


**TECHNICAL SUPPORT THINK TANK
July 5, 2007**

REPORT OF PROCEEDINGS

Prepared for
The First Nations Technology Council
by
Franki Craig and Associates



Background

On July 5, 2007, twenty-nine 29 educators, technicians and former students attended a Think Tank in Vancouver to review the lessons learned from the recently-completed *Pilot Project for Training Certified Computer and Network Technicians for First Nations Communities* and to share intelligence from this and three other capacity building initiatives designed specifically to help build capacity in First Nations communities.. In organizing the Think Tank, the First Nations Technology Council aimed to achieve three outcomes:

- A shared understanding of the challenges that need to be overcome in order to significantly increase the available pool of certified computer and network technicians for First Nations communities
- Shared understanding of the factors that need to be taken into account when planning for the delivery of technical training to First Nations community members and
- A recommended technical training model that the FNTC and partners can further develop for delivery.

The projects presented for discussion were:

- OWL¹ Pacific Drinking Water Technologist Program. Community Health Associates of BC, and NVIT.
- UBC Certificate in Aboriginal Health Care Administration Program
- TRU Water Treatment Technology Program for First Nations
- FNTC/FNESC Pilot Project for Training Certified Computer and Network Technicians

Appendix A contains a brief description of the courses and highlights of the Think Tank presentations and lessons learned from the projects.

Common themes emerged from the subsequent round table discussion of all four projects.

Program Design

A blended model of face to face instruction combined with on-line works under the following conditions:

- There need to be clearly defined competencies that document standards and set targets for success of learners;

¹ On-Line Web Learning

- Client communities need to be involved in program design.
- There should be sufficient hands-on experience built into the program design, with practicum experience, if possible;
- There needs to be a face to face component that provides students an opportunity at the outset to meet face to face with each other and with instructor(s)
- There needs to be a cultural component that acknowledges Aboriginal values and world view.
- Where industry-standard exams are involved, they need to be scheduled as part of the program design.
- When text based courses are adapted for on-line delivery, there needs to be sufficient budget to make them multi-media in order to accommodate visual learners.
- Courses need to be accredited. Programs need to ladder into certificate, diplomas and ideally into degree path programs.

The report of the Evaluation of the FNTC/FNESC Pilot Project for Training Certified Computer and Network Technicians² documented additional conditions as necessary for successful delivery of the blended program design model:

- Students have the academic and technical pre-requisites or equivalent in experience before beginning the training.
- Students are motivated and sufficiently dedicated to give priority to the course for that period of time.
- Participating communities meet the selection criteria outlined and are able to ensure that students have access to internet connectivity with sufficient capacity to handle the on-line classes.

On-Line Delivery

Three of the projects experienced challenges with on-line delivery and concluded that:

- On-line learners need to be computer literate and both technical and social aspects of on-line learning must be addressed to ensure that students remain motivated and engaged in the web-based classes.
- Content specialists do not necessarily possess technical skills; on-line educators are not always experienced with the learning styles and community realities of Aboriginal learners.
- WebCT does not accommodate real-time discussion on line.
- Dial-up access to internet was too slow for Elluminate Moodle³ was used in the OWL project and proved to be useful.⁴

² Process Evaluation. Report prepared for the First Nations Education Steering Committee by Franki Craig and Associates. March 2007. < <http://www.fntc.info/>>

³ According to NVIT's Education Technology Facilitator, Moodle works very well with dial-up. However, it is possible to include many different types of media in Moodle courses, so instructors and course developers need to be aware that learners will be

- Student and, in some cases, faculty orientation is essential.
- The groups need to solidify before on-line training begins – so some face-to-face, especially with a social aspect is essential.

Location

The four projects offered a range of venues for comparison. The one week Learn to Learn orientation program for the OWL programs was delivered at the NVIT campus in Merritt. Students were housed in a local hotel. The face to face components of the AHCAP program were held in the Long House on the UBC Point Grey campus. The Long House was acknowledged as playing a large part in the program's success, as it provided a safe and welcoming cultural environment for students. The students stayed in commercial accommodations. No particular issues associated with location or accommodation were raised in the Think Tank discussion.

