

**PILOT PROJECT FOR TRAINING CERTIFIED
COMPUTER AND NETWORK TECHNICIANS
FOR FIRST NATIONS COMMUNITIES**

AND

**HELP DESK TRAINING FOR CERTIFIED
SCHOOLNET COMPUTER HELP DESK
TECHNICIANS**

PROCESS EVALUATION



Report Prepared for the
First Nations Education Steering Committee (FNESC)
by
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EXECUTIVE SUMMARY

It is imperative that First Nations communities have certified community-based technical support to keep the community's computers and networks operational and upgraded to current technical standards.

First Nations Technology Council Strategic Plan 2006 - 2008

Since its inception in 2002, the First Nations Technology Council (FNTC) has worked tirelessly to assist 203 First Nations communities in British Columbia to gain access to high speed broadband internet connection and the technical capacity to operate and maintain community information and communication technology (ICT) at industry standards. First Nations leaders recognize ICT infrastructure and capacity to be fundamental to meaningful participation in social, cultural and economic development in the 21st century and to bridging the 'digital divide'. The First Nations Education Steering Committee (FNESC) administers the federal SchoolNet program and is an active member of the FNTC.

An Environmental Scan¹ published by the FNTC in 2005 forecast that by the end of 2006 broadband-grade network infrastructure would be established in more than half of the First Nations communities. It noted that the issue of 'last mile' to distribute connectivity throughout the communities would have barely been addressed and that much work remained to develop ICT user skills in the communities.

Together, the FNTC and FNESC have implemented two projects designed to prepare 14 certified tier-one and tier-two technical support providers and 13 help desk technicians for work in their communities: *The Pilot Project for Training Certified Computer and Network Technicians for First Nations Communities* and *Comp TIA A+ Training for Certified SchoolNet Computer Help Desk Technicians*. A+ and Network+ certifications are recognized worldwide as the standard for computer and network technical skills competency and determined to be an appropriate measure for fully-qualified technical support for First Nations communities. The effectiveness of a blended distributed learning model consisting of three weeks face-to-face instruction followed by mandatory web-based instruction is being tested in this pilot project.

FNESC and FNTC have contracted with an independent evaluator to conduct a process evaluation of these projects. Through file research, student surveys and structured interviews with other stakeholders, the evaluation presents a detailed picture of the pre-planning and implementation stages of the pilot project, its successes and challenges.

¹ *Information and Communications Technology in B.C. First Nations Communities*. Report on an Environmental Scan Conducted by the First Nations Technology Council, Report Prepared March 2005.

The pilot project was a success overall in that 27 individuals now possess sufficient knowledge to serve as technical resource people in their communities, whether or not they have challenged the certificate examinations. Seven people are now A+ certified; three of these are also Net+ certified, and at least five more students are expected to achieve their A+ certification by the end of April. The project planners recognize that their expectations of completion rates of 100% were overly optimistic. It is significant that all 21 students surveyed would recommend the course to their friends.

Students expressed high degrees of satisfaction with the computers and training materials provided and with the support they received from the host community, from their home communities and from the dedicated FNTC and FNEESC personnel.

FNTC and FNEESC were reacting to challenging circumstances throughout the pre-planning stages of the pilot project when a delivery partnership with the Nicola Valley Institute of Technology did not materialize. The locale for the face-to-face instruction was shifted to the Namgis Training Centre at Alert Bay and many project management functions which would have been handled by the post secondary institution were delegated to a qualified project manager/training instructor reporting to FNEESC with support from FNTC members.

The first group of students began classes in Alert Bay in October, 2006. Implementation challenges were legion. Lab manuals and tool kits were late in arriving at the Training Centre. Students protested the perceived lack of hands-on instruction and the heavy workload brought about by classes in A+ and Network+ being delivered together. An elusive technical problem, finally solved by an Elluminate trouble shooter, delayed the web-based training that was conducted through Elluminate technology. The project manager/training instructor resigned in December.

The FNTC/FNEESC team addressed each of the challenges. An open RFP was used to recruit a new project manager/training instructor. Supplementary face-to-face classes were scheduled at the Namgis Training Centre in January to make up for gaps in hands-on instruction. Lessons learned in implementing the *The Pilot Project for Training Certified Computer and Network Technicians for First Nations Communities* were taken into consideration when Industry Canada made sufficient funds available to support 13 students in *Comp TIA A+ Training for Certified SchoolNet Computer Help Desk Technicians*, commencing February 5, 2007. For example, Net+ training was not included in the Help Desk curriculum.

Section 5 of the evaluation contains conclusions and observations that will be useful to anyone intending to replicate this model of technician training. Key observations are repeated here:

This pilot project has demonstrated that the blended distributed learning format combining face-to-face classroom instruction and mandatory on-line instruction can be an effective model for training certified computer and network technicians or help desk technicians in a six to eight week time frame when the following conditions are met:

- 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.

Other factors to be considered:

- CompTIA A+ and Network+ training is highly technical and requires good reading and study skills. A bridging program may be required to prepare students who do not have academic pre-requisites, or who have been out of school for a long time.
- Sufficient time and staff resources are needed to devote to pre-planning and for community engagement, thus reducing the need for crisis management.
- Roles and responsibilities of partner agencies need to be spelled out clearly and documented in the form of written agreements.
- CompTIA A+ and Network+ Certification programs must be offered sequentially so that students complete A+ before proceeding to Network+.
- In addition to an instructor, each training project should be staffed with an on-site coordinator for face-to-face classes who is familiar with the host community. A coordinator can direct students to resources they may need to deal with logistical or personal issues.
- On-line learning involves more than the technology. 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.
- 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.

It is hoped that this evaluation will inform strategic decisions that must be made by the principals concerning future approaches to technician training for First Nations communities.

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1.0 Introduction

On October 9th, 2006, 14 students from 10 First Nations communities gathered at the Namgis Training Centre in Alert Bay, BC, to begin the classroom portion of the *Pilot Project for Training Certified Computer and Network Technicians for First Nations Communities*. The students, eight men and six women ranging in age from early 20s to early 40s, had been recommended by their communities and screened by a qualified project manager/training instructor. Although presenting widely diverse backgrounds in terms of academic prerequisites and prior technical experience, students brought to the project shared commitment and determination to master the technical training available to them.

