



RACOL

Rural Advanced Community of Learners



**Academic Technologies for Learning – Faculty of Extension – University
of Alberta**

CANARIE E-learning Program

**Final Report of the Evaluation Team:
Education Evaluation Sub-Group**

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by

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1.1 Introduction

This report provides recommendations based on findings from formative and summative evaluation activities, on the Rural Advanced Communities of Learners (RACOL) pilot project. These evaluation activities have taken place over a two-year period spanning from the spring of 2002 to March 31, 2004. The RACOL pilot project's goal was to bring high bandwidth technology to a remote location to enhance their education program offerings. Evaluating this project meant it was necessary to understand their existing situation, relative to other less-isolated districts, and see what changes took place around the project. To do this, it was necessary to collect information at the project's beginning, and again at the project's completion. In addition, formative evaluation of the technologies and the pedagogy were conducted to allow for continual improvement of the while the project is funded.

The role of the evaluation investigation has been to investigate the practical viability and sustainability of this solution to the problem of providing learning opportunities to the Fort Vermillion School Division #52 (FVSD), and in part to being the foundation for further community development. It was expected that the evaluation of this pilot project should make suggestions about a required plan of action to continue with the program after being implemented in the FVSD; provide information and guidance for other locations that wish to implement a similar program; and provide information that may help to meet the learning needs and development of the community. These suggestions will be based on the results of the interactions and reactions of the many stakeholders with the projects three main components of this pilot implementation: the technology, the pedagogy, and the professional development initiatives. Output measures of improvement in distance education because of these interventions might include enrolments, student performance, satisfaction and improved opportunities.

Suggestions made will help to guide the continued use of this distance education system in a way that will benefit the various stakeholders, including the school administration,

partners, teachers and students of the FVSD and other school divisions contemplating similar solutions.

1.2 Deliverables

At the outset of the project three broad areas of research questions were delineated: 1) pedagogical/professional development questions, 2) sociological/economic questions, and 3) technical questions. The role of the evaluation team has been to investigate relevant to contributing knowledge to each of these areas of the RACOL pilot project

1.3 RACOL Evaluation Commitment

The commitment of the RACOL evaluation team was to:

- Help determine the initial attitudes and behaviors of the target users and stakeholders and the changes over the length of the project. Three types of information would be gathered:
 - Information about the instructional technologies used
 - Information about the relevant pedagogical methods used, and
 - Information about the costs of the different programs. This information would serve in part as baseline information for later comparisons within the project and with other school divisions, and in part to help learn what initial training would be needed and where.
- Examine the learning achieved by the students.
- Continuously provide formative information to the developers, stakeholders, and participants.
 - Information that can be used to make improvements.
 - Information that can be used for designing the later parts of the project.
- Examine the project goals to see if they are being met and to understand the goals in their authentic context.
- Assist with the dissemination of findings through submitting research articles and other methods.

1.4 Deliverables relative to the Statement of Work:

Phase I: Baseline Data gathering commenced in the spring of 2002 and continued to August 2003.

Phase II and III: Due to delays in start-up, 1st and 2nd Formative Evaluation phases were combined and completed from September 2003 to January 31, 2004.

Phase IV: Summative Evaluation activities completed were delayed to February and March of 2004. On-going summative evaluation activities will continue through to at least to June 30, 2004.

1.5 Research Design

Multiple designs and multiple methods were used. This approach allows findings to be triangulated, which decreases the chances of spurious findings. Combinations of the following methods were used: interview (F2F and teleconference), focus groups, surveys (both online and paper based), observations, and analysis of other available data. In addition, when appropriate permission is attained, paper records of budgets and expenses were examined to help determine cost estimates.

Introduction of a major improvement in the distance learning technology utilized by the Ft. Vermilion School Division (audio-graphics to video conferencing) presents a relatively unique opportunity to evaluate the change.

1.6 Data Collection

The evaluation was undertaken with various groups – partner stakeholders, FVSD administrators, VPLE teachers and students, and the community. The following outlines data gathering methods for each

1.6.1 Stakeholders



All stakeholder data was acquired by interviews conducted in person or via conference call. Stakeholders include industry partners, post-secondary institution partners, and community representatives in the McKenzie Region. See Appendix C for a listing of stakeholders interviewed.

