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DESIGNING AN e-MASTER-APPRENTICE PEDAGOGY RESEARCH FOR CRITICALLY ENDANGERED LANGUAGES

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INTRODUCTION

Statistical reports verify the perilous state of Aboriginal languages in Canada. A 1992 survey of language conditions in First Nations communities revealed that 70% were **declining** or **endangered**, 18% were merely **enduring** and only 12% were **flourishing**. The swift rate of decline was made evident in the 1991 Statistics Canada report, which showed that in 1951, 87.4% of Aboriginal people had an Aboriginal language as their mother tongue compared to 1991, when only 36% of adults over the age of 51 and 21% of children spoke an Aboriginal language. The 1992 survey stated that 11% of First Nations communities had languages that were **critically endangered** with fewer than 10 speakers or no known speakers in the community (AFN, 1992). Stó:lō Halq'eméylem, which serves as the pilot Indigenous language for this research, currently falls into the critically endangered category with only four fully fluent elderly speakers remaining.

The research described here has been funded by, and was designed to fit, the Social Sciences and Humanity's Research Council (SSHRC) of Canada's objective to facilitate research of concern to Canada's Aboriginal peoples, specifically concerning that of languages and cultures. At the time of writing this article, the research project was only at its formative stages of development, however the background and method of research may be of interest to those wanting to learn ways modern technology can be used for language revitalization.

The principle applicant, the author, is Stó:lō, and is working in collaboration with Stó:lō communities to match fluent-speaking elders with moderately fluent Halq'eméylem speakers and language teacher trainees in an experimental e-Master-Apprentice program. The participants live in the 24 Stó:lō communities along the Fraser River in British Columbia, Canada, and do not have ready access to each other for a face-to-face Master-Apprentice experience. The research involves equipping and training Masters (3) and Apprentices (6+) in the use of computers, relevant software, web cam and World Wide Web. Apprentices will create multimedia teaching and learning projects as a vehicle for communicating and speaking with masters. The aim of communication will be for the apprentices to develop greater Halq'eméylem fluency via Web communication with the fluent speaking elders. Their responsibility is to work with Masters who will serve to authenticate the language embedded in the materials developed. It is expected that School Districts on Stó:lō territory and the community schools in Chehalis and Seabird Island First Nations will benefit from this research by having the research participants deliver their newly acquired language and resources in these communities to assess their language teaching and learning skills in an educational context.

The research aims to determine how computer and World Wide Web technologies can serve as effective pedagogical tools for developing highly fluent speakers of a critically endangered language, and how elders' roles in language revitalization can be expanded using these technologies. The results of this study will have implications for the fields of education, linguistics, cultural studies and First Nations studies more broadly,

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and more specifically for knowledge development in second language acquisition and teaching and learning a critically endangered language. The knowledge gained through this study aims to create greater understanding, awareness and appreciation of the practice of Indigenous language revitalization generally, and of the pedagogical implications specific to severely endangered languages. Additionally, we will begin to learn what happens when an ancient Indigenous language interfaces with new media technologies. The research builds from, and links with, work conducted by other communities and organizations involved in Aboriginal language revitalization, including national and provincial organizations.

Such organizations include the First Nations Confederacy of Cultural Education Centres (FNCCEC), which advocates for the recovery, survival, maintenance and enhancement of First Nations languages and cultures in Canada. The FNCCEC represents eighty-seven (87) First Nations cultural centres, one of which is the Stó:lō Nation Cultural Program. Additionally, the Government of Canada provides funding through the Aboriginal Languages Initiatives program and has established an Aboriginal Task force to examine, consult and make recommendations for the creation of an Aboriginal Languages and Cultures Centre. The results of the research described here could have implications for both the FNCCEC Centres and Programs and the proposed Centre, particularly as it relates to the use of computers and World Wide Web as pedagogical tools in language revitalization, and as it relates to new ways elders can be involved using these tools.