The pilot project is a product of a partnership between the First Nations Technology Council (FNTC) and the First Nations Education Steering Committee (FNESC). Both organizations have objectives to increase the integration and efficient use of information and communication technologies (ICT) in First Nations Communities.

The First Nations Technology Council (FNTC)² was created by resolution of the First Nations Summit in 2002, with a mandate to develop a First Nations Technology Plan for First Nations in British Columbia to address technology issues, including:

- High speed internet connection;
- Technology skills development;
- Development of technical support.

The First Nations Education Steering Committee (FNESC)³ administers SchoolNet, part of the federal government's strategy to keep Canada among the leaders through connecting its citizens to internet. With the assistance of an advisory committee of First Nations representatives from different schools and stakeholders, FNESC works with schools and communities to develop skills needed to access relevant information through the "Information Highway".

FNESC and FNTC have chosen CompTIA (Computing Technology Industry Association) A+ and Network+ Certification as the baseline measure of a qualified First Nations technician to be delivered in a blended/distributed model of instruction with some instruction done in a classroom setting and some instruction done via the internet in the student's home or home community. FNESC and FNTC believe that in addition to producing trained certified technicians for work in First Nations communities, this blended/distributed model of training will result in more community members becoming certified technicians since the training will better reach people in remote communities and permit them to take training at home with limited classroom time⁴.

² <http://www.fntc.info>

³ <http://www.fnesc.ca>

⁴ Professional and Institutional Development Program Application 4045-21.

Once the pilot project was underway FNESC used funding from Industry Canada's SchoolNet program to recruit and bring a second cohort of students to the Namgis Training Centre for Comp TIA A+ training for Certified SchoolNet Computer Help Desk Technicians, commencing in February 2007. Thirteen students were selected and attended the three-week face-to-face instruction at Namgis Training Centre between February 5th and February 23rd, 2007. The SchoolNet cohort of students consists of nine men and four women, ranging in age from under 25 (six) to over 55 (one).

Prior to the completion of the training programs, FNESC, together with the FNTC, contracted with an independent consultant (Franki Craig and Associates) to conduct a process evaluation of the pilot project(s).

1.1 Purpose of the Evaluation

The purpose of a process evaluation, also called an implementation evaluation, is to answer three main questions⁵:

1. Why was the program developed? The answer to this question is critical to justify continuing, changing or ending the program.
2. How was the program operated? Specifically, how, why and by whom are program decisions made; types of resources needed to run the program; unexpected challenges, opportunities and barriers encountered in its implementation. Answers to these questions are needed to analyze activities that cannot be easily quantified and to guide future replication of the program.
3. Is the program being operated as intended? Answers to this question are critical to understanding why quality outcomes were or were not achieved, and may be used to justify a change in program focus, delivery, staffing or resources.

In a complex service collaboration such as this one, a process evaluation may also examine how the agencies interacted during implementation.⁶

This evaluation will address the questions outlined above. It will not undertake to evaluate the relative merit of the CompTIA (Computing Technology Industry Association) A+ and Network+ certifications compared to other possible industry credentials. Nor will this process evaluation include a financial audit. A final evaluation of trainee outcomes and the impact of their integration into community infrastructures will be left to a future summative evaluation.

⁵ Annie E. Casey Foundation 2002. Community Health Summit Tool Kit.

⁶ D. S. Gomly and C. S. Larson (Spring 1992). Evaluation of school-linked services, in R. Behrman (ed). *The Future of Children: School Linked Services* 2(1) 68-84. Los Altos CA. Centre for the Future of Children and David and Lucile Packard Foundation.

1.2 Methodology

This process evaluation was conducted in four phases:

Phase One: compilation, review and analysis of archival documents leading to the design and implementation of the pilot project and preliminary identification of issues to be further explored.

Phase Two: data collection through survey questionnaires administered to participating students and structured interviews with key partners, pilot project coordinator(s), and instructors. Spokespersons from a sample of nominating communities were also interviewed as well as administrators from funding agencies.

Phase Three: preliminary reporting to FNEESC and FNTC of findings, conclusions and recommendations from stakeholders concerning future implementation of the program.

Phase Four: preparation of the final report.

Confidentiality: The identity of respondents to all questionnaires and interviews has been kept in confidence unless the respondent has agreed to be quoted.

1.3 Report Organization

This report is organized in five sections. Following this introduction, Section 2 describes the genesis of *A Pilot Project for Training Certified Computer and Network Technicians for First Nations Communities* and the sequel project, *Help Desk Training for Certified SchoolNet Computer Help Desk Technicians*. This section strives to answer the question: Why was the program developed?

Section 3 describes the implementation of the pilot project and adjustments that were made to the original plans in response to changing circumstances. This section strives to answer the question: How was the program operated?

Section 4 describes the successes of the pilot project, and the challenges encountered. This section addresses the question: Is the project being operated as intended? Section 4 will also examine the way in which the partner agencies interacted during the implementation of the project.

Section 5 contains conclusions and observations directed at future program designers.

Section 6 contains recommended next steps.

2.0 Why was the project developed?

The pilot project was developed in response to the FNTC Strategic Plan 2006 – 2008. This plan lays out a five-point strategic vision for technology:

- Every First Nations community will have sufficient broadband capacity, internal network capacity and equipment for real-time video conference for telehealth and other applications including distance education and attendance at virtual conferences.
- Every First Nations community will have qualified technical support available within the community.
- Every First Nations community will have sufficient ICT user-skills training capacity in the community to achieve 100% computer literacy among community members.
- Every First Nations home that wants to be connected will have a broadband connection to the internet.
- Every First Nations home that wants one will have an up-to-date computer.

The Plan calls for a technical-skills training program to be undertaken in a partnership between FNTC and the Nicola Valley Institute of Technology (NVIT) that could be expanded to include other post-secondary institutions.

This Strategic Plan received support from the First Nations Summit Chiefs in Assembly, and was presented to senior Federal and Provincial Ministers, including the Premier, thus laying the foundation for FNTC to develop and implement a technical-skills training program pilot project, which it subsequently did, in partnership with FNEESC in 2006.

The pilot project began with two main objectives: (1) to prepare 15 certified computer and network technicians for employment as tier-one and tier-two technical support providers in 15 First Nations communities and (2) to test the effectiveness of the blended distributed learning model of face to face instruction followed by mandatory web-based instruction. A third objective, to prepare 13 Certified SchoolNet Computer Help Desk Technicians for work in their communities, was added later when funds became available to do so.

