



RACOL

Rural Advanced Community of Learners

RACOL Technical Report

This report provides documentation of the current status of each of the deliverables for the Rural Advanced Community of Learners (RACOL) project.

1.1 Virtual Presence Learning Environment Prototype

VPLEs have been installed in 5 of the 6 High schools in Ft. Vermilion School Division, in the FVSD Central office and at the University of Alberta. On August 17, 2003 the final Supernet equipment was installed to the classrooms, the central office and the NOC in Ft. Vermilion. The VPLE equipment was connected and tested between August 17 and Sept. 1. One week of professional development was also fitted into this period. On the first day of classes in September, the first five High School courses went live in Ft. Vermilion School Division using all the equipment. The Supernet connection between FVSD and the University of Alberta was completed on February 23, 2004. Connection and testing to the Faculty of Education VPLE was completed on February 26, 2004. One Supernet connection (to Meander River school) is delayed due to land use negotiations. A copy of the "RACOL Virtual Presence Learning Environment Functional Design (As Built)" is appended to this document. Please note that the Functional Design is the intellectual property of R.H. Sivertsen and Associates. The VPLE concept can be commercialized, but due to the unique nature of each classroom, each implementation will probably require some customization.

A technical documentation for the operation of the University of Alberta Cyberport (VPLE) has been prepared and is constantly under revision. A copy of the current Cyberport documentation is available for inspection.

1.2 Course Development

1.2.1 High School Courses

FVSD gave each teacher extra time to develop the high school courses. Each teacher was also given a laptop computer and productivity software. The VPLEs were designed so that a teacher can

bring their laptop to class, plug it into the network and power and immediately have access to the SMARTBoard and their school files. We began a series of professional development sessions with the teachers who were teaching in the VPLEs during the fall of 2003. During the first term (September 2003 – January 2004) five courses (Science 10, Pure Math 10, Physics 20, Aboriginal Studies and Career and Life Management) were prepared and offered. In the second term (January 2004 – June 2004) four high school courses (French 13, Applied Math 10, Science 20 and Physics 30) were prepared and offered.

The Banff New Media Institute has recorded, edited and made available on the Web as series of interviews and discussions about the intersection of Art and Aboriginal Studies. These are available at <http://banff.netera.ca/>.

Banff New Media Institute, in conjunction with researchers at the University of Alberta and the University of Calgary have developed four educational games that specifically address topics in the Alberta high school physics curriculum. These games are available at <http://racol.banff.org/>.

1.2.2 Post-Secondary Courses

Three post-secondary courses are being offered:

- The University of Calgary redesigned courses in their Teacher Assistant course so that they could be delivered to remote students via videoconferencing (specifically for use in the VPLE, but with the intention of making them widely available). They are offering the first course in the 9-course Teacher Assistant program teacher's certificate course January – April, 2004. The second course in this program is scheduled to begin April 21, 2004.
- The Northern Alberta Institute of Technology is offering an Apprenticeship Welding Course in the VPLEs. This course began in February 2004.
- The Department of Educational Psychology designed a new course EDPY597: Synchronous Learning Systems. This course was designed specifically for teachers and graduate students interested in learning how to deliver instruction in environments like the VPLEs. The course began in January 2004 with a pilot group of students.

1.2.3 Professional development program

We have increased the proportion of resources spent on professional development, but we feel that with the completion of the VPLEs, it is imperative that the teachers receive as much help as possible in using them effectively. We meet monthly with teachers via the VPLEs. We have also had face2face meetings in both FVSD and Edmonton.

1.2.4 Best Practice Vignettes

A prototype for the best practice vignettes has been completed. Teachers have discussed the kind of thing that they wish to demonstrate in the best practice vignettes. Two graduate students are scheduled to travel to FVSD the week of March 8, 2004 to complete video taping of the best practice vignettes (interviews with teachers and students, etc.).

1.3 Human Interface

1.3.1 Expert System Control System

Under the direction of staff in the Department of Computing Science at the University of Alberta, Robyn Taylor, a computer science graduate student, examined the user interface that was delivered with the VPLE control system. The intention of this evaluation was to see how the system could be improved by using expert system techniques. The system was evaluated using two different techniques: heuristic analysis and cognitive walkthrough. A number of deficiencies were identified in the current system. A copy of the report *Evaluation of the RACOL User Interface* is attached. After looking at how expert systems might be used to ameliorate some of these deficiencies, and the possibility of new errors being introduced by the use of such systems, Robyn recommended that the current interface should be redesigned around functional need, rather than adding the complexity of an expert system interface. A copy of the report has been provided to the designers of the original user interface and they have been asked to comment. At this time we concur with Ms. Taylor's recommendation and do not wish to pursue the development of an expert control system.

1.3.2 Asynchronous Recording and Playback of Synchronous Lessons

A system has been developed to record the three video streams (presenter stream, student stream and data (SMARTBoard) stream) and the audio stream. The streams are encoded, time-stamped, and made available through a specially designed Web Interface. A draft copy of the *Asynchronous Capture and Display System Technical Documentation* is attached to this report. A paper was presented to the Pacific Telecommunications Council annual conference in January 2004 and met with very positive response. Since the presentation, a number of issues have been addressed and a more complete paper has been accepted for presentation to ED-MEDIA 2004 in June 2004. Copies of these papers are attached to this report.

1.4 Evaluation

Three different evaluations: an educational evaluation, an economic evaluation and an evaluation of the different codecs are all being undertaken. A case study of the project has been approved as a PhD dissertation topic. All instruments have been designed and preliminary data collection has been completed. Some final data collection has been completed and this will be finished before the end of March, 2004. An interim evaluation report has been submitted and it attached.

As the implementation of the project was delayed by over one year, we had hoped to evaluate the classes that began in January 2004, the first "steady state" use of RACOL. Unfortunately, they do not finish their courses until after March 31, 2004. We expect that the economic study and codec evaluation will be substantially complete by March 31, 2004. We will not be able to evaluate student achievement, student completion rates, etc. We have applied to Alberta Learning for further funding to complete the evaluation, but have not received any response at this time.

1.5 Project Management

Cathy King of the Netera Alliance has been the Project Manager for RACOL. Cathy has been assisted by Ken Faulkner. They have done a tremendous job under, at times, extremely difficult conditions.



1.6 Publication/Communication

The RACOL web page is available at <http://www.racol.ualberta.ca>. Copies of publications written by RACOL researchers are linked at the publications page (<http://www.racol.ualberta.ca/publications.html>). A sample of three recent and one "in press" publication are attached.

Recently there have been a number of news stories about RACOL. The headline article in the January 2004 IEEE Spectrum was about RACOL. The Edmonton Journal (March 1, 2004) had a full-page article (Page A3) about RACOL. Wherever possible, copies or links to such articles are also on the RACOL Web page.