1.6.2 Administrators

All administrator data was acquired by interviews conducted in person or via conference call, via minutes from meetings and e-mail communications. Administrators include school superintendent (past and present), school and learning store principals, and school computer technology technicians.

1.6.3 VPLE Teachers

All teacher data to date has been gathered through observation in professional development meetings, minutes from these meetings, classroom observation, conversations with professional development coordinators, and informal discussions with the teachers.

1.6.4 VPLE Students

All student data has been gathered through survey and focus groups and classroom observation.

1.6.5 Community

Data on community reactions and interests was gathered through interviews, informal discussions with community leaders and FVSD administrators.

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1.7 Outcomes

Since the submission of the January 31, 2004, Interim Evaluation Report, the evaluation team has conducted 10 summative stakeholder, partner, and administration interviews to determine present attitudes, expectations, successes and shortcomings, on-going concerns, needs for sustainability relative to the technology, teaching and learning, administration and management, and the community. Interviews were completed March 31, 2004.

On-going summative evaluation activities will include:

1. A comprehensive teacher survey will be delivered in late May, early June 2004.
2. Student focus groups will be conducted in early late May or early June 2004.
3. A final report workshop to include discussions of the results and sustainability strategies.

Outcome data analysis and recommendations are reported in a manner to help in providing some answers to the initial research questions, comparisons to baseline data, and recommendations based on data analysis. Outcomes are reported up to March 31, 2004 and where further evaluation research is pending, this has been indicated.

Recommended on-going evaluation activities should include a needs assessment of community needs, and formative and summative evaluation activities of pending adult learning program.

1.8 Achievements

As per the original Statement of Work, we completed baseline data collection and formative data gathering.

See also Appendix B: Interim Report

1.9 Challenges

Delays in the SuperNet afforded the evaluation team extra time to gather baseline data. This data was especially beneficial in

determining the expectations of various key stakeholder groups (see Appendix C). However, time constraints on the actual live VPLE time for evaluation of the RACOL project have limited the outcomes possible up to March 31, 2004.

The first semester data provides insight into getting started with the system. Data from a second semester would reveal more on the impact of the system on teaching and learning, and how the school division is able to solve many of the issues that have come up, how individuals adapt and creative in building communities of learners and practice, and develop with the system.

Many aspects of the pilot project were expected to be changeable during the formative evaluation phases and therefore expect to be modified in response to student, teacher and expert interactions. This moving target nature of the RACOL pilot project is an advantage in that its flexibility increases the likelihood that the information yielded by the formative evaluation will be used to make substantive improvements in the structure and operation of the program.

Another limitation has to do with different perspectives of the participants in this evaluation. Mennonite and native cultural and religious concerns and how this may influence their perspectives. These distinctive perspectives must be kept in mind whenever the results of the evaluation are considered in order to prevent misinterpretation of the findings.

The pace of technical and pedagogical components of the project proceeded differently. Because the pedagogical components require more time, due to the need to develop some comfort with the technology, gain an understanding of the technologies strengths and weaknesses, and work through the inevitable bugs, the major part of this evaluation has needed to be delayed (mostly beyond the CANARIE timeframe). However, the technological component itself can be examined within the CANARIE timeframe.

1.10 Recommendations

The following are key recommendations based the RACOL Evaluation Study:

- We strongly recommend that a champion coordinator be hired (or as a volunteer) in the school division, or community, to be responsible for the research and on-going coordination of learning and business opportunities and activities with learning system.
- We strongly recommend an expert individual or group completes a needs assessment of the communities short and long term learning needs.
- We recommend that all school jurisdictions utilizing similar distance education learning systems, be integrated and linked in an attempt to avoid redundancy of efforts by sharing lessons learned, best practices, resources, and sharing research findings nationally, and internationally.

Appendix A provides details on data analysis and suggestions for the Fort Vermilion School Division.

1.11 Phase Deliverables

Please describe the actual achievement for each deliverable as described in the Project Agreement.

See Appendix B: Interim Evaluation Report for a breakdown of deliverables up to January 31, 2004.