This pilot project for training certified computer and network technicians contributes to a broader commitment to assist First Nations to bridge the “digital divide”, FNTC describes the digital divide as “the gap in the ability of some populations and some communities to compile, retrieve and exchange information and to communicate with family, friends, colleagues, teachers, government agencies, and others, for social, economic, education, health, administrative and dozens of other purposes. Communities need advanced

technical support capacity to “keep the local distribution network operating and to provide hardware and software support for computer users in the community”⁷.

All First Nations community administrators and students interviewed for this evaluation agree on the critical importance of having qualified, trained technicians living in their communities. Respondents commented on the following consequences of having to rely on outside technical services:

- Time lost: some communities may have to wait three or more days for technicians to travel into their communities; In the meantime work grinds to a halt.
- Lost opportunities: without local technical expertise, opportunities are lost to improve efficiencies of the IT systems of bands, schools and individual homes and to expand community networks. Moreover, dollars that could be kept circulating within the local economy are leaked to other centres and lost to community reinvestment.
- Cost: in addition to high technical fees, communities must pay for travel time of outside technicians. In the opinion of one respondent, “Some bands are getting robbed by high price IT guys coming into the communities”.

3.0 How was the project operated?

3.1 Location of the Pilot Project

In August 2006 Namgis Nation offered the Namgis Training Centre in Alert Bay, BC as the site for the Pilot Project when original plans to hold the training at the Nicola Valley Institute of Technology (NVIT) in Merritt, BC fell through. In addition to a state-of-the art computer lab in the Training Centre, Namgis Nation was able to arrange for student accommodation at the Sun Spirit Lodge and Janet’s Guest House in Alert Bay. Meals and study snacks could also be provided at the Lodge. Project managers agreed that locating the project in a rural First Nations community would present fewer barriers and distractions to students than they would face in a larger centre

The majority of students who attended face-to-face classes in Alert Bay commented positively on the welcome that they received in the Namgis community and with the opportunity this location provided for them to see a community that works hard to retain its cultural values. A student reported mixed feelings due to the location of the course in a former residential school the student had attended.

⁷ *Information and Communications Technology in BC First Nations Communities*. Report on an Environmental Scan Conducted by the First Nations Technology Council. Report Prepared March, 2005.

3.2 The Management Framework

Since August, 2006, the Pilot Project has been jointly managed by FNEC School Net Program staff, the FNTC Coordinator and a small group of FNTC representatives. In this consultative partnership, FNTC/FNEC has undertaken to recruit and employ a qualified project manager/training instructor and finalize curriculum. FNEC has managed project funds. FNTC has taken the lead in communicating with First Nations communities, Band Councils, and other First Nations organizations taking part in the Pilot Project and assisting with project coordination, administration and evaluation.⁸

A qualified project manager/training instructor was selected through a limited RFP process in September, 2006 to undertake project management, instruction and mentoring of students at the Namgis Training Centre location. A second, open RFP was issued in December in order to replace the first instructor who resigned effective December 20, 2006. The new instructor assumed project management/training instructor responsibilities in early January, 2007.

3.3 Project Funding

The A+ and Network+ portion of the pilot project involving the first cohort of students was funded by Indian and Northern Affairs Canada's Professional & Institutional Development Program (PIDP), augmented by student fees and a contribution from BC Hydro. PIDP funds are intended to advance effective governance areas in First Nations and Inuit communities.

The CompTIA A+ Training for Certified SchoolNet Computer Help Desk Technicians was sponsored by the SchoolNet Program. See Appendix A for proposed budgets. Final accounting of expenditures may vary from proposed budgets because of mid-course amendments to project plans.

3.4 The Curriculum and Training Model

The curricula chosen for the Pilot Project were: CompTIA A+ and CompTIA Network+. Exams required to achieve certification are:

- A+ Core Hardware Exam (Comp TIA 220-301)
- A+ OS (Operating System) Technologies Exam (Comp TIA 220-301)
- Network+ Exam (Comp TIA N10-002).

A+ and Network+ certifications are recognized worldwide as the standard for computer and network technical skills competency, and were determined to be an appropriate measure of the fully-qualified technical support for the First Nations Technical Training Pilot Project.⁹

⁸ Professional & Institutional Development Program Application 4045-21

⁹ First Nations Technology Council Proposal for Funding to Undertake, Complete and Evaluate a Pilot Project for Training Certified Computer and Network Technicians for First Nations Communities.

The selected training model is a blended distributed learning format that combines three weeks face-to-face classroom instruction delivered at the Namgis Training Centre, followed by mandatory classes on-line using Elluminate technology. On completion of the formal curriculum, the plan calls for each trainee to begin practicum assignments in professional IT environments, followed by four days of face-to-face class time for review, update and exam preparation. The last step in the training and certification process is writing the CompTIA A+ and Network+ Certification exams.

The following textbooks and associated lab manuals were selected for Comp TIA A+ and Network+: *A+ Guide to Managing and Maintaining Your PC. Fifth Edition Enhanced, Comprehensive.* Jean Andrews, April 22, 2005. 1275 pages¹⁰ and *Network+ Guide to Networks, Fourth Edition.* Tamara Dean, April 4, 2005. 984 pages¹¹ (See Appendix B for Tables of Content for these texts). Laptop computers and computer repair tool kits were also provided.

The planned schedule for the first cohort of students was:

October 9 – October 27 – Face-to-face classroom instruction
October 30 – January 19 – Mandatory classes delivered on-line
January 23 – March 31 – Practicum assignments.

The Project Managers subsequently had to drop the requirement for a practicum as part of this project because it took more time than imagined for students to complete the reading and testing¹².

Supplementary face-to-face classroom instruction was scheduled for two weeks in early January at the Namgis Training Centre for the first cohort of students in order to compensate for late delivery of lab manuals and reported lack of hands-on experience in the October classes. Supplementary on-line classes were also scheduled for this group in March to help them prepare for writing the A+ examinations. Five days of lab instruction in Net+ was scheduled to be held in a well equipped computer lab in the Lower Mainland for the students who were eligible to write the scheduled Net+ exam.¹³

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The schedule for the SchoolNet Help Desk technicians training program was implemented as planned:

February 5 – February 23 – Face-to-face classroom instruction
March 5 – March 26 - Mandatory classes delivered on-line.

Practicum assignments were not part of the SchoolNet Help Desk curriculum.

