Times newspaper (from 2003 to 2006), "AchieveBC" news (Ministry of Education "BCEd On-line"), and School District #57 reports and publications; and
- a review of school statistics in British Columbia using ICT, the Internet, and web conferencing tools; and communities with broadband.

In-depth interviews were conducted with key informants during the spring of 2007. Key informants were defined as those directly or indirectly involved in delivering or receiving education through video conferencing. Questions were designed to explore the planning, delivery, monitoring, and evaluation of video conferencing in high school classroom settings, as well as any challenges, expectations, or unique achievements (See Methodology Report).

The analysis was conducted to explore four key themes including management, delivery, teaching capacity, and student capacity.

3.0 Summary of Findings

A number of benefits and challenges were linked to the project. From the students' perspective, many were able to accomplish their goal of graduating with the courses needed to pursue a career at a college or university. While these students would have preferred a course taught in-class with the physical presence of a teacher, they did recognize that video conferencing was a better alternative than taking the courses by correspondence or over the Internet. Everyone involved in the experience of video conferencing believed that it was a good tool for distance delivery of courses because feedback could be provided to the students in real time. However, it was recognized that other technology tools, such as a blogs, websites, printers, or CDs, would be useful complements to this type of course delivery. In addition, the project needs to be properly set up with rehearsals in all the sites to address technical problems. Video conferencing is also viewed as a useful communication tool for community or institutional meetings, especially for more remote places during the winter months.

The main findings from this research relate to a number of topic areas including:

a) motivation of participants,
b) technical support,
c) enhanced audio-video,
d) human connection,
e) quality of learning-teaching,
f) coordinator/teacher-assistant,
g) planning (incentives),
h) the need for an integrated video conferencing approach for the community, and
i) the need for evaluation.

Motivation of Participants

Teachers expressed excitement when the government provided their schools with video conferencing equipment and designated them as a "pioneer" within School District #57. They felt that students in small towns, like McBride, want to have the same quality of education.

Teachers identified several challenges to using video conferencing as an educational tool to deliver education, including:

- difficulty understanding how to use the equipment,
- difficulty adapting course material for two different study groups at the same time (on-site and at a distance),
- difficulty arranging the material to integrate the two groups actively and effectively, and
- difficulty reinforcing student motivation to learning through video conferencing.

At the same time, students did not always know that they would be participating in a video conference class. During the early tenure of the project, some students dropped the course or had intended to drop the course. According to Armstrong-Stassen *et al.* (1998: 154), one of the major factors influencing the effectiveness of video conferencing is student acceptance of this medium of instruction. They added that the inexperience or the unfamiliarity of both instructors and students with video conferencing could have negative effects on students' attitudes.

Teachers recognized that it was no longer sufficient to only teach students about how to use the video conferencing equipment, but it was also important to know that students from each school involved in the project had different capabilities and motivations to learn through such technology. Such sentiments reinforce previous ICT work that "when designing distance learning programs and courses, the first thing an institution should consider is the student audience (Johnson 2003: 110)". Phillips and Peters (1999) also argue that different groups of students have different learning needs. Different approaches to reach those students will be necessary.

Despite the extensive time required to provide feedback and address technical problems, teachers tried to involve and motivate students in video conferencing classes. However, both remote and on-site students were not satisfied with the video conferencing courses. As Johnson (2003) reveals, on-site students may find that the professor is less accessible due to style and technique adjustments made to accommodate remote students. As instructors overcompensate to motivate remote students, there may be unintended consequences for on-site students.

Technical Support

The project operated without a technical support person at each site. If technical problems occurred, sessions were cancelled. While teachers can improve their teaching skills through the use of e-teaching/learning, they cannot be expected to understand and be responsible for every aspect of video conferencing technology. Student support services, particularly technical support, must be provided.

Enhanced Audio-Video

Some feel that audio is a more critical component than video to facilitate effective interaction during meetings (Sonnenwald *et. al.* 2002; Patrick 1999). For the most part, the absence of video can be compensated through good quality audio. Unfortunately, audio at McBride Secondary School was often poor due to differences in high speed connections at the participating sites, technical problems, lack of technical support, lack of rehearsal with participating sites prior to the commencement of classes, and lack of training with respect to voice and encoding techniques that would improve the quality of speech.

Human Connection

Patrick (1999) identified many concerns about human factors involved in mediated communication systems, such as video conferencing. Much of the development and use of these systems has been driven by technological advances with little consideration for actual use and communication processes. While participants felt that video conferencing cannot replace spontaneous events in a face-to-face environment, if properly supported, it can provide an adequate substitution for regular classroom interactions with the caveat that its success will depend on the quality of the technology.

Quality of Learning-Teaching

Furr and Ragsdale (2002) examined and described the incidental learning activities of students and instructors in distance video conferencing classes. They found that "local evaluations and longitudinal studies that can document patterns and changes and guide policy decisions are critical for program success and survival". Knipe and Lee (2002), in their study about the quality of teaching and learning via video conferencing, found that inexperience, bad preparation and planning, unsuitable teaching strategies, and inefficient training on the part of the facilitator also has a bearing on the quality of teaching and learning in a video conferencing class.