Objective/Deliverable	1.11.1.1 Actual Achievement with Comments
Stakeholders Interviews	10 individuals interviewed (stakeholders, partners, administrators) completed March 31, 2004.
RACOL Evaluation Team Meetings	The evaluation team continued to meet and discuss evaluation needs, plans, and proposed action for data gathering up to the end of June 2004.
Completion of Final Report	Completion of Summative Evaluation Report including descriptions of on-going activities.

1.12 Schedule

For each deliverable outlined above please identify the “Actual Finishing Date”. On top of this please provide a summary of your experience on the RACOL Project, including your achievements, challenges, outcomes and lessons learned as we move toward the end date of the project.

1.13 Information Dissemination/Technology Transfer

Please describe initiatives to disseminate the knowledge gained or technology developed during the project to the broader community. This will include conference and workshop presentations, scientific publications and other electronic media communications. . Please identify the audience being reached. (T - technical, B - business, S - Industrial Sector, E - Education Sector, H - Health Sector, P - other public sector, M -Mixed, O - other, please describe). Please complete the following summary tables and provide complementary narrative discussions.

1.14 Conferences/Workshops

For the first table, list all conferences and workshops at which presentations related to the project were made. Identify the category of the initiative (CS - CANARIE sponsored conference, NC - non CANARIE sponsored conference, PS - project sponsored workshop/seminar, OW - other workshop/seminar, OT - other, please describe) and number of attendees (indicate if an estimate). Also describe the audience being reached, using the categories described above.

Conference/ Workshop/Seminar	1.14.1.1.1 Category	Registration Fee (y/n)	Number attending	Audience
EdMedia 2003 Conference	OT - graduate research student with some Travel Grant support from U of A.	y	1500	M
EdMedia 2004 Conference	OT - graduate research student	y	1500	M



	sponsored.			
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1.15 Publications

Please list any publications (not limited to refereed journals, but could also include newspaper and magazine articles) resulting from the project, and identify the type of audience being reached.

Article title and location	Audience
Preparing Rural Teachers for a Broadband-Enabled Virtual Presence Distance Learning Environment	<i>1.15.1.</i>
Rural Advanced Communities of Learners (RACOL): A Case Study (A brief paper on the highlights due for completion May 3 and presentation June 2004).	M
Rural Advanced Communities of Learners (RACOL): A Case Study (Ph.D. Dissertation due for completion later fall, 2004)	M

1.16 Print and Electronic Media (Promotion/Communication)

Please describe print and electronic media presentations and events in which the project has been promoted or communicated, and identify the audience being reached.

Title/event	Audience
n/a	

1.17 Appendix E1.1: Data Analysis and Recommendations

Discussion on data analysis, and recommendations are broken down into 6 sections. The first section provides findings on the analysis of data gathered on the

administration and management of the RACOL project. These are the individuals that, without their commitment and buy-in, the RACOL pilot project could not have endured and accomplished what it has to date. Section two provides findings on the analysis of data gathered from key individuals regarding the communications, hardware and software technologies that were integrated to form the platform for RACOL. Section three provides recommendations based on the analysis of data gathered centered on the Virtual Presence Learning Environment (VPLE) classrooms. These include activities around professional development, teaching and learning. The fourth section provides findings from the analysis of the attitudes and perceptions of the FVSD community groups that would represent also parents of students in the VPLE classrooms. The fifth section of outcomes provides findings on the analysis of adult learning programs being offered. Lastly, section 6 revisits the projects goals and reflects on the progress made as well as provides recommendations for sustaining the VPLEs beyond the RACOL pilot project.

Data analysis based on data gathered from various partner stakeholders has been woven throughout.

1.17.1 FVSD Administration & Management

Initial baseline information gathered from administration indicated favorable, positive attitudes overall towards receiving the new distance education system and its potential benefits for the students. Principals were hopeful that it would provide improvements over previous distance education solutions (correspondence, teleconferencing, audio graphics). For the past 6 years the jurisdiction has been using audio graphics to synchronously deliver 8 academic courses to all high schools. Although this technology has been fairly successful, teachers and students have indicated some dissatisfaction with this learning environment. Students have said that they feel isolated and have indicated that they would like to see what their teachers and the other students look like. "Teachers feel disconnected from their students because they cannot see their faces and judge their reactions," says a senior administrator. "Because the audio graphics only facilitates voice communication, teachers can't gauge if students are lost or following along on a topic." The Fort Vermillion



teachers often find themselves falling into “presentation mode” because of lack of feedback. Also, due to very limited bandwidth that existed prior to SuperNet there has been limited ability to develop digital presentations (e.g., PowerPoint) and to share digital resources with students. Students are usually aware through other students and/or family members who had experiences with “bad connections, and the lack of visual connection in other classes and therefore not as keen to take teleconferencing or audio graphic courses. There was however, expectation of increased interest in taking distance education course, in the VPLE, in part out of curiosity and, in part out of the opportunity to be able to see and interact with their teachers.