¹⁰ <http://www.course.com/catalog/product.cfm?isbn=1-4188-3557-9>

¹¹ <http://www.course.com/catalog/product.cfm?isbn=0-619-21743-X>

¹² First Nations SchoolNet, Interim Report: A+/Network+ Course. February 26, 2007.

¹³ Students must have A+ certification in order to be eligible to write the Net + exam.

3.5 Student Selection and Community Selection Criteria

The information *Re: Technology Support Training Opportunity sent to All Chiefs, Band Administrators, Post-Secondary Coordinators, Tribal Councils, First Nations Mandated Health Authorities and AHRDAs*¹⁴ contained Selection Criteria for both students and communities. (See Appendix C) Included in the criteria for student selection were good reading skills, language proficiency, and understanding of personal computers (PC) desktop systems and experience in computer and peripheral maintenance and troubleshooting. The selection criteria were ambivalent with respect to academic prerequisites of Grade 11 English and Math but did caution that Comp TIA A+ and Network+ materials are at a fairly high technical level equivalent to Grade 11. The criteria also indicated zero tolerance for substance abuse.

Applicant screening was conducted by the project manager/training instructor with FNEC and FNTEC oversight to determine levels of education and prior technical training and experience. Eleven of the 14 students in cohort one and seven of the 13 students in cohort two reported having the required academic prerequisites. Nine of 14 students in cohort one and five of the 13 students in cohort two reported technical experience. Additional screening was not conducted to determine applicants' current competencies in Math and English. In no cases were the selection criteria rigidly applied as means to screen out applicants. This was partly due to the lower than expected number of applicants and partly due to suggestions from FNTEC executive to remove barriers, not create them.

Expectations spelled out for communities were that they must

- Have the capacity to support a technician, i.e., budget (wages etc), network and appropriate equipment (stand-alone computers, peripheral equipment, etc.)
- Play an active role in selecting and supporting trainee candidate(s)
- Commit to the project in writing (contract or otherwise)
- Where appropriate, work with other communities in proximity that also need technological support.

Written commitments were not obtained from communities.

3.6 Student Supports:

3.6.1 Financial Support: Costs for student travel, room and board, computer equipment, software, text books, lab manuals and testing fees were all provided as part of the pilot project. Once accepted into the project, students were responsible to pay the \$1,000 tuition fee. In all cases fees were paid by the communities.

¹⁴ Aboriginal Human Resource Development Agreement holders.

The majority of trainees expressed a high degree of satisfaction with the computers and training materials that were provided. More than one student in the second cohort noted that receiving the laptops allowed them to keep in touch with their home communities which helped combat homesickness.

3.6.2 Tutoring support was arranged by FNEESC for the first cohort of students, both on-site and on-line. A supplemental tutorial entitled, "*Attacking the Text*", delivered at the Namgis Training Centre was delivered by a former instructor from North Island College to both student groups. It has been identified as a best practice that should be included in any future technician training courses because of its effectiveness in helping students to meet the heavy reading demands of the courses.

3.6.3 Social/Cultural Support: The Namgis Nation provided social/cultural support by arranging for students to visit the Umista Cultural Centre, to attend a Potlatch and to go on a whale watching expedition. In the absence of an on-site coordinator, certain members of the Namgis community volunteered time and expertise to assist students to solve logistical and personal problems encountered in this new living and learning environment. Namgis Chief and Council also hosted a recognition celebration when the first cohort of students was ready to leave Namgis in November. The recognition celebration was webcast to sponsoring communities.

3.6.4 Community Support Support from students' home communities both during and after they completed the course was described in the information to Chiefs, Band Administrators and others as an essential element of the technical training program. Managers were asked to give the students time to attend classes and Band Administrations were required to agree that there would be at least a part-time job supporting community technology upon successful completion of the program, for a minimum of six months.

Most students surveyed reported receiving a great deal of support from their home communities. They also highlighted the importance of the support they received from family and friends at home which helped them to combat feelings of isolation or homesickness. Family members were also acknowledged in the survey for providing child care for parents who attended the training.

4.0 Successes and Challenges

4.1 Successes

Table One shows the progress of both cohorts of pilot project students toward achieving certification. At the writing of this report (mid April), five students from the *Pilot Project for Training Certified Computer and Network Technicians for First Nations Communities* have passed the A+ Core Hardware Exam (Comp TIA 220-301) and A+ OS (Operating System) Technologies Exam (Comp TIA 220-301). Of these, three students have written and passed the Network+ Exam (Comp TIA N10-002).

Two SchoolNet students have achieved A+ certification and plan to take the Net+ exam. Three more students from each cohort are expected to pass A+, or in one instance, Net+, before the end of April 2007.

The remaining students from each group will proceed as they feel ready to do so.

TABLE ONE

	No of students certified by mid-April	Expected to take exams in April	Will complete A+ and Net+ at their own rate
Cohort One			
A+ Certification	5	2	7
Network + Certification	3	1	10
Cohort 2			
A+ Certification	2	3	8

Success cannot be measured exclusively in terms of the number of certificates achieved. The following quotes from students questionnaires paint a much broader picture of success from the students' points of view when asked what they liked best about the program:

- Being introduced to a different culture and being given the tools toward achieving certification.
- The training and how it all fits together opened doors to better understanding and ideas.
- A whole new world ...opens more doors. I got a chance to be part of the program, learning about computers – today's world.

- This program will have a great impact
- The tools and resources provided
- The friendships we have established.
- Computers and all their components and understanding the technology.
- I am truly grateful for the opportunity. Living in a small community there isn't much education/training available.
- This is a good program for small reserves.
- The opportunity to become a certified technician and to be trained in a First Nations facility with other First Nations technicians, including older students.

All of these students have returned to their communities with an increased knowledge of computer technology, trouble shooting and increased understanding with which to continue their learning.

The meals provided to students in Alert Bay were reported by both groups to be an outstanding success and kudos were given to the chef.