The principal researcher is a member of the Aboriginal Languages Sub-Committee of the First Nations Education Steering Committee (FNESC), and thus, is connected to other B.C. language communities that are searching for new and effective approaches to language revitalization. The FNESC Sub-Committee was responsible for negotiating with the B.C. College of Teachers to establish a framework whereby a First Nations community could partner with a Faculty of Education at a University in B.C. to create a Developmental Standard Term Certificate (DSTC) in First Nations Language and Culture. Stó:lō Nation was supported by the FNESC Sub-Committee to develop, with Simon Fraser University (SFU) as its partner, the first proposal using this framework. Their joint proposal served as a model for other communities to develop DSTC proposals for their own language communities. This research builds on the work accomplished through the DSTC and will be reported to the FNESC Aboriginal Languages Sub-Committee for feedback and evaluation.

The use of Web technologies presents policy concerns for Aboriginal communities in terms of what can appropriately be posted on the Web and in what ways. The Stó:lō Nation Cultural Program is one of fifteen communities selected to upload their alphabet with sound files, over 5,000 words and phrases on to the FirstVoices.com Web site, an online multimedia archiving tool created through the First Peoples Cultural Foundation (FPCF). The research team and participants will explore culturally appropriate ways the FirstVoices.com site can be used for language teaching and learning at the community level, and reciprocally, to add to the multimedia opportunities the site offers. Reports will be made through FNESC to the First Peoples Heritage language and Culture Council (FPHLCC), which oversees the FPCF.

The research project offers training and scholarship opportunities on a number of levels. First, the Apprentices will gain academic credit through a guided program of study on the topic of *language revitalization and new media pedagogies*. Research collaborators and partners include SFU Faculty of Education Field Programs, the FNESC Aboriginal Languages Sub-Committee, the FPHLCC and the Nicola Valley Institute of Technology (NVIT), a publicly funded First Nations controlled post-secondary institution that is developing a certificate in teaching Aboriginal languages. Second, two Indigenous scholars, Nadine Eugene (Shuswap), a Masters student in educational technology and Laura Buker (Sto:lō), a Ph.D. student specializing in digital technologies for teaching and

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learning, will conduct these work through this research, and three students from the SFU Chilliwack Masters in First Nations Education cohort will be conducting major projects through this study. Third, this research builds on the principle researcher's prior scholarship in Aboriginal language revitalization and current research on *Revitalizing Severely Endangered Languages: State of the Art in Aboriginal Communities*, a literature review, and on the *e-Master-Apprentice Pilot for Language Revitalization* to determine if the face-to-face experience can be generalized to a computer-assisted Web-based context.

LITERATURE REVIEW

In his landmark book *Reversing Language Shift* Fishman (1991) postulated a continuum of eight stages of language loss with stage eight being the closest to total extinction and stage one being the closest to dynamic survival. Many Aboriginal languages in British Columbia, including Halq'eméylem, are at the eighth stage where only a few elders speak the language. For stage eight languages on the verge of extinction, Reyhner (1999) suggests that speakers need to be recorded using media that is not subject to degradation over time, such as VHS videotapes, and through written transcripts using phonetic alphabets that catch the nuances of the language's sound system. He states that in stage eight elders seldom have the stamina to teach young children, especially in large groups, though they can teach young adults, singly or in small groups, who have both the stamina to teach young children and who can be trained in teaching methods appropriate for schools. Participants from the language teacher training partnership between Simon Fraser University and Stó:lō Nation are prime candidates for working with the few remaining Stó:lō elders available for audio/video recording to create authentic, quality multi-media language learning aids.

The research *combines* two approaches identified as effective for revitalizing stage eight languages; one, the Master-Apprentice approach, and the other, the use of computer-assisted instruction and the Web-based tools (Reyhner 1999). Hinton has written in-depth about the Master-Apprentice approach (1994, 2002), where an elder speaker is paired with a member of the community who wants to learn the language and, ideally, the new speaker becomes equipped to teach and/or mentor others. The other approach, that of using the newest online multimedia technology to bring Indigenous languages to new generations, is a growing trend, as shown by the Indiana University model in the creation of the Arikara Multimedia Language Lessons (Parks, Kushner, Hooper, Flavin, Yellow Bird & Ditmar, 1999), an online project that teaches the language and culture of the Puget Sound, and online televised courses in Choctaw (Morrison and Peterson, 2003). Hawaiian language revitalization efforts are taking full advantage of computing and online communications, using the Leoki bulletin board system (Warschauer & Donaghy, 1997), and in teaching language courses at the University of Hawaii (Ka'awa & Hawkins (1997). However, Buszard-Welcher (2001), who examined a data base of 50 U.S. and Canadian endangered language websites to evaluate the Web as a tool in language maintenance and revitalization, found that less common kinds of content included technologies such as e-mail archives, bulletin board discussions (BBS), live chat, and to a lesser extent, video and video broadcasting.