All shared the same concern/ discouragement over the delays in the SuperNet and therefore resources remained limited until the SuperNet was operational. Overall individuals felt they were well informed on the project and, where necessary, had a role in some of the decision making around it. Administration felt an overall sense of positive reception from the community barring a few concerns as will be discussed later in this report.

The following are some of the initial concerns expressed during baseline gathering activities, and the outcomes to date:

Initial Concerns	Outcomes
What has to supplement the video conferencing to make it effective?	Efforts are being made by teachers to explore the appropriate and effective use of the technologies by exploring creative application of new pedagogical methods in their teachings. In early stages, process is continuing.
What is the video conferencing technology doing to improve how students learn and how teachers teach. What are the paradigm changes that are occurring and what is contributing to these changes.	Teachers have begun to rethink how they can best teach different concepts with the available technologies and connectivity to students. Students are interested in broadening their perspectives by working on group activities



	with students in the different schools. The major paradigm change occurring so far is the increased collaboration, communication and learning interactivity amongst the students and teachers in the schools.
Will there be adequate professional development training for teachers so they do not have to learn the VPLE equipment while they are teaching?	Given that teachers had no control over ready date of the technology and limited advance preparation time, they appeared able to make the transition to using the technology with minimal problems.
Will the equipment be adequately secure?	One school has installed video camera surveillance and another school had an on-site teacher assigned, and others are considering similar measures.
Kids being able to access the Internet on a regular basis in class at a faster rate than the current 56K. The 56K speed in a computer lab of 20-25 students takes too long and usually cannot be accomplished in the 40 minutes they have. Experienced delays up to 20 minutes in getting web site to appear.	SuperNet connectivity has likely solved this problem however, this has not been directly observed to date.
Improvements over problems with teleconferencing and audio graphics.	Data gathered to date indicates major inroads to improvements over past distance education learning systems used in this school division. The primary issues of these past learning systems was the lack of visual contact that created feelings of disconnectedness, isolation and the inability for teachers to



	<p>determine if the students were engaged in learning activities. Teachers and students were also limited in being able to share resources. The VPLE learning system appears to have resolved these issues. To be determined however, is the impact of the new system on failure rates and grades.</p>
<p>Will there be possibilities for community to use the VPLEs to access post-secondary classes all year round, evenings etc.</p>	<p>Senior administrators in the FVSD are working to send signals to the community that the technology is helping to build a stronger community at large, that can grow economically and be successful without its population leaving to seek learning needs. And, that the new learning system will not only impact education opportunities, but also children services, life long learning attitudes, and demonstrate have heard their needs and will comply. To date, there have only been a few limited examples of attempts to provide adult learning courses. There is reason to believe this will improve in the future.</p>
<p>Students who do take the courses are able to function as self-directed learners, under minimal amount of assistance form a supervisor</p>	<p>Not all students seem to benefit from this environment. Administrators currently have decided it is best not include Grade 10 students as they were thought not ready for this kind of classroom structure. One teacher indicated however, that if the pedagogy was sound, then all students should be</p>



	successful. The FVSD will try new strategies with student selection for the Fall 2004 semester and continue to assess this situation.
Users need to share what they have learned in using the equipment, lessons learned and best practices through some form of documentation, paper or digital.	Teachers have had minimal time to meet to discuss their experiences and challenges outside working with the RACOL professional development team and their regular meetings.

The following of administration and management are concerns that had developed throughout the first semester that for the most part have been resolved.