4.2 Challenges

*"Whatever can go wrong will go wrong, and at the worst possible time,"
Murphy's Law*

The successes achieved by these two pilot programs must be measured within the landscape of the many challenges encountered in both the pre-planning and implementation stages of the pilot project,

4.2.1 Pre-planning Challenges

4.2.1.1 Project Management Challenges: The First Nations Technician Training Pilot Project was originally designed to be a joint initiative between the First Nations Technology Council and the Nicola Valley Institute of Technology (NVIT). The long-term goal was to ladder a preparatory program into the certificate program, then to a diploma program and ultimately to a degree. Obvious advantages for the pilot project to be offered through this partnership included access to the infrastructure, administrative processes, and learning environment of an established Aboriginal public post secondary institution. However, there were also disadvantages in working with the public post-secondary institution. NVIT Information Technology Department was already decided in its choice of an IT model aimed at Cisco Systems certification and delivered over a ten month period. FNTC and FNEESC technical advisors maintained that Cisco Systems training was more sophisticated and intensive than required for entry level certification for First Nations community technicians.

By August 2006, FNEESC and FNTC were faced with a stop or go decision on the entire project for 2006-2007 when agreement could not be confirmed with NVIT

on the curriculum, the delivery model or approved funding for an unaccredited program of study.

Other factors influencing the decision were lower than expected numbers of applicants with the necessary prerequisites for the course as initially advertised, the belief of FNTC executive members that the communities needed shorter term programs to relieve the burden of trainees being out of the communities for prolonged periods of time, and finally, a shortage of available student housing in Merritt.

Finding another partner college at such a late date was not possible. Rather than lose the window of opportunity afforded by available federal funding, FNEC and FNTC opted to go ahead and offer the pilot project themselves at the Namgis Training Centre with the help of a qualified project manager/training instructor.¹⁵ Having made that decision, FNTC and FNEC were bound by the requirements of federal sponsors to complete the project by the end of the 2006-2007 fiscal year.

In retrospect, FNEC and FNTC respondents agree that they underestimated the complexity and workload associated with the pre-planning and ongoing coordination needed to deliver a new technicians training program in a rural First Nations community for students who had to travel significant distances to attend. Further, they overestimated the ability of a contracted project manager/training instructor to fulfill the project management function without the assistance of a full-time on-site coordinator familiar with and known to the community. Individuals in the Namgis community who came forward to fill the coordination gap observed that the project manager/instructor model results in too much dependence on the instructor. They also suggest much greater involvement on the part of participating communities is needed.

Uncertainty of future funding contributed to the haste with which the project was launched, and resulted in these management challenges.

4.2.1.2 Community Challenges: According to one spokesman from a community that sent students to both segments of the pilot project, communities are faced with a dearth of potential participants who can meet both academic and technical selection criteria. Most fully qualified candidates have work, family and community obligations or have left the community to pursue other careers. Many may need bridging programs to prepare them to succeed in technical training.

¹⁵ According to the NVIT Technology Department only about one third of the initial FNTC student applicants went to Alert Bay, the others remain on a wait list at NVIT. NVIT is still interested in offering a 10 month IT program.

4.2.2 Implementation Challenges

The implementation challenges described here are taken from project status reports, minutes of face-to-face meetings between FNTC and students, conference-call notes, student questionnaires and structured interviews with FNTC members, FNEC staff and other stakeholders.

4.2.2.1 Location: While some students said “change nothing; it was awesome”, some students expressed objections to the training being held in a former residential school, which carries very bad associations for First Nations people.

Concern was also expressed by some students about the safety of the Namgis Training Centre being located in such an “old, cold and damp building”. When asked about the safety of the building, individuals who live and work in Alert Bay counter that other organizations, like the Musgamagw Tsawataineuk Tribal Council and until recently North Island College, have raised no safety issues during their long tenures in the building.

Accommodation in the Sun Spirit Lodge and Janet’s Guest House were reported to be satisfactory, except for lighting levels geared more toward recreational guests than students with a rigorous study schedule. Lodge management responded immediately and to the satisfaction of FNTC to caretaking issues raised by students. In fact, one caretaker was dismissed.

There are mixed opinions about future location for technician training courses. At least one FNTC member recommends that this kind of training should be offered in community learning centres closer to home for students. Others point out that not all communities have learning centres with the necessary technical infrastructure. NVIT is advertising an eight month IT Certificate Program in its 2007-2008 calendar.

4.2.2.2 Challenges with Face-to-Face Instruction:. The decision to offer the A+ and Net+ courses simultaneously to the first cohort of students was acknowledged to be a mistake, particularly given the diverse starting points of students with respect to academic prerequisites and IT experience. This issue was compounded by the late delivery of lab manuals and tool kits to the students.

On the closing day of the first face-to-face training at ‘Namgis, students requested a debriefing meeting with FNTC staff to protest the heavy reading schedule of four chapters per week and the perceived lack of hands on training. *A Plan to Go Forward* was developed at that debriefing meeting which stated:

- *Week of November 6th – scheduled as reading week to allow students to re-read or read for the first time the material covered; decision to reduce number of chapters to be covered per week to two.*
- *On-line classes to resume November 13th.*

- *Recommended that students have an older computer at their work stations that they can work on during the class.*
- *Requested format for on-line classes:*
 - *Send out PowerPoint presentations the day before the class*
 - *A short theoretical session to cover the theory*
 - *Do the lab/address any questions; high level questions to be addressed outside of class time.*
- *Requested that students work in small groups when using Elluminate for the on-line classes.*
- *Requested that all questions be answered respectfully.*

This last item concerning respectful answers to student questions offers some insight into growing levels of student dissatisfaction among the first cohort of students.

The SchoolNet students were unanimous in the view that three weeks face-to-face instruction was not sufficient to adequately cover the heavy reading requirement of the A+ curriculum since they had no time for pre-reading and did not understand in advance the level of commitment required. They did express satisfaction with the instruction they had received.

4.2.2.3 Challenges with On-Line Instruction

Technical problems were experienced with the Elluminate program at the beginning of the web-based portion of the program in November. The '+' symbol used in the name was the root cause of the program dysfunction and was finally solved by Elluminate tech support. Reading assignments for the on-line instruction were reduced, as requested, to two chapters per week (one A+ chapter and one Network+ chapter).

Technical challenges also plagued the March on-line classes. Students living in satellite-connected communities had difficulty joining Elluminate at scheduled times; dial-up technology was too slow to be useful.

Only four students in each cohort reported having previous experience with distance learning. While there was a preliminary orientation to on-line learning there were no discussions between instructors and students regarding the social aspects of forming on-line learning communities were reported. This oversight may have contributed to poor attendance in supplementary Elluminate classes.¹⁶

¹⁶ Debbie Garber, 2004. Growing Virtual Communities, Centre for Distance Education, Athabasca University Report #R34/0404. "Too often the assumption is made that simply by putting online technology into place for people to use, we have 'built' a virtual learning community."