During the three years of experience with video conferencing in this project, there has been no specific evaluation of the impact that the project has had on student learning. Among the schools involved in the project, only the Principal from McBride Secondary School has attempted to seek student input on the impact of the project on learning. While participants involved generally felt that the quality of learning-teaching was not as good as face-to-face process, this has never been formally evaluated.

Some teachers at Prince George Secondary School and Kelly Road Secondary School tried to enhance the process of learning via video conferencing through adopting a more blended learning approach by adding other tools such as blogs, e-mail, etc. Blended learning programs integrate innovation and technological advances to create a number of advantages (Bersin 2004).

- "learning can be more targeted, focused, delivered in bite-size, and just in time;
- learners can interact with the tutor;
- learners can interact with peers;
- learning materials are really accessible; and

- a variety of techniques can be utilized by maximizing different technologies" (Thorne 2003: 132).

Coordinator, Teaching Assistant (TA)

In our case study examining the use of video conferencing at McBride Secondary School, the project group has been working regularly without a teaching assistant in the remote site. In McBride, the Principal functioned as the coordinator in all the courses delivered to or from McBride. However, clerical support is very important for data management, test validation, and reproduction. Schools should not expect that the teacher should handle these duties in addition to preparation requirements for instructional video conferencing.

Planning and Incentives

In the case study, none of the teachers were provided with training prior to the start of classes. Also, teachers have been performing a double role as a traditional teacher (in the site) and distance educator (to remote sites) without any incentives for the additional time spent in planning, researching, and training themselves for video conferencing classes, or for the special support needed for distance education students. Davis (2004: 103) states that:

> *Even in the initial stages of thinking about the development of an on-line program, it is wise to involve all those who are likely to be involved at any stage. To foster such involvement, the sponsors of the program can prepare a preliminary proposal laying out the objectives of the program, the intended students' market, and the proposed on-line approach. This strategy gives the service units a chance to comment on matters what will affect them, and for fellow educators to comment on the proposed content and pedagogy.*

Evaluation

The development and execution of an e-learning or video conferencing educational system should include a plan for the independent evaluation of all the aspects of the system. This must include the degree to which it enables or enhances the project goals and student earning outcomes (Davis 2004).

4.0 Summary of Recommendations

Recommendations from this study can be categorized into four themes:

1. Management,
2. Delivery,
3. Teacher Capacity, and
4. Student Capacity.

Management

Classroom support needs:

- Technical support for video conferencing classes to protect the quality of teaching and learning in the connected classrooms.
- Policies to provide incentives for teachers to pursue training for video conferencing and ICT.
- Compensation for the time teachers allocated to preparing and delivering video conference courses.

Evaluation needs:

- Participating schools should evaluate the results of video conferencing projects on an on-going basis through observations, testing of students, and through discussions with teachers, students, technical support, and other staff.
- Promote the use of evaluations for video conferencing courses.

Funding needs:

- Allocations to support the development of video conferencing courses.
- Teachers should receive appropriate support for extra duties associated with video conferencing classes.
- To set up video conferencing rooms that are suitable for remote classes.

Network needs:

- Establish page on the school district's website that provides appropriate information and resources for teachers, students, and parents involved in video conferencing courses. It should include practice guidelines, information related to the use of video conference technology, forums, a listing of technical reviews in northern BC, announcements of new technologies and updates, announcements of global video conferencing activities and opportunities, and recordings of video conference classes produced for students with a password to download when needed.
- Support community capacity building through the provision of forums and the development of curriculum around these medium.

Delivery

Classroom needs:

- Teaching assistants for larger classes, or particular course types, in remote sites.

Blended learning needs:

- Methods of delivery support for small classes in remote sites (1-5 students). This may include pre-recorded classes that are available for downloading on a CD or IPod.

Teacher Capacity

Training needs:

- Opportunities for teachers with experience in delivering video conferencing courses to share their knowledge with their colleagues about challenges and best practices.
- Provision of forums and training for teachers and staff.
- Creation of a mentor and support network for video conferencing teachers.

Trends to improve:

- Create opportunities for teachers to discuss common problems and responses to delivering courses through ICT with their colleagues. This should include best practices, experiments used with video conferencing technologies, and networks used to obtain training with video conferencing equipment.
- Provide literature on video conferencing.
- Encourage teachers to consider delivering one session in their traditional classes through video conferencing.

Support needs:

- Technical support to enhance students' skills with using video conferencing equipment in order to enhance the comfort levels that students have with using such equipment as a natural tool for learning.

Addressing student needs and expectations:

- Teachers should assess students' needs in all of the remote sites that they are delivering materials.
- Assess student feedback about video conferencing courses and develop strategies to increase collaborative and participatory work. Previous strategies have included e-mails, blogs, and face-to-face meetings to enhance communication between teachers and students.

Student Capacity

Support needs:

- Provide training on the use of video conferencing equipment to students who will be involved in video conferencing classes. Training sessions should include all of the participating parties involved in both the host and remote sites.

Roles:

- A mature student in a remote site may be designated and trained to be responsible for configuring, troubleshooting, producing, and operating the video conferencing equipment.