Development	Solution
Class enrollments were initially too large.	Administration felt many students initially registered based more on curiosity and this would level off over time.
Remote location discipline issues developed, for example, not on task, leaving the classroom.	Felt this could in part be solved by being selective about which students would be best suited to learn in the VPLE. Another method employed by teachers was to zoom in with the cameras to draw attention to disruptive behaviours. Some teachers were more comfortable than others with using the cameras as part of their discipline actions.
Issues with cheating on exams.	Suggestions made included keeping all microphones on, limited number of students in the class, spread students out in the class, use the cameras to monitor activity, select where students can sit, and have local teachers attend tests.



Other teachers and students are also interested in using the technology.	None to date but exploring possibilities for these opportunities.
Problems with school morning announcements and clock synchronization.	Temporary mute the microphones during announcements. Clocks have been synchronized at all schools except one, all will be synchronized in the fall.
Some resistance from teachers who do not accept this as a good form of teaching, perhaps based on their audio conferencing experiences.	Administration does not believe this problem is widespread. There are also limited teachers involved.
How will attendance be tracked. Some schools may not track VPLE students as seriously as they should.	Administration is currently exploring attendance tracking systems for these classrooms.

1.17.1.1 Other Comments

RACOL has brought positive exposure through publicity from the Province and others and brought a greater profile to the community. This may provide a boost of confidence to those working on the project. The FVSD administration feels the project has unfolded better than expected with lively students connected to each other, teacher changing instructional strategies and doing some remarkable integration of the technologies. The FVSD has built a team of experts to present at conferences on their experiences, and promote the learning system, and would like to continue to work with the support of Alberta Learning.

The following are suggestions based on our analysis of the data in relation to the FVSD administration and management of RACOL. Some of these have already been discussed with individual in the RACOL project and the FVSD based on early data gathered, and others are based on more recent data.

1. Continue to provide all interested teachers with professional development support that will help them to:



- a. Design student-centered approaches to teaching their subjects.
 - b. Integrate more interactivity between each the locations.
 - c. Integrate activities that help students to learn more about each other's culture and religions to help in dismantling myths and developing bonds with students between communities.
 - d. Encourage teachers to explore different technologies to find best fit relative to the subject or topic or concepts they are teaching. Not all technologies are suited to all content. At times a blend of technologies provides the best learning experience for students. Teachers are going to need considerable help and support for this one. Teachers working in isolation are going to have a difficult time with just the required curriculum.
 - e. Encourage teachers to view playbacks of recordings of their teaching and the teaching of their colleagues in order to share new teaching strategies, and assess their own presentation styles, video presence and pedagogy. This can be done individually or in groups with discussion around what works well and what did not in order to extract best practices. However, teachers will require the support of the network technicians and the school infrastructure. On-going professional development would be essential to supporting this process by providing expert perspectives and feedback to teachers.
2. Open opportunities for using the VPLeS to other students and teachers, i.e. running lunch hour and after school sessions for special interest groups, music, brown bag lunch discussions on topics from completing math tutorials, to building a canoe, crafts, to the sharing and planning of basketball strategies on the SmartBoard™. This can be tested first with small pilot projects and will also need the support of the school through supervisory personnel etc.
 3. Encourage teachers to meet regularly with teachers within their school jurisdiction and with teachers in other school jurisdictions to create a culture of support through a community of practice by sharing experiences and strategies for teaching, and creating best practices models. This will again require technical support, especially when meeting with other school jurisdictions since they will likely be using different video formats (e.g., h.323).



4. Continue to explore possibilities for supervision in the classrooms to:
 - a. help students with technology problems,
 - b. to help deal with discipline and test taking concerns (i.e. keeping students on task in remote locations, and preventing the temptations to cheat on tests),
 - c. act as a liaison between teachers and students for sharing resources (i.e. retrieving and sending faxes, photocopying, etc, and
 - d. assisting students and teachers in facilitating learning activities by acting as teacher's aids or student coaches.
5. Work towards integration with other Alberta and global initiatives to create a culture amongst different organizations. This will require someone to be assigned as the coordinator.

1.17.2 Technology

Data gathered regarding the technology of RACOL indicated overall satisfaction with how well the RACOL configuration ran from the beginning – very few glitches. Given that it was a very complex system to put together, things went remarkably well.