The Water Treatment Technology Program for First Nations was delivered all face to face on campus. This was successful in that it kept students together, promoted networking, enabled use of the Kamloops water treatment facility and bus trips to introduce students to other technologies. Kamloops presented some distractions for students.

The face-to-face component of the FNTC/FNESC Pilot Project(s) was held at the Namgis Training Centre in Alert Bay. Namgis community provided a cultural welcome, community supports, good accommodation and meals and fewer distractions than students would have encountered in Vancouver, Kamloops or Merritt. The Training Centre is located in a former residential school which proved to be a problem for one student.

It was agreed that location is important and that:

accessing their courses on a dial-up connection. For example a learner may be able to access the course with a dial-up, but they shouldn't be expected to download course materials that have large file sizes. (PDF or Power Point can sometimes be very large files). Elluminate as platform requires more bandwidth than Moodle. But it's difficult to compare them this way because they serve such different purposes. Moodle is more like a house before it's furnished, and you have many choices about what to put in there (documents, discussion forums, graphics, quizzes, assignments, etc). In fact, you can even access an Elluminate session from within Moodle. Whereas Elluminate is intended for real-time presentations and interactive sessions using voice and a shared space for slides, viewing web pages, or whiteboard.

⁴ See Phil Bialobzyski, March 2007, Nation Re-building: Indigenous Planning for Governance. Delivery - Comparison of Course Management Systems: Moodle and Desire to Learn. Bialobzyski finds both Moodle and Desire to Learn to be 'pedagogically sound and have the same or similar tools available to learner and instructors' but recommends Moodle.

- Students should have a cultural welcome into the communities where training will be offered and a chance to meet each other socially at the outset.
- Aboriginal students prefer more face to face course time than the blended models allowed.
- Distractions need to be managed to the degree possible.
- Some adult students at the Think Tank noted that they would not have taken the FNTC/FNESC program had it not been held in a First Nations community.

Community Engagement and Selection Criteria

Effective community engagement varied among the four projects studied. The OWL project identified this as a serious gap. AHCAP did community consultations before and during the course delivery, and is planning to do followup. TRU reported good community support overall, but noted there needs to be more work done with communities by INAC and TRU to justify the requirement for this kind of training to communities that have always taken their water supply for granted.

FNTC/FNESC acknowledged that there was not enough up front work done with communities. For example, some but not all of the band administrations had the capacity to offer post-program employment specific to supporting community technology which was a desired requirement. All communities were able to pay the \$1000 tuition contribution for their candidates.

Ideas coming from the Think Tank round table included:

- Technical training should be linked to community projects, like development of the community health plan, other projects, and the development of Community Technology Plans.
- Community commitment and support for students and technical training is essential. Communities need to be truly committed to giving time for the student to participate in the training. (AHRDAS have a sample contract that may be used for this purpose).
- Indian and Northern Affairs Canada (INAC) should be included in the community engagement as part of their Comprehensive Community Planning work.
- There should be Elder involvement.

Student Recruitment and Selection Criteria

Different methods were used for recruiting students into the four capacity development courses. According to OWL, the student recruitment plan fell away; was good in the water course, but absent in the other course the OWL program offered. There was insufficient time for upgrading.

The AHCAP program offered a flexible but non-credit course. The Institute for Aboriginal Health (IAH) referred students - on the basis of roles and work experience rather than academic achievement.

In the case of the TRU Water Treatment Technology Program, INAC identified community operators; TRU confirmed with communities. TRU then conducted assessment exams to determine students' academic levels. TRU's program was flexible on the entrance requirements but ensured that students were supported throughout the program so that they had the entrance level qualifications when they finish the program.

The FNTC/FNESC Pilot Project posted detailed student selection criteria but relied on instructor interviews for student selection. Owing to lower than expected applications, the posted academic requirements were not used for exclusion from the program.

Aptitude testing would be beneficial. Students interested in technical training should job shadow a practicing technician for at least a day, to give them some idea of what is involved.