Expectations:

- Students should be advised that they are responsible for their own learning in video conferencing classes. Video conferencing is a distance education method that has an

independent learning component, although it also promotes collaboration and participation with teachers and students in the host site.

5.0 Conclusion

Review of the video conferencing teaching pilot project between McBride Secondary School, Prince George Secondary School, and Kelly Road Secondary School suggests great promise and the need for additional supports to realize that promise.

Ideally, schools should invest in planning and preparation of video conferencing courses before classes begin. Teachers and students involved in video conferencing courses need to learn and build experience with delivering education through video conferencing technology. The efforts made by those 'pioneers' involved in addressing significant challenges associated with the video conferencing pilot project are valued for their contribution to knowledge and expertise that can inform future video conferencing or on-line classes. It is important to share these lessons learned from their experiences in a forum that could be organized and promoted by School District #57 and UNBC.

There are 91 schools across British Columbia that already have video conferencing equipment, and there are an increasing number of communities with broadband connections. Therefore, students in rural and small town places could take the courses they need to attend college or university through video conferencing or on-line access points. The best practices and lessons learned in our case study should provide a foundation for developing a forum or conference with teachers, administrators, and students to build better practices for future video conferencing or on-line classes. At the core of our recommendations, it is instrumental that students have simulated classes before video conferencing classes start, while further research is needed to explore how video conferencing impacts students' success and motivation to learn.

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6.0 Useful Resources for Video Conferencing

Websites

Alberta Education. *Video Conferencing Research, Community of Practice Research Report*. Edmonton: Alberta Education. Website: http://www.vcalberta.ca/community/Research_Summary_Report_word_version_final.pdf.

> This report examines the use of video conferencing technology to deliver education in Fort Vermilion School Division No 52, Red Deer Catholic Regional Division No. 39, Grande Yellowhead Regional Division No. 35, Edmonton public schools, and Prairie Rose School Division No. 8. Key topics include technical support, coordination and delivery, incentives, mentoring and training, and research and evaluation of video conferencing techniques.

Alberta SuperNet. Website: http://www.albertasupernet.ca

> Provides high-speed connectivity for Alberta's public sector institutions including schools, libraries, health facilities, and government offices. Construction on the SuperNet (a high-speed digital network linking 429 urban and rural communities throughout the province) began in 2002 and was completed in 2005.

British Educational Communications and Technology Agency. Website: http://becta.org.uk

> Established in 1998, BECTA's mandate is to promote the innovative use of technology to facilitate learning in the UK. This includes initiatives to provide teachers and parents with support to get children learning online, the role of leadership in implementing technology in education and training, and descriptions / evaluation of various types of video conferencing systems.

North Slope Borough School District. Website: http://www.nsbsd.org

> The North Slope Borough School District in Barrow, Alaska started using video conferencing in 1993 in order to deliver education to students of diverse cultures in outlying villages in order to prepare them to work and live in the information age.

The Institute for Distance and Distributed Learning at Virginia Tech. Website: http://iddl.vt.edu/instructors/ivc/before.php

> Provides tips for teaching through video conferencing (i.e. dress codes for instructors, camera use, how to prepare powerpoint presentations, classroom management).

The Learning and Teaching Scotland Video Conference Hub (VC Hub). Website: http://www.ltscotland.org.uk.

> This Website demonstrates the use of various technologies (i.e. video conferencing, podcasts, online magazines, etc.) to deliver education to students, as well as information about teaching support and funding / cost savings programs for software and equipment.

University of Alaska – Office of Information Technology. Website: http://www.alaska.edu/oit/vcs/etiquette/etiquette.xml

> This Website provides information about setting up and using video conferencing equipment (i.e. camera placement, lighting, equipment checks, how to dial out, how to receive calls, how to schedule video conferencing sessions, reducing noise, dress codes, etc.).

University of British Columbia – Faculty of Medicine. Website: http://www.med.ubc.ca/education/distributed_programs/mpaact/etiquette_training.htm

> This Website provides information about video conferencing etiquette and training. Video conferencing tips focus on strategies for interacting with remote site participants (i.e. use of gestures, dress codes, time management, managing group sessions, design of presentations, etc.).

University of California – Cooperative Extension. Website: http://groups.ucanr.org/VC/Video_Conferencing_Etiquette_and_Tips/

> This Website provides tips for managing meetings through video conferencing (i.e. scheduling video conferencing sessions / troubleshooting technical problems). There are also several links to other universities in the United States that provide video conferencing tips on topics such as setting up video conferencing equipment, how to call and answer remote sites, and troubleshooting technical problems.

University of Victoria. Website: http://imp.uvic.ca/faculty/documents/etiquette.PDF

> This Website provides a link to a document with tips and etiquettes for tutors working with video conferencing related to the sound (voice and noise), presentation materials, timing (arriving and leaving the room), and camera movements.

University of Washington – How to Videos. Website: http://www.uwtvproduction.org/resources/prodvideos.html

> "The Video Conference Zone" is a video clip that viewers can download from the UWTV Production website. It demonstrates good video conference techniques, as well as some common problems and how to avoid them.

Publications

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