The major point of discussion in interviews with technology stakeholders was over the chosen CODEC ("COmpressor/DECompressor"), MPEG-2. While all agreed, MPEG-2 it is a superior CODEC for video quality, the subsequent introduction of the less expensive, now evolved H.323 and provincial standardization to use this CODEC could mean the eventual conversion to H.323 for compatibility. Michael Bussiere of Sonic Design will provide CODEC evaluation feedback

The following suggestions are based on our analysis of data collected relative to the technology:

1.17.2.1 Virtual Presence Learning Environments (VPLE) Classroom

Overall satisfaction expressed with the layout, climate, lighting, sound and comfort of the classrooms. The only major technical issue identified by teachers and students was the problem of batteries running low quickly in microphones (batteries were good

for only 3 classes). While teachers were innovative in how they dealt with this problem during class, and soon learned to have a supply of batteries on hand, we are suggesting wireless microphones as an option.

Initially it was taking up to 10 minutes at start of classes to get the system ready. Students and teachers had adjusted to this delay and found time span could eventually be reduced to 5 minutes.

The PA systems were initially a major distraction at the beginning of class, as many as 5 different announcements coming through the microphones to all of the schools at one time. Teachers learned to turn off the microphones during announcements so that remote classes did not have to hear other remote school announcements.

Students will turn off lights in remote classrooms (to better see the displays), when this happens teachers cannot see the students. The glare of lights is a problem it has been suggested that the classrooms may have to use spotlight lighting to solve for this problem.

1.17.2.2 VPLE Technology Configuration

In general, there was praise from stakeholders for the VPLE configuration. One technology expert described the configuration as “elegant”. While there were some glitches from time to time, these appear to have been relatively minor to the users. While satisfied with the present configuration, it was felt by one individual in the FVSD that a smaller, more mobile system would better benefit some situations, for example when connecting with other school divisions who use H.323.

One issue identified that may affect teaching is that a teacher must determine and select one mode of instruction, i.e. SmartBoard *or* Visualizer, for the entire class. This selection is based on the desired latency quality mode (high or low) for their teaching need. Teachers have to think about which they want to use given the strengths and weaknesses of each, and adjust their lesson plan to the technology of choice. It is not desirable for teachers to have to make curriculum decisions based on the technology, rather it is important teaches make technology decisions based on the

curriculum. This will remain however the case for now as it currently takes 2 hours to change the latency mode.

At times, the CODEC may not show on start up. This usually resulted in a missing school on the screen and therefore no audio to that remote school. Teachers were able to navigate around this problem and it is resolved by the FVSD technician.

Another concern raised by a technology expert is that the MCU and AMX touch screens had to be custom built for this project – both have merits over the available *off-the-shelf* solutions available to enhance usability of VPLEs. The concern however is that because these are custom built solution, these may not be replicable, i.e. currently only one person in Alberta programs the AMX touch screens used by the system.



1.17.2.3 Asynchronous

It was the initial intention of RACOL to make lessons available to students “after the fact”, from their homes, by allowing students to connect to the FVSD network. The goal was to provide the same experience they would receive in the classroom, with the added benefit of being able to pause and review the material (Boora, Davis, & Montgomerie, 2003). It was also thought that these recordings could serve as best practices lessons for teacher professional development. Recording occur at two speeds, one high speed stream for use within the school system which is equipped with broadband capabilities, and the second for access by students from home with 56k Modem access only.

For the development of the asynchronous components of the project, the initial delays in the SuperNet were advantageous in that they allowed for time for the coordination and configuration of a better method for capturing the synchronous course materials. There were some difficulties experienced in initially acquiring the hardware and software; however, alternate solutions were found including the AMX programming of the SmartBoard touchscreen interface. The technical issue remains that once the system is started by the teacher’s schedule, it cannot be restarted. Therefore,



if teachers start and then stop the system, the recording session of their lesson will not restart.

To date, students, or teachers had not accessed the asynchronous recordings. The primary reason is that the network administrator has not yet made these available. The reason given is for protection of the network until a secure means of allowing this has been implemented on the network.

1.18 Teaching and Learning

Several issues arose out of the slower than expected availability of the SuperNet: 1) a shortened first semester start-up time period for the schools; 2) delayed start-up of the professional development (PD) activities (it was important to not have a long lag time between PD activities and actual hands-on teaching in the VPLE, and teachers were weary of investing time into PD until there was more certainty of when the VPLEs were ready. See the PD report below for further information.