- Confidential student assessments can benefit both the student and the community.
- Earlier assessment and clear statement of expectations of student is appropriate. (Ktunaxa Nation has a student/community contract to serve this purpose).
- Student recruitment materials should include a wellness index for students to use for self reflection.
- A distinction can be made between entrance vs. exit criteria.
- First Nations need to establish their own credentials and standards, based on competencies rather than arbitrary standards (but this could be difficult when an industry standard such as A+/Network+ already exists).

Cost and Financial Support for Students

All four of the projects brought to the Think Tank suffered from lack of long-term funding, or as one participant labeled it, "projectitus". In the case of the OWL projects, the funds could have been more effectively spent had there been more time for project planning. UBC Continuing Education works in a cost-recovery mode. Funding for the AHCAP program came through the Bands. To lower the cost of tuition, UBC provided free class location at the Long House during the face to face workshops.

INAC provided funding for both the TRU Water Treatment Technology program and the FNTC/FNESC pilot project. However, the March 31 deadlines for expenditure of federal funds puts pressure on program planners to make hurried decisions, not necessarily the best ones.

Federal post-secondary student funding is for status Indian students only and limited by policy to those courses that lead to accredited post-secondary credentials.

IT is a costly field. There is need for training, retraining and upgrades to maintain industry and government standards.

- Technical capacity building training requires secure multi-year funding.
- The March 31 deadline for expenditures needs to be relaxed.
- There need to be partnerships with post-secondary institutions.
- Federal and provincial government departments need to devote more resources to on-line learning.

Management and Administration

The round table discussion revealed both positive and negative impacts associated with management and administration of the programs. OWL and FNTC/FNESC reported lack of clarity around roles and responsibilities of partners. Instructors were expected to also act as project manager, putting too much burden on one person.

Staff turnover and the need to re-orient new people was a factor in both AHCAP and the FNTC/FNESC pilot. For the FNTC/FNESC pilot the time to complete the course was not enough for the students to feel confident. "Life" got in the way but because the funding window did not allow for continuation past Mar 31 program managers could not adequately slow down the course. The lack of post-secondary infrastructure was also reported to be key - for example, pre-requisites/follow-up for students/career placement, assistance/counseling/transcripts - all of these were not able to be appropriately delivered. TRU reported that their mandate supports course development and flexibility to respond to changing circumstances.

Think Tank participants agreed that capacity development projects like these need:

- A dedicated project manager
- Strong governance structure and full-time on-site coordination.
- A partnership with a public post-secondary institution

Instructor Selection

Both OWL and the FNTC/FNESC projects learned that content specialists are not always on-line specialists. Think Tank suggested a team approach is preferred. AHCAP had First Nations content instructors who had some WebCT experience, and they were given one half-day WebCT training. Not all instructors were aware of the on-line capacity of programs like WebCT and Elluminate. Since the TRU Water Treatment Technology program is industry driven, the

University hired two high level operators and two instructors from TRU. Tutors were brought in for extra math, with flexibility to adjust the program.

Minimum requirements for instructor selection were agreed to include:

- First Nations experience
- Experience teaching on-line
- When selecting instructors, balance credentials and field experience.
- Choose instructors that understand the importance of flexibility.
- Plan for tutors to provide additional student supports
- Link to First Nations Tech Support Network as mentors.
- The Evaluation Report for the FNTC/FNESC Pilot Project also noted some students may arrive for technician training with issues associated with earlier negative educational experiences. Instructors must bring to technician training successful experience with adult First Nations learners and the ability to create and maintain an inclusive, interactive and respectful learning environment.

Communications

The communication requirements of any training initiative are complex because they involve so many stakeholders, including government and/or other funders. OWL project noted two areas requiring special attention: agreement with employers and communication with funders, both of which needed to be planned up front.

UBC identified three areas of communications requiring attention: communications with the partner agency Institute of Aboriginal Health as staff and priorities changed, data collection on the future of graduates and exit interviews with students who left the program, post-program follow-up with communities.