4.2.2.4 Challenges with Supplementary Instruction: A number of issues emerged regarding the supplementary classes:

- The supplementary classes were delivered by the second instructor whom the first cohort of students had not met before the January classes started. Some students expressed residual loyalty to their original instructor;
- Only seven members of the first cohort of students attended the supplementary face-to-face classes in Alert Bay, thus further disrupting the cohesiveness of the group.
- Very few of the first cohort of students signed on for the supplementary Elluminate classes, though both afternoon and evening classes were offered in order to best accommodate their timetables.
- Unless supported financially by their employers, students traveling to the Lower Mainland to attend supplementary Net+ training or to write exams required funding advances to cover expenses.

4.2.2.5 Challenges with Student Selection Criteria. As noted earlier in this report, students came to the training with a wide range of academic backgrounds and prior experience with computers and IT trouble shooting. The published student selection criteria were not applied as bases for excluding students from either A+ and Network+ or SchoolNet Help Desk training programs.

There is no evidence that criminal record checks of students were conducted to ensure that participating students are bondable. Nor was the criterion of zero tolerance for substance abuse enforced through student dismissal although both instructors reported that some students appeared to have alcohol issues.

When asked directly what student selection criteria they would recommend for future programs, the first cohort of students noted:

- Firm grasp of computer basics and certain computer experience
- Aptitude testing
- Interviews to determine levels of maturity
- Better commonality among students in levels of experience with computers and computer networks
- Grade ten or eleven equivalent experience in computers or a few years of computers use besides using the internet

The second cohort of students emphasized the need for applicants to understand the intensity of the training and what would be expected of them.

The project manager/instructor trainer recommends student screening to identify students who need a bridging program in order to prepare for the A+ and Network+ courses.

When asked about zero tolerance for substance abuse a small sample of students indicated that they considered this criterion to be unenforceable given

that the students are adults. Former North Island College instructors agreed with this conclusion based on their experience with college students.

4.2.2.6 Challenges with Community Selection: It was apparent from student surveys that some but not all communities or band administrations have the capacity to offer employment specific to supporting community technology upon successful completion of the program. Fifteen of the 21 students surveyed reported jobs waiting for them in their communities. A number of these expect IT responsibilities to be added to their existing job descriptions or in one case that they will be expected to volunteer help desk services in return for the tuition that was paid on their behalf.

Some community employers expressed concern about trainees being out of the community with their jobs vacant for longer than initially planned.

4.2.2.7 Financial Challenges for Students: One student requested that future consideration be given to providing student stipends for applicants who are not receiving a salary while they are in training.. The idea of student incentive stipends to offset costs at home, like child care or backfilling work responsibilities was also promoted strongly by an FNTC member who has been involved in training initiatives where these kinds of incentives helped keep students engaged to the finish of the course.

4.2.2.8 Challenges Associated with Tutoring: On-line tutoring support for students was arranged by FNEESC for the first cohort of students. Even though students had an introductory phone call introduction with the on-line tutor and encouraged to call and contact him, it was not used. A reason given was that there was no context for the introduction of a tutor and inadequate planning for it. Face-to-face tutoring support provided in the Namgis community received positive reviews.

4.2.2.9 Challenges Associated with Exams.

The biggest challenge associated with writing of the exams may be in convincing students that they are ready to take them. In an on-line student evaluation survey conducted in February, 2007, more than half of the respondents indicated that they were neutral or not sure of their knowledge of the A+ course. None of the respondents expressed comfort with their knowledge of the Network+ course. These numbers were not consistent with the assessment of the instructor who expressed confidence that significantly more students were exam ready.

In order to address this crisis of confidence, FNEESC/FNTC arranged with the project manager/instructor trainer for supplementary on-line classes for the first cohort of students. Elluminate office hours were established for both afternoon and evening classes to accommodate the schedules of working students. According to the instructor, so few students attended the supplementary on-line

classes that they were discontinued and an invitation extended for cohort one students to attend blended sessions with the SchoolNet students.

Scheduling exams in recognized examination centres has proved to be somewhat of a challenge. As presently configured, the Namgis Training Centre does not meet the technical requirements of the Computer Technology Industry Association (CompTIA) to serve as an exam centre. Students wishing to take the exams in established testing centres must obtain a voucher number from SchoolNet staff at FNEESC and register online for their exam and location. A number of students from each cohort have recommended less flexibility in scheduling of exams. They prefer that exams be scheduled directly after the conclusion of classes and that in future students be brought together to write them.

4.3 Partner Agency Interaction

Interaction between agency partners in the management of the pilot project may be characterized as unstructured and informal, dependent on existing relationships and shared commitment to ensure successful completion of the technician training for as many students as possible. All of the organizations involved in the planning and implementation of the technicians training pilot project, including FNEESC, NVIT and Namgis Nation are members of the First Nations Technology Council (FNTC). Their representatives have been chosen because of their abilities to contribute to fulfilling the mandate of the Council.

In undertaking to be an active partner in the delivery of the pilot project, FNTC has stepped outside of its traditional role of advisor, advocate, information broker and champion for the adoption of technology and it has done so with no addition to its staff complement of one coordinator. FNEESC SchoolNet has a mandate to deliver training programs. Although, there is a small SchoolNet staff and competent FNEESC infrastructure for financial management and administration, the technical advisor is available to SchoolNet only two days per week. Furthermore, assumption by FNEESC of management and administration responsibilities for the course was unexpected, and additional staffing resources were not in place in the year's work plan to accommodate this significant increase in workload. Both FNTC and FNEESC agree that the workload associated with the pilot project was extraordinary and that the project needed a designated coordinator.

No formal steering committee was formed to oversee the pilot project. Instead, the principals acted in that capacity in an ad hoc way without clearly delineating roles and responsibilities. On the one hand this level of informality enabled the partners to react interchangeably to correct problems with project implementation if and when they arose. On the other hand, it has been reported as problematic by both instructors, whose contractual statements of work included project management responsibilities. The first instructor cited perceived undermining of

his position as one (but not the only) reason for his resignation. The second instructor, who holds a Masters of Business Administration (MBA) understands project management to include overall responsibilities for management of information, budgets, communication, critical path, etc. and not program logistics and he has not felt connected to the project management functions.