1.18.1 Teaching

Overall the teachers involved were receptive to the new teaching environment and each demonstrated attempts to be creative with the technology for teachings. Most see the system as easy to use. Teachers had to make several adjustments in the first semester in getting used to the new environment and dealing with technology glitches, especially in the getting started activities.

The following suggestions are based on our analysis of data from the first semester:



1. Teachers can design collaborative and interactive, learning activities in an attempt to foster tolerance amongst students from different communities, through better understanding about their cultures and religions. Students also expressed an interest in communicating more amongst the different locations in the context of various activities inside and outside of the course.



2. There is concern by the RACOL professional development team that FVSD will not be resourced enough to continue to offer professional development opportunities to the existing, and new teachers that would ensure the system is used properly. Teacher's may fall into very traditional teaching mode, or not continue to explore possibilities with the technology. Teachers will need on-going professional development support to help to build and maintain the connections between the locations amongst students, and with themselves and the students in all locations, and teaching strategies in this environment, and to learn more about the possibilities of the technologies features. On-going professional development support to provide expert perspective and assessment feedback is strongly suggested.
3. Several logistic problems, including timing of school announcements, synchronizing of clocks between schools, different dismissal times between schools, came up in the course of the first semester that were worked out or are in the process of being dealt with.
4. There is a need in the classrooms for fax machines so that teachers and students can fax resources, assignments etc more easily. In some schools the only fax availability was in the general office, taking extra time away from teaching and learning to retrieve faxes.
5. Teachers may require guidance in finding and accessing Internet resources in order to pursue more creative and student-centered teaching activities. This will also require professional development, or periods release time.
6. Suggest teachers create more activity around encouraging students to use the question button and the "I'm lost" button, as well as introducing activities that requires interacting with the SmartBoard Most students expressed they felt uncomfortable with these aspects of the technology. This was not as a result of the technology itself, but rather the idea of being singled out or the focus of the cameras and therefore classmates. Student normally can be uncomfortable when they are required to be in front of their classrooms.
7. Encourage one-on-one communications using the computer station cameras. VPLE classroom computers

have been equipped with WebCams to provide for one-on-one communications with teachers.

Given this set of data represents the first semester, the students and teachers used the VPLE, we expect that over time there will be a smoothing out of some of the issues that were presented in the first semester.

1.18.2 Learning

Severe winter weather conditions limited the number of students that could be accessed during the last focus group data gathering visit (in January 2004). Students in the first semester were reserved on their experiences in the classrooms, with most preferring to not repeat a course in the manner if they had a choice. This reaction may be due to several minor issues that can be resolved with further experience by the teacher, on-going PD for teachers, and a better start for the 2nd semester. It is hoped that the next semester's data will show a smoothing out of some of the issues and student receptivity than that presented in the first semester. Also, some students will have experienced the process previously and can coach new students. . Another important aspect of evaluating the goals of RACOL is determining the impacts of the VPLE on student learning. Some remote students did indicate they felt their class average was lower than their normal average, and that of students in the non-remote classroom. The FVSD board will review student achievement scores, from semester to semester, to help determine the impact on student learning in the VPLE, over a longer period of time to be sure all relevant variables are accounted for.

The following suggestions are based on our analysis of data from the first semester.

1. It is suggested that students be provided with an orientation on the classrooms and the protocols for communicating with other students, and the teachers. Some of the orientation activities might include:
 - a. Encouraging and providing ideas on how to support one another in the remote locations
 - b. Strategies for getting the most out of the delivery



- c. Strategies for working more independently
2. Students need to be less hesitant to ask questions from the remote sites. This may be accomplished with coaching from an in-classroom supervisor, through persistent teacher prompting and probing activities, and with some practice during orientations.

1.18.3 Community

Informal discussion with community representatives indicates there is a great deal of interest by community groups to explore the possibilities for bringing learning opportunities to their community through the VPLE. The communities will however have to see tangible value in the learning systems for their specific needs before they can fully support and promote the system. The following are some suggestions based on these discussions:

1. Continue to include the cultural, religious, and family values of the community in decision making activities.
2. Continue to work with the communities to build trust in the system and its usefulness to the entire community. Community buy-in will occur if allowed to achieve an adequate comfort level, sense of control, degree of trust, patience, slow pace and empowerment of people. Community needs to be assured the technology has value, usefulness to developing and sustaining their community, and provides the security they want.
3. Perform a needs assessment to determine the real needs of the community and the timing of these needs, for the short term and long term.
4. Perform a scan of the facilities, strategies, partnerships, and technologies needed to provide for these needs.