What was not clearly evident in the research is how the computer and Web technologies can be used for direct teaching through audio/video conferencing involving fluent speaking elders in communities where only few remain. Thus, it was not certain how the e-Master-Apprentice approach would work for the elder participants who have not engaged in using computer and Internet technology, though they are the only ones who know the native language fluently. The Stó:lō people reside in 24 First Nations communities along the Fraser River in B.C. Using these technologies presents opportunities for elders who do not live in close proximity to the learners in several ways. One is that elders can demonstrate correct pronunciation, intonation, and conversational

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style to learners by video conferencing. Another opportunity is that elders' speech can be recorded and listened to repeatedly by the Apprentices, relieving the elder of the task of constantly having to repeat a word or phrase. Also, elder and learners can connect at each other's convenience. These are important considerations in communities with few elders who can provide authentic language samples. Further, the relatively few moderate speakers in the community need continuous opportunities to learn and practice with a fluent speaker, and subsequently to create ways to facilitate the learning process for new learners.

The e-Master-Apprentice approach incorporates five principles that Reyhner and Tennant (1995) draw from the work of Krashen, Lozanov, and Berlitz for effective language-teaching programs: 1) Putting primary emphasis on *communication*, not grammar, 2) Using *context* that is real or at least realistic, 3) Processing *content* of high interest to the learner, 4) Adjusting the pace of instruction to the students' progress, including moving from simple to complex (generally speaking), and emphasizing speaking over speaking correctly, and finally 5) Correcting students through modeling. Computer assisted language learning shows great potential for applying the above principles in language revitalization. It has been noted that integrating technology into learning environments by putting the tools of creation into the learners' hands, designing opportunities that channel student creativity into effective language learning activities is a powerful pedagogical approach. With structured guidance, students can gain valuable language practice while they develop cultural Web sites, create digital video class projects, and establish contacts with students in other cities and countries through Internet-based, multi-user, interactive environments. Within these pedagogically innovative environments, we can investigate how technology-based learning affects the language acquisition process (CALICO, 1999).

Computer assisted language learning (CALL), which has evolved over the last thirty years into what Warschauer (1996) categorizes as *integrative CALL*, is based on two important technological developments that the e-Master-Apprentice approach will incorporate – multimedia computers and the Internet. We will explore how to link multimedia technology (text, graphics, sound, animation and video) with *hypermedia*, which means that the multimedia resources are all linked together, and learners can navigate their own path simply by pointing and clicking a mouse. The advantage of using Hypermedia is that it can create an authentic learning environment, with listening combined with seeing, just like in the real world. Through computer mediated communication participants are able to share not only brief messages, but also lengthy (formatted or unformatted) documents – thus facilitating collaborative writing – and also graphics, sounds, and video. Members of the research team for this project aim to maximize the use of these computer and Web technologies to determine their effectiveness as pedagogical tools for revitalizing critically endangered languages. Two hypermedia programs have been identified for resource development, eZedia QT1 and MaxAuthor, hypermedia programs that have been used successfully with other Indigenous languages.

In *How to Keep Your Language Alive*, Leanne Hinton, Matt Vera, and Nancy Steele (2002) offer a systematic way for language communities to cultivate and maintain their heritage tongues, where the Master-Apprentice team members commit themselves to spending at least ten hours a week together speaking chiefly in the target language. The approach is derived from Stephen Krashen's "input hypothesis," that states that language is learned when it is spoken in the context of actions that make general meaning clear, and from the "total physical response" model, which combines language with whole body movement so that the learner focuses not on the words themselves but on the overall message. With the understanding that the elder teacher may not be a trained language instructor, the master-apprentice model places the responsibility for guiding the learning process on the apprentice. The e-Master-Apprentice approach for

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this study uses web technology such as iSight camera and iChat as media of communication between the Masters and Apprentices. The Apprentices in this study are moderately fluent speakers who have Halq'eméylem language tools they can use to communicate with the elder to request her assistance. Their role is to develop further fluency in the language by interacting with the elder who then authenticates the multimedia language material they develop for teaching.

The e-Master-Apprentice approach has the potential of off-setting challenges inherent with the face-to-face program, including the failure of teams to remain immersed in the language, the difficulty of arranging schedules to accommodate at least ten hours of language learning a week, and the reluctance to push forward to a more advanced level when a plateau is reached. In second-language learning, patience is paramount, given that the learner may "have to hear and practice a word twenty times in twenty different contexts in order to master it (Hinton, 2002)." Additionally, learning a critically endangered language is tremendously challenging for *both* the speaker-teacher and the language learner, as the language learner needs to figure out and learn the whole system of linguistic, social, and pragmatic rules that govern the language behaviour of the speech community. Further, the speaker, who may not have spoken the language in conversation in many years, may struggle with what it is the learner wants to know. Thus, Hinton (cited in Nicolas, 2004) says, "the learner...of the language has a greater task than merely to learn the language; he is also working with the speaker to re-create a speech community." At this time, very early in the research process, we do not know if the e-approach will show the same or similar challenges as the face-to-face approach. We do not yet know what specific challenges will be presented in the process of an e-Master-Apprentice approach, or what kinds of technologies and amount of contact will be feasible for the team. Though schedules can be flexible, we do not know what might be a saturation level for either the Masters or the Apprentices. Will ten hours contact be too much, or can they handle more? Are there ergonomic considerations we need to attend to for the elder? Thus, it should be noted that the rate of learning for a critically endangered language may be a much slower process than for that of learning a flourishing language.

In the recreation of a Halq'eméylem speech community, the researchers and participants will be exploring how this approach can demonstrate a culture-based way of teaching and learning a critically endangered language. For example, learning the functional structure of the language can help new speakers use the language in its traditional form, and respect it as such, rather than modifying it into pseudo-English forms (Rubin, 1999). It is what the elders mean when they say that our cultures and worldviews are embedded in our languages. A Halq'eméylem example would be how the 'small adult coho' salmon is referred to as "little berry;" from its origin story that links the coho to a berry that dropped into the lake (Gardner, 2002). A multimedia approach is a good fit for Halq'eméylem and for other languages that can be described as "picturesque," as it has the potential of capturing these rich representations as expressed in feeling, imagery, poetry, story and metaphor through digital technologies (Rubin). The Apprentices, a linguist who has studied the structure of Halq'eméylem and the elder fluent speakers will work with the research team to help unpack new words and phrases for their cultural manifestations.

Other questions of the research relate to how the language learning and technology impact on the teachers pedagogical practice. How might they use the technology they are learning in their teaching. Research shows, for example, that audio and visual data, in addition to the use of computers, are effective in developing multimedia language lessons for classroom instruction. Hawaiian language courses developed at the University of Hawai'i at Manoa incorporate a wide range use of multimedia and computer technology (Ka'awa and Hawkins,1997). Ruth Bennett (2003) discusses how computers, tape recorders and radio were successfully used for lesson

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development with members of the Hoopa Valley Indian Reservation in California. In another example, students and teachers at Lau Welnew Tribal School in B.C. are using iMac computers and Apple iMovie digital video editing software to produce multimedia instructional materials. (Brand, Elliot & Foster, 2002). To test these approaches in an educational context the Apprentices will implement their newly acquired language and multimedia resources in classroom settings using the technological tools they used to develop their own proficiency in Halq'eméylem, and further, will begin to act as Masters for new Halq'eméylem learners.

In summary, this research has four central objectives: 1. to determine the effectiveness, convenience and ease-of-use of Web technology *for developing language fluency* using audio/video Web communication techniques; 2. to determine how elders can be involved in new ways using these tools; 3. to determine the effectiveness of this approach for authenticating Halq'eméylem language via the multimedia language resources developed through this approach; and 4. to learn what cultural considerations and policy issues related to language and culture and worldview will emerge in the development of the processes and products of the research. The research will add new knowledge on Indigenous language revitalization strategies focusing on the Master-Apprentice approach, where Apprentices will be mentored to become Masters for new learners and to become master teachers in their educational settings. This pedagogical approach is targeted for inclusion as part of a graduate diploma program with the Field Programs area of SFU's Faculty of Education and for consideration in the language teacher certificate being developed by the Nicola Valley Institute of Technology.

RESEARCH METHODS

The research was scheduled to take place between January 2005 and April 2007. The Masters (3) and Apprentices (6+) in this research project will have been equipped with a computer, relevant hardware, software, and high speed internet access. The research assistants will be training both the elder and teacher trainees in the use of computer technology, and workshops will be held with Apprentices for developing multimedia language materials to be authenticated by the fluent elders. A process and protocol for communicating interactively over the Web and for authenticating Halq'eméylem will be established by the research team and participants. A website will be created to post multimedia language materials for sharing among the participants. Participants will be trained in use of email lists, audio and video tools, instant messaging services, accessing a website for this project and posting authenticated language materials on the Web.

The Apprentices will be trained in data collection methods to monitor their communication with the fluent elders in terms of kind, frequency and quality of contacts made using Internet technologies. They will also be trained in how to keep a journal to record daily learning. A Collaborative Action Research approach (Sagor, 1992) will be used that will allow the Apprentices to define activity agendas, monitor their own progress in their language learning process and provide evidence of growth in language fluency through e-Portfolios. This training will form part of the academic credit option along with the training in new technologies. The types of Halq'eméylem authenticated by the elder will be assessed in terms of words, phrases, and sentences with attention to identifying quality language that fosters communication, including culturally contextualized language. Multimedia language materials posted on the Web will be assessed for their use as quality authentic language resources for teaching and learning.

Throughout the research, the team will implement an Integrated Performance Assessment rubric to evaluate the communication progress of the Apprentices in three categories: 1. Interpersonal Communication (communicating with Master on projects, themes) 2. Interpretive Communication, (designing projects, themes for authentication, and 3. Presentational Communication (posting audio/visual/text materials on the Web) (ACTFL, 1999). A rating scale will be devised to determine Apprentices levels of fluency

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from the lower *passive*, *symbolic* and *functional* levels to higher levels where they demonstrate being *fluent*, defined by their ability to understand and speak the language with confidence and skill, with understanding of normal syntax, grammar and rules of form, and an extensive and growing vocabulary. We will know that the research is successful if the Apprentices are able to function at the *fluent* level, and that they also would begin functioning at the *creative* level, defined by their ability to understand and speak the language in ways that create new word usage and structures, showing a deeper understanding of the language and its potential new uses (Rubin, 1999). The teacher trainees will be interviewed to elicit their perceptions of achievement with this process, including the challenges and successes of their progress in developing language fluency. The elders will be interviewed on their perceptions of their role as e-mentors and on their assessment of teacher trainees achievement in language learning. The research team, including the Masters and Apprentices, will meet at least twice each year of the program for a focus group discussion on what is being learned about the cultural contexts of the language that is collectively being produced and communicated through the e-Master-Apprentice Approach.

Activities for year 1 and 2 are outlined below. In the third year of the research, the first year activities will be replicated with a second set of Apprentices to begin to determine the generalizability of the approach to new learners. The first two years of experience with this approach will help to determine candidates for year three. It is conceivable that some of the Apprentices may serve as Masters in the third year.

PHASES OF RESEARCH

Year 1 & 3	Year 2
<p>Phase I Four Day Visioning institute on the design of research, including the e-Master-Apprentice Approach</p> <ul style="list-style-type: none"> • Design experiment, setting up computer hardware and software, beta testing iSight and iChat • 3 two-day workshops in the use of technologies available on computers, ie email, iSight, iPhoto, iMovie, Powerpoint • Four weeks use of iSight and iChat incorporating multimedia technologies • A face-to-face meeting to unpack cultural manifestations that emerge 	<p>Phase I, Four day Institute on how to use the Web for new speaking opportunities. ie Internet Radio, BBS, Stories, songs, news</p> <ul style="list-style-type: none"> • Communicate and share language revitalization ideas with people in Hawaii, New Zealand, Australia, California • iChat and iSight continued as needed for posting new material on the Web • A face-to-face meeting to unpack cultural manifestations that emerge
<p>Phase II, 2-day institute to set up web pages for participants. Posting digital still images and self-introduction in text and audio and other resources. How to use FirstVoice.com</p> <ul style="list-style-type: none"> • 2-day institute to teach Hyperstudio • iChat increased or decreased according to need • A face-to-face meeting to unpack cultural manifestations that emerge 	<p>Phase II, Four-day institute to take stock of how the e-Master-Apprentice approach is working</p> <ul style="list-style-type: none"> • Two two-day workshops on MaxAuthor for creation of more sophisticated language learning resources • Continue iSight and iChat for new assignment • A face-to-face meeting to unpack cultural manifestations that emerge
<p>Phase III, Institute for In-School implementation</p>	<p>Phase III, • Four-day institute on Apprentices</p>

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<ul style="list-style-type: none"> • In-School or Community implementation of resources and tools • E-portfolio presentation to Sto:lō Nation House of Elders 	<ul style="list-style-type: none"> • becoming Masters in both face-to-face and on the Internet • Set up Practical experiences for Apprentices to practice as Masters • E-portfolio presentation to Sto:lō Nation House of Elders
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Collection of data and analysis of data will be conducted in each phase of each year of the research with both written and digital video reporting structures. Reports will be made to all collaborators, partners and supporters, and especially to the Stó:lō Nation House of Elders who also serve as the Stó:lō Halq'eméylem Language Authority. Though the Apprentices will have experimented with acting as masters in this research, the next stage of research following this project will be to test the Apprentices ability to sustain their role as Masters with new Apprentices.

CONCLUSION

A pilot study was conducted to determine how the technology would work involving one fluent speaking Halq'eméylem elder (Master) and a Halq'eméylem language learner (Apprentice). The participants, equipped with Mac computers, iChat, iSight and high-speed Internet, communicated successfully using Halq'emeylem in synchronous (iChat) and asynchronous (email) communication methods. The pilot study is reported in an article by Gardner & Eugene (2005), called "What? A Stó:lō elder can use computer and Internet technology? But, of course!" A unique aspect of the e-Master-Apprentice Pedagogy for Critically Endangered Languages is the involvement of Aboriginal elders who are fluent in the language. Everyone interested in this project wants to know how the elders will be able to learn the sophisticated technology required for the research. This is a valid inquiry, for sure. In our experience, thus far, all but one of the remaining fluent speakers have expressed an enthusiasm, openness and excitement about the prospect. The one elder who is in her late eighties, and continues to contribute to Halq'emeylem revitalization in other ways, feels that this approach will present an insurmountable learning curve for her. We respect and understand her stance; she has declined to participate as a Master in this project. The moderately fluent speakers, who are language teacher trainees, are looking forward with much excitement to the opportunities ahead to communicate with each other in Halq'emeylem through iChat, and especially with our elder fluent speakers. They have already been introduced to multimedia tools available on Mac computers, such as iMovie, iPhoto, iTunes and iDVD, and are looking forward to discovering all the ways they can incorporate Halq'emeylem using these and other software programs to create language learning resources, including interactive ones. Most of all, we are looking forward to discovering how this approach can help Apprentices become highly fluent speakers, and to how we can expand existing possibilities for involving elders in Indigenous language revitalization efforts.

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BIOGRAPHY

Dr Stelómethet Ethel B Gardner is an Assistant Professor in First Nations education at Simon Fraser University with an extensive history in Aboriginal language revitalization both in academic scholarship and at the community level. Her doctoral dissertation was written on what language renewal means in the everyday lives of the Stó:lō people and she has written several articles on language revitalization prior to and after the Ph.D. thesis. Dr Gardner is well connected to her Stó:lō community, to major First Nations language initiatives in B.C. and in the international community. At the community level initially and subsequently at SFU, Dr Gardner coordinated the development and delivery of the Stó:lō Nation/SFU Developmental Standard Term Certificate (DSTC) in First Nations language and culture.