FNESC and FNTC commentators agree that roles and responsibilities need to be clearly defined at the beginning of a project and respected throughout. Further, it was suggested by FNESC staff that a project manager should be very familiar with the managing organization, such as a staff member.

There is still lack of consensus among FNTC members as to the best delivery model, training location and management structure for future certified computer and network technician training. Namgis Training Centre is willing to serve as the host community for future programs and to upgrade its computer labs to accommodate CompTIA A+ and Network+ examinations. Other FNTC members believe training should be disbursed to local training centres in order to offer opportunity to more participants. FNESC understands its role to be to offer the best practices and to work with its post-secondary members to administer a second project.

NVIT is advertising an Information Technology Certificate program in the 2007-2008 calendar, based on Cisco systems. Professorial staff at NVIT acknowledge two factors contributing to student distrust of Information Technology (IT) as a career: collapse of IT companies some years ago and the cost of upgrades.

These options and related factors need to be explored.

5.0 Conclusions

The need for resident technical support for First Nations communities has been well document by the First Nations Technology Council. In addition to the requirement of technical assistance for individual households, technical innovation occurring in other agencies is putting increasing pressure on First Nations administrations to maintain technical equivalency. For example, Indian and Northern Affairs Canada is rolling out a new First Nations and Inuit Transfer Payments System to bands and tribal councils. The Provincial Telehealth Initiative¹⁷ is aiming to expand telehealth videoconferencing capacity into rural and remote communities in British Columbia. Universities and colleges are expanding their offerings of distance education to rural and remote communities, a service much needed by First Nations struggling to close the education gap

¹⁷ Telehealth is part of the Rural & Remote Health Initiative (RRHI), a collaborative effort on the part of government, educational institutions, health care providers and private partners to improve access to health care services and enhance continuity of care in northern, rural and remote communities in BC.

between First Nations and the general population. First Nations are depending increasingly on the technology as a tool for preserving and revitalizing indigenous language and culture. Where internet technology exists, training for certified computer and network technicians can help communities to meet this burgeoning demand.

This pilot project has demonstrated that the blended distributed learning format combining face-to-face classroom instruction and mandatory on-line instruction can be an effective model for training certified computer and network technicians or help desk technicians in a six to eight week time frame when the following conditions are met:

- 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.

The expectation that all students enrolled in the project would achieve certification was unrealistic especially when compared to completion rates recorded by colleges and universities for entering students. However, it appears that by the end of April, 2007, the pilot project will have produced a respectable number of certified technicians. It is significant to note that all students surveyed would recommend the program to their friends.

The following observations are directed toward program planners intending to offer one or both A+ and Network+ programs again.

Not all students in the pilot project were ready to begin a program with such high demands for reading and study skills. Students would benefit from screening to confirm that their current academic competencies are at the same level indicated by their transcripts. A bridging program designed to attract interested applicants who require upgrading or technical orientation before being admitted to the program would be a more effective approach to ensuring student success than supplementary classes.

Lessons may be taken from the many challenges encountered during implementation of the two certificate programs:

- Sufficient time and staff resources are needed to devote to pre-planning and for community engagement, thus reducing the need for crisis management.
- Roles and responsibilities of partner agencies need to be spelled out clearly and documented in the form of written agreements.

- CompTIA A+ and Network+ Certification programs must be offered sequentially so that students complete A+ before proceeding to Network+.
- Textbooks, lab manuals, laptop computers and tool kits must be ordered in time to ensure they are available for course commencement. Ideally, successful applicants should receive the text and lab manual in advance to allow pre-reading.
- In addition to an instructor, each training project should be staffed with an on-site coordinator for face-to-face classes who is familiar with the host community. A coordinator can direct students to resources they may need to deal with logistical or personal issues.
- Tutorial support should be available to students, particularly during the early days of the face-to-face training.
- Students express a strong preference for having readings and lectures linked closely to hands-on learning.
- 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.

Some students may arrive for technician training with issues associated with earlier negative educational experiences. They will benefit from efforts to enhance their comfort levels in this new learning situation. Suggested strategies include:

- An opening social mixer in which students are welcomed into the territory of the host community, and given an opportunity to meet each other and the instructor before the classes begin
- An introductory tutorial like *“Attacking the Text”*. This was named as a ‘best practice’ that should be included in any future technician training courses because of its effectiveness in helping students with the heavy reading demands of the courses.
- Provision of textbooks prior to the arrival for pre-reading
- Periods of unscheduled time to allow students to stay in touch with their work, family or home community obligations

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.

Dedicated multi-year funding directed toward technician training will be needed to take full advantage of the lessons learned from this pilot project and to continue to assist First Nations to bridge the digital divide.

Recommended Next Steps

There are now strategic decisions to be made by FNEESC and FNTC about future approaches to training certified computer and network technicians for First Nations Communities.

6.1 Recommended that FNTC host a facilitated meeting of FNTC members and selected experts in First Nations distance education as soon after the end of April 2007 as possible to undertake a summative review of the pilot project. Input to the review should include a summary of student outcomes from the *Certified Computer and Network Technicians Training* and the *Training for Certified SchoolNet Help Desk Technicians*, findings of this process evaluation, a final report from the project manager/instructor trainer, augmented by lessons learned from other First Nations distributed learning projects such as OWL (On-line Web Learning).

Expected outcomes of this meeting include but are not limited to:

- A decision on the future of the blended distributed learning model for certified computer and network technician training that combines classroom instruction with mandatory online classes;
- Decisions respecting the roles of FNEESC, and other FNTC member organizations in future computer and network technician training;
- Recommendations regarding location(s) for future technician training
- Next steps outlined in a draft resolution for presentation to the Summit Chiefs in Assembly.

6.2 Recommended that FNEESC and FNTC jointly develop a communication to all participating communities, students, SchoolNet and FNTC members and funders informing them of the overall outcomes of the project and the decisions regarding future programming.

