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E-learning Design for Indigenous Communities:

Towards a Pedagogy of On-line Education for Aboriginal Cultures

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Introduction

Is web-based instructional design tailored for the needs of powerful ethnic groups? Is it conceivable to devise an e-learning model with the potential of accommodating multiple cultures? If technology supported educational environments can embrace cultural diversity, what are the best online practices for aboriginal learners?

The problem resides in the divestment of communal learning traditions. Contemporary academic research stipulates that dominant cultures are responsible for producing instructional design models that de-contextualize the learning experience (Collis, 1999, as cited in McLoughlin & Oliver, 1999). Moreover, studies show that the creation of web-based education is influenced by the designers' theories of knowledge and objectives.

Part 1

Concepts and Assumptions

This research project explores the ways in which on-line delivery of instruction can include various communicating and information processing preferences. The paper bases its approach on Lave & Wenger's 1991 conceptual framework (as cited in McLoughlin & Oliver, 1999) concerning communities of practice and examines the possible development of an e-learning design model including: structures, processes, tasks, activities and educational outcomes tailored to the needs of indigenous societies.

Terminology

For the sake of concision and clarity, in the pages that follow:

1. The words: *aboriginal*; *indigenous* and *native* are used to define:

“Peoples as those born or produced naturally in a land or region; native to...” (On-line Oxford English Dictionary). However, this dissertation acknowledges the contradiction inherent to the post-industrial definition of these terms: “while community ownership is a prime marker of indigenous rights, granting the rights of community ownership requires the idea of individual property rights” (Nair, 2006). Despite the fact that there is no agreement on the meaning, this working definition from the “International Work Group for Indigenous Affairs” seems adequate for the following paper:

“Indigenous communities, peoples and nations are those which, having a historical continuity with pre-invasion and pre-colonial societies that developed on their territories, consider themselves distinct from other sectors of the societies now prevailing in those territories, or parts of them. They form at present non-dominant sectors of society and are determined to preserve, develop and transmit to future generations their ancestral territories, and their ethnic identity, as the basis of their continued existence as peoples, in accordance with their own cultural patterns, social institutions and legal systems.” (Cobo, n.d., para. 2)

2. *E-learning design*, in the following pages, relates to:

The presentation of content delivered to particular users through the internet via a web browser (or other similar devices). Within this broad definition, *e-learning design* includes programming and aesthetic features. In other words it integrates:

operation, form, content and process. This classification enables the incorporation of: functional characteristics; style attributes; instructional subject matter; as well as types of activities. The description emphasizes the holistic process of the designing environment in order to integrate the delivery of instruction with the contextualization of learning.

3. *On-line education*, for the purpose of this document, means:

Web-based education using technological functionalities such as animation, audio tools, graphics, pictures and video streaming, just to name a few. The term presupposes that there is no actual face to face contact between the teacher and the student. It also refers to the use of integrated and worldwide teaching materials accessible for the attainment of learning outcomes.

4. *Pedagogy*, within the context of on-line learning for indigenous learners, is a term defining: teaching strategies guided by the students' ancestral and historical background(s); communal experiences; cultural environment(s); social structures; personal characteristics, and previous subject matter knowledge. In this definition, flexible instructional scaffolding is assumed and takes diverse forms (resources, motivating activities, models and guidance). Furthermore, learning outcomes are jointly established by the students and teacher (or facilitator) fostering student engagement (Córdoba, n.d.; Currie & Kaminski, 2008; McLoughin, 1999; Harris & Wasilewski, 2004)).

5. The concept of *communities of practice* refers to:

Shared socio-cultural practices emerging as people interact to achieve common objectives (Wenger, 1998, as cited in Moule, 2006). Communities of practice

organize around particular types of knowledge building. Their activities provide members with a sense of common endeavor and identity.

6. Tertiary context: “Any education entered after [...] secondary education, which may include vocational [...] education (leading to a certificate) and higher education (leading to a degree [...]”, (Campbell & Rozsnyai, 2002, p. 133).