1.18.4 Adult Learning

The perception of FVSD administrators is there is interest from many in the FVSD surrounding communities to have adult learning offerings, however, based on feedback from administration, there is a need to better understand what the rhythms and timings best

suiting to the various communities in order to know what course offerings to make and what time of year. For example, spring is often a busy time for certain industries and therefore individuals, while interested, would not have time to take a course. Post-secondary institutions may not be able to sell their standard package of offerings in this region, if the offerings are not perceived as filling a need within the community.

The following are suggestions based on an analysis of data collected regarding adult learning:

- Create a position, possibly a voluntary coordinator, to be responsible for coordinating adult learning offerings and scheduling etc. There is a need for better investigation into the specific needs of the community. So far Welding has not had the interest initially expected in terms of the number of participating in the initial course offering. While there is a need for certified Welders, many individuals can currently practice in the area without certification and therefore the opportunity to take classes was not seen as important. Better understanding of the perceived needs of the community could be helpful in promoting opportunities so others see the relevance.
- Those developing adult content need to be sensitive to when in these communities courses can best be taught, when the busy seasons for these workers are, and the real needs of the community. This discussion should also occur with the employers and what incentives might exist.
- Need to investigate what policies and protocols need to be in place to use the suites by those outside the school, i.e. supervision.

1.18.5 Beyond RACOL: Sustainability

As well as formally gathering data from participants, the evaluation team has also been in a position to observe and inquire informally for last two years. Our observations and queries have provided insight into the beginnings of a valuable distance education solution for the FVSD school division, and the community. It is our conclusion that these groups are just beginning to get a sense of



the possibilities the RACOL pilot project has introduced, but they are not equipped with the resources they will need to realize these. We strongly recommend that a champion coordinator in the school division, or community, be responsible for the research and on-going coordination of learning opportunities and activities around the learning system.

1.19 Resources and References

Boora, R., Davis, A.R., & Montgomerie, T.C. (2003, June). Converting Synchronous Instruction for Asynchronous Delivery. In D. Lassner & C. McNaught (Eds.), *Proceedings: ED-MEDIA 2003--World Conference on Educational Multimedia, Hypermedia & Telecommunications* (167 - 170). Norfolk, VA: Association for the Advancement of Education.

King, C., & Montgomerie, T.C. (2003, June). Surveying the Impact of Full Motion Video In Post-Secondary Teaching Environments: Alberta Video Classroom Network Evaluation. In D. Lassner & C. McNaught (Eds.), *Proceedings: ED-MEDIA 2003--World Conference on Educational Multimedia, Hypermedia & Telecommunications* (249 - 252). Norfolk, VA: Association for the Advancement of Computing in Education.

Montgomerie, T.C., King, C., & Dropko, K. (2003, June). A Needs Assessment and a Design for a Distance Education System: The Rural Advanced Community of Learners (RACOL). In D. Lassner & C. McNaught (Eds.), *Proceedings: ED-MEDIA 2003--World Conference on Educational Multimedia, Hypermedia & Telecommunications* (199-206). Norfolk, VA: Association for the Advancement of Computing in Education.

Montgomerie, T.C., & King, C. (2003, April). Rural Advanced Community of Learners. *The Distance*, 12(1), 1,5. Edmonton, AB: Alberta Distance Education & Training Association.

Montgomerie, T. C., Davenport, M., & King, C. (2003). Providing Quality and Equitable Distance Education. In *Proceedings: PTC2003: Global Broadband / Global Challenges*. [CD-ROM]. Honolulu, HI: Pacific Telecommunications Council. (4,592 words)

Montgomerie, T.C., Irvine, V., & Davenport, M. (2001, Jan 14-18, 2001). Design and Implementation of a Next Generation Distance Education System. In *Proceedings: PTC2001 From Convergence to Emergence: Will the user rule?*. Honolulu, HI: Pacific Telecommunications Council.

1.20 Appendix E1.2: Stakeholders

Project Leadership

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RACOL

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