Appendix A

Proposed Pilot Project Budget

Revenue

INAC	\$ 200,000.00
\$1000 Fee from 14 Students	\$ 14,000.00
	\$ 214,000.00

Cost Categories	INAC
Direct Labour	
Project Manager/Instructor	\$ 21,000.00
FNESC Project Manager	\$ 5,000.00
Direct Materials	
Facility Rental	\$ 3,800.00
Training Supplies (laptops, books, supplies, equipment)	\$ 25,359.00
Industry Certification	\$ 3,350.00
Professional Services	
Program Evaluation	\$ 5,000.00
Honoraria	\$ 4,000.00
Travel	
Travel/Accommodations For Attendees - Namgis	\$ 47,000.00
Travel/Accommodations For Attendees - Practicum	\$ 51,000.00
Travel/Accommodations For Attendees - Certification	\$ 18,375.00
Travel for Program Staff	\$ 6,500.00
Other	
Administration Expense - FNESC	\$ 11,808.00
Administration Expense - FNTC	\$ 11,808.00
TOTAL	\$ 214,000.00

Proposed SchoolNet Computer Help Desk Budget

Revenues		
Industry Canada		\$123,509
Student Fees		\$ 13,000
Cost Categories		IC
Direct Labour		
Course Instructor		\$ 21,000.00
FNESC Project Manager		\$ 8,000.00
Onsite Project Manager		\$ 8,000.00
Direct Materials		
Facility Rental		\$ 3,800.00
Training Equipment and Supplies		\$ 25,359.00
Industry Certification		\$ 3,350.00
Professional Services		
Program Evaluation		\$ 5,000.00
Assistant Course Instructor		\$ 2,500.00
Honoraria		\$ 4,000.00
Travel		
Travel/Accommodations For Attendees		\$ 47,000.00
Travel for Program Staff		\$ 6,500.00
Other		
Administration Expense - FNESC		\$ 10,000.00
TOTAL		\$ 136,509.00

Appendix B

A+ Guide to Managing and Maintaining Your PC. Fifth Edition Enhanced, Comprehensive. Jean Andrews, April 22, 2005. 1275 pages

Table of Contents

1. Introducing Hardware
 2. How Hardware and Software Work Together
 3. Understanding the Boot Process and Command Line
 4. Electricity and Power Supplies
 5. The Motherboard
 6. Managing Memory
 7. Floppy Drives
 8. Understanding and Installing Hard Drives
 9. Optimizing and Protecting Hard Drives
 - 10 Supporting I/O Devices
 11. Multimedia Devices and Mass Storage
 12. Supporting Windows 9x/Me
 13. Understanding and Installing Windows 2000 and Windows NT
 14. Managing and Troubleshooting Windows 2000
 15. Installing and Using Windows XP Professional
 16. Managing and Supporting Windows XP
 17. Supporting Modems
 18. PCs on a Network
 19. PCs on the Internet
 20. Notebooks, Tablet PCs, and PDAs
 21. Supporting Printers
 22. All About SCSI
 23. Purchasing a PC or Building Your Own
 24. Troubleshooting and Maintenance Fundamentals
- Appendices
- A: Error Messages and Their Meanings
 - B: ASCII Character Set and Ansi.sys
 - C: The Hexadecimal Number System and Memory Addressing
 - D: FAT Details
 - E: Electricity and Multimeters
 - F: The Professional PC Technician
 - G: Introducing Linux
 - H: Supporting Notebooks
 - I: Windows XP Service Pack 2
- Glossary

***Network+ Guide to Networks, Fourth Edition.* Tamara Dean, April 4, 2005.
984 pages**

Table of Contents

1. An Introduction to Networking
 2. Networking Standards and the OSI Model
 3. Transmission Basics and Networking Media
 4. Network Protocols
 5. Networking Hardware
 6. Topologies and Access Methods
 7. WANs, Internet Access, and Remote Connectivity
 8. Network Operating Systems and Windows Server 2003–Based Networking
 9. Networking with UNIX-type of Operating Systems
 10. NetWare-Based Networking
 11. In-Depth TCP/IP Networking
 12. Troubleshooting Network Problems
 13. Ensuring Integrity and Availability
 14. Network Security
 15. Implementing and Managing Networks
- Appendices
- A: Network+ Examination Objectives
 - B: Network+ Practice Exam
 - C: Visual Guide to Connectors
 - D: Standard Networking Forms
- Course Prep Exam Guide for Network+

Appendix C

Student Selection Criteria

Personal Suitability:

Student should demonstrate:

- Good reading skills
- Good communication and interpersonal skills
- Good work habits – punctual, ethical, focused, accurate, hard-working
- Self-motivation
- Flexibility
- Willingness to travel
- Interest in life-long learning
- High energy
- Ability to work under pressure
- Sound analytical and problem solving skills

High school graduation is not mandatory and can be mitigated with experience but students must recognize that there is significant technical reading required for the course. Students will be required to pass a Language Proficiency Index test.

Academic Prerequisites

Networking Academies, such as NVIT, use academic results in combination with other selection tools to select appropriate individuals. Older students, not used to taking tests, may score lower than expected, but for an 18-year-old coming from high school, the low score could mean difficulty with the curriculum and require further investigation. NVIT policy dictates that a grade 11 English and Math is the prerequisite requirement. NVIT has the resources to support those candidates that may fall short of these requirements.

Reading:

The CompTIA A+ and Network+ material is at a fairly high technical level (equivalent to grade 11) so students will need to be comfortable with reading and absorbing technical materials.

- Grade 11 English

Math:

The Networking Academies also screen for high school level math with similar tests.

- Grade 11 mathematics

Written Communication:

Some Networking Academies require a writing sample to evaluate the individual's ability to express themselves and organize their thoughts.

- Good writing and communications skills

Technical Prerequisites:

Students should:

- Have a desire to gain technical knowledge
- Possess an understanding of Personal Computers (PC) desktop systems and printers and a desire to support users
- Have some experience in computer and peripheral maintenance and troubleshooting to component level in a safe and effective manner
- Some technical knowledge of server hardware and configuration, networking peripherals and understanding of the principles of a network operating system.

Note:

Student success is partly dependent on a stable environment and good support networks.

- Housing
- Income
- Childcare
- Family support
- Community support

Substance Abuse:

- Zero Tolerance

No Criminal Record:

- Students must be Bondable

Additional Requirements:

- Webcam, microphone and speakers
- Access to the Internet
- Should have a valid driver's license

Community Selection Criteria

Important Note: Communities must understand – this is not a “make work” project and the support technicians need to be made an integral part of the community’s infrastructure.

Communities must:

- Have the capacity to support a technician i.e. budget (wages etc.), network, and appropriate equipment (stand-alone computers, peripheral equipment, etc.)
- Play an active role in selecting and supporting trainee candidate(s)
- Commit to the project in writing (contract or otherwise)
- Where appropriate, work with other communities in proximity that also need technological support