TRU identified the hard sell required to convince communities of the need for trained water operators. Communications around this issue involve INAC and industry. TRU has a Program Advisory Committee that meets once or twice a year to monitor progress/client satisfaction.

FNTC recognizes the need to link technical training to other projects, building on the needs of such initiatives as Telehealth, the FIT communities model, and emergency preparedness.

What Next?

Program Design

- A+ and Network+ are basic industry credentials that should be minimum community requirements. Participants agree that to run a sophisticated network more training is required and acknowledged that it is a big jump to Network administration..
- Teaching MOUS (Microsoft Office User Support) in the early stages of training. This would benefit Band Office Administration and would be a good way of getting community buy-in.
- Completing a Community Technology Plan - see the FNTC website www.FNTC.bc.ca – should be part of the student practicum

Think Tank participants agreed that a business case needs to be made for Administrators and Councils

- containing a province-wide plan
- outlining the ITC competencies required in their communities and offices
- providing an index of community reliance on technology, for small business and education as well as community administration
- describing the standard ratio of computer and network technician support to other staff expected by industry and other governments.
- showing career path/ladder for technicians
- including a communication plan that will help them in getting community buy in and funding support.

Too often First Nations Administrators are hiring non-First Nations technicians, non-Band members to provide technical support to their operations. Hiring back First Nations students who complete these programs is an important first step.

The FNTC would like to acknowledge and thank the following funding agencies for their support of both programs and for the Think Tank:

Indian and Northern Affairs Canada
 Industry Canada
 BC Hydro

Appendix A

OWL Pacific Drinking Water Technologist Program. – Community Health Associates of BC (CHABC)/NVIT

- A collaborative effort between CHABC, the Nicola Valley Institute of Technology (NVIT) and the First Nations and Inuit Health Branch (FNIHB)
- Two courses for online delivery: Pacific First Nations Drinking Water Technologist (DWT), Prenatal Health Care Program (PHCP) and one Learn to Learn orientation course.
- Distributed learning approach that includes Web-based instruction, audio and video conferencing, face-to-face, individual and group instruction

Notes from the Think Tank Presentation

This was one of two 12-week, 3 credit courses for community health workers: designed for online delivery: the Pacific Drinking Water Technologist course and the Prenatal Health Care Program. A third course was a one week face-to-face orientation program where learners were brought together to learn computer skills and to enhance writing and mathematics skills. The OWL project was funded by the NIHB. The on-line portion used Moodle, an open source learning management system.

A course used by Atlantic First Nations was adapted for content to be put on line.

Challenges –

- Working without a team to adapt an existing course for on-line. Usually offered face to face taking students from talking about hydrologic cycle to roles and responsibilities of a water tester and water monitor, and then reporting
- Used basic science, basic math – a student would need high school Eng, Math and Science
- 14 learners – 60% passed the pilot with flying colors; 50% of those who passed had high passes. 4 of the 14 were already water monitors.
- 40% who didn't succeed had issues of commitment, availability to work on line.
- Course was text base, there was no the budget to make it multi-media in order to accommodate people who are visual learners or who learn best one on one.
- Students did not consider the water course to be too difficult and did not have computer issues. There was technical support from NVIT
- Communication through chat e-mail, phone calls; Moodle was simple and students had orientation and introduction to on-line learning.
- On line learners need to be very computer literate.
- On-line shows the instructor who has logged in, who has read the on-line material, etc.

- Instructor couldn't accommodate the schedule for real time because of competing time/work pressures.
- Students wanting more information about water tech were referred to other institutions.
- The real challenges had to do with project management and partnerships. If it were not a pilot it would have fallen short because of things like transparent budgets, pre-learning assessments

Lessons learned:

Need a systems approach; there was too much reliance on one person to pull it together.

The sustaining structure was not built. The project got caught up in 'projectitis' – responding to availability of funds with hope of finding sustained multi-year funding with a comprehensive plan to train community health workers. – and providing access to a career ladder. The course can ladder into a career path to environmental health officer, for example.

Right selection of participants is critical

Moodle allows students to interact in the chat room; they contacted the instructor primarily for time extensions or technical hiccups. FNS learners were very open about problems and feelings.