Assumptions

This paper contends that e-learning for indigenous peoples should include holistic design considerations to allow for cultural contextualization.

Assimilation, cultural integration or marginalization?

Conventional ethnocentric educational perspectives have viewed aboriginals as deficient learners that needed to assimilate to a dominant culture in order to succeed in their studies (Sigh, 1993, as cited in McLoughlin, 1999). This ineffective model is presently challenged by the implementation of a *multiple cultural model* (McLoughlin, 1999). One example of this approach is the Australian *Learning Pathways* (a case study developed at greater length in the third part of this paper), which develops on-line instruction incorporating various representations of content; multiple perspectives; and a wide range of pedagogical methods and tools.

Paradigms for indigenous e-learning. According to Henderson’s 1996 study (as cited in McLoughlin & Oliver, 1999) three widespread educational paradigms fall short of providing native communities with adequate on-line learning experiences. As shown in Table 1, the first one, labeled *inclusive*, contains selected indigenous nations’ perspectives but fails to question prevalent cultural systems and is therefore deemed “superficial”. The second one, labeled *inverted* endeavors to tailor the instructional form and content to specific aboriginal groups. This process results in an increased marginalization as well as less opportunities for the integration of

native students in mainstream tertiary educational contexts. The third one, labeled *unidimensional*, presupposes that learning is the same for everyone and disclaims cultural differences altogether, with disastrous consequences. The three paradigms are represented in table 1.

This brings us to Henderson's 1996 e-learning design (as cited in McLoughlin & Oliver, 1999) called *multiple cultures model*. The former is typified by: flexible learning resources; various interaction options with the didactic materials; access to several points of view; interface representing cultural values; numerous pedagogical practices; and a combination of mainstream and non-conventional assessment strategies allowing for equitable access to tertiary education.

Web design for local and international audiences. Collis & Remmers's 1997 research (as cited in McLoughlin & Oliver, 1999) defined two main classifications when reviewing website designs that acknowledged cultural interests: one set had a local focus while the other reflected international perspectives. The exposition that follows attempts to link the two categories of web design (local and global) using the approach favored by communities of practice. More precisely, it is an effort at finding an e-learning design methodology that can include a multiple cultures model with the particulars of indigenous cultures.

Part 2

Indigenous e-learning design & communities of practice

Is e-learning a neutral process? Technological determinism, which would define technology as separate from society's economical and political influences, might lean on the side of neutrality. However an analysis of the standardization process of "IT for Learning, Education and Training" (Blandin, n.d.) demonstrates that the standardization of technological processes, from a socio-political viewpoint, is in itself biased due to the designers' expert consensus

regarding *interests and optimum order*. According to the author, mapping, for instance, is a form of process representation which tends to bypass configurations such as team work, communities of learners and student to student interaction. Interestingly, the abovementioned activities: peer work; communities of practice; and learners' interaction are precisely the sort of procedures favored by indigenous clienteles.

Bowers' 1988 findings (as cited in McLoughlin, 1999) also warned against a reductionist outlook, cautioning designers to foresee the disadvantages of computerized education. According to the aforementioned researcher, over defined information can generate "linear, analytical thinking through design of instructional sequences and navigation tools" (McLoughlin, 1999, p. 233).

Participation of aboriginal peoples in the information age. This paper presumes that adapted online educational models can allow indigenous peoples to take part in the information society without risking the loss of their identities. In order to do this, e-learning design frameworks must include the values embedded in authentic native literacy, the specificities of aboriginal pedagogical principles and the cultural symbols that represent the target participants (Smillie-Adjarkwa, 2005).

Contextualizing educational design.

Academic literature endorsing collaborative learning activities is abundant. Vygotsky's 1978 socio cultural theory (as cited in McLoughlin & Oliver, 1999) emphasizes enculturation (adoption of a society's behavioral norms) and scaffolding (gradual coaching support dependent on the student's autonomy). Lipman's 1991 study (as cited in McLoughlin & Oliver, 1999) proposes a "community of inquiry approach", while McLoughlin (1