UBC Certificate in Aboriginal Health Care Administration Program Aboriginal Health Care Administrators Program (AHCAP)

- 10 month non-credit certificate program offering 5 courses through Continuing Education designed to increase the capacity of Aboriginal people to deliver health care services, coordinate clinical care and improve health promotion.
- 10 month mixed model of delivery involving 50% in-person instruction and 50% on line
- Pre-requisites include grade 12 or equivalent, internet access and e-mail address, program related work experience
- Students met Thursday to Saturday at UBC Point Grey Campus every two months, followed by on-line discussions and written assignments

Notes from the Think Tank presentation:

This was a blended training model using WebCT software; Courses were of 8 week duration, 3 days face to face at the UBC Long House, the remainder on line. The Institute for Aboriginal Health (IAH) referred students - on the basis of roles and work experience rather than academic achievement.

- Funding and federal health funding policy was a challenge
- Getting instructors was a challenge – content specialists did not have

experience in on-line instruction

- On-line moderator and workshop coordinator took care of glitches; program administrators helped
- Most of the participants got some kind of funding through the communities a little bit of funding for the first year of the pilot; by the third year the IAH was changing its focus – numbers started to go down.
- Partnered with the UBC Long House for the face to face space
- Communication through newspapers, in communities on-line
- Varied academic achievement mix and mix of confidence in working on line
- Demanding work, assignments written and discussion, students helped each other
- Some of the courses could be overlapped
- Other things come into people's lives over the course of a year
- As time passed partnerships and communications reduced, also funding commitments. This was partly due to staff changes at IAH and shifting priorities. Sustained buy-in is needed.

UBC is not collecting data about the future of the graduates and bridging into other programs. Only informal exit surveys were undertaken.

-

Lessons Learned

UBC Long House played a big part in success of the program.

WebCT had limits - lacked real time discussions. Students felt isolated being on-line – waiting lag, not instant dialogue

On-line demands a lot of discipline with dedicated time for assignments but can enable students to fit learning into their schedules.

Cost savings and time saved not traveling

Good to have meetings in person to learn to know each other. Staff was supportive. Personal e-mails were used.

Feedback sheets at the end were accepted and responded to.

Although this was an award winning course, it contained no transferable credits.

Band/community support is needed to provide funding and allow students time for the course.

**TRU (Thompson Rivers University)
Water Treatment Technology Program**

- The program is two years in length (4 semesters) leading to a diploma in Water Treatment Tech.
- A student will receive a TRU certificate in Water Treatment Operations for each semester they have completed.
- The program allows students to enter and exit the program dependant on the level of credential they are aspiring to.
- An optional coop term will be offered to give entry-level students an opportunity to gain valuable hands-on experience in a working plant. And be able to write the EOCP accredited Operator Level 1 Certification Exam.

TRU was approached by industry after Walkerton. Met with industry and set out to address access to affordable and effective training. Started in a distance delivery mode using Web CT platform. Now has a comprehensive series of courses - ladderred certificates..

More recently began to work with INAC, and the water treatment facility to put together a face-to-face program for First Nations students. Began with 24 students. Face to face enabled networking, introduction to other technologies (bus trips). Organized a flexible schedule in 10 week blocks in an out of their communities. Students progressed well. Lost only two students in the first cohort.

Industry requires provincial exams for certification. Open Learning Agency (OLA) is a partner with TRU – OLA brought their distance learning experts – print learning and on-line.

Challenges

- Issues of travel, accommodation, food, etc.
- Flexibility was a key.
- Not sure about people's educational backgrounds – students had some technical skills.
- Most of the students don't have internet capability.
- No backup operators for technicians when they are out of their communities.

Lessons Learned:

Face to face has been successful.

Need to step into blended curriculum Need to be more creative in on-line delivery. Tried one week whereby students were given on-line assignments.

WebCT is not perfect.

Entry requirements are open, but overall grade 11 math and chemistry and secondary school grad. For the FN training pre-assessments in math comprehension and reading comprehension.

In BC INAC has 187 bands with water systems – need one operator and one backup for each community.

Two sessions using a laddering curriculum. Following the TRU mandate in career driven type programs.

TRU has big plans for on-line, like plant simulators.

FNTC/FNESC - Namgis Training Centre, Alert Bay.

A Pilot Project for Training Certified Computer and Network Technicians for First Nations Communities

- A blended distributed learning model involving 3 weeks face to face instruction followed by mandatory on-line instruction leading to Comp Tia A+ and Network+ accreditation
- Program to be modified to address challenges identified in the Pilot Project Process Evaluation Report

First pilot – A+/Network+ designed to be 3 week face-to-face then online with group coming back together for a week review pre exams
Revised to include another face-to-face session to provide 'hands on' experience

Second pilot – A+ designed to be 3 weeks face-to-face then online with group coming back together for a week review pre exam

Challenges:

- Big mistake was doing A+/Network+ concurrently
- Week review and exam preparation in Vancouver was challenging to plan and implement

Group 1

Lots of technical difficulties with using Elluminate caused early frustrations
Relationship with instructor was an issue for some students
After second face-to-face session, on-line participation really dropped off

Group 2

Much more positive experience

Students continued to participate online right till the end

Lessons learned.

Needed a dedicated project manager

Longer planning framework

More community commitment needed and community engagement; building awareness in the communities is key

Namgis location provided extraordinary community support but presented a residential school issue to at least one student.

Student comments

- Overambitious, network+ should have come after A+
- Need hands on time
- Students formed student study relationships
- Some students had little exposure to computer – entrance – the successful students had prior tech experience
- Satellite hookup not enough
- Easy for students to get into slacker mode when they returned home and had other responsibilities.
- Exams need to be scheduled.
- Communications is such an issue – general mailouts to bands is not realistic.
- Need to be mindful of what courses we put people into.
- Students agree that there would be too many distractions in an urban setting.
- The success of the course is demonstrated in one community which has already greatly reduced technical costs to the band.

Appendix B

**TECHNICAL SUPPORT THINK TANK
JULY 5, 2007
Elements Selected for Consideration in Future
Technician Training Project Design**

<p>Program Design</p> <p>Consider the need for clearly defined competencies including: project mgmt, time mgmt; bus mgmt, entrepreneurship</p>	<p>Blended: face to face and on-line Laddered certificates Exams scheduled Practical/practicum Cultural component Adequate face-to-face</p>
<p>On Line Challenges</p>	<p>Budget Orientation Real time discussion on line Instructor skills</p>
<p>Location</p>	<p>Face to face on campus Face to face in community Social aspect Manage distractions</p>
<p>Community Engagement/Recruitment</p>	<p>Include community in the planning Get a commitment from the community Elders involvement Communication plan Link to community projects like telehealth Include the INAC community in planning</p>
<p>Student Recruitment Selection Criteria</p>	<p>Confidential student assessments One-day work introduction; mentoring/job shadowing Entrance/exit criteria Competencies rather than arbitrary standards Aptitude testing Wellness Index Clear statements of expectations</p>

Cost and Financial Support for Students	Non-credit limits access to funding INAC funding is required Need secure multi-year funding Relax March 31 funding deadlines Partnerships with P/S Institutions
Management and Administration	Need a strong governance structure Project manager Institutional supports Ability to be flexible Instructor cannot also manage the project
Instructor Selection	First Nations experience with positive references Experience teaching on-line Industry-driven programs Combination approach – content/technical/hands on; student services Balance technical credentials and practical experience Plan for tutors; flexibility to adjust
Communication	Communication is key Business case for administrators/councils With competencies required for office sizes Communications plan Getting community buy-in

What Next?

A+ Net+ OK

Mous >

Mac No

I+ is Internet security plus

Web site administration

Info on other certifications

- CCNA
- MCSE
- MCSD
- Linus support dependent

Seeking a public post secondary partnership
Small business
Career Path/Ladder
Province-wide plan
Index of community reliance on technology
Big jump to Network Admin
Technology Planning for the Community (see the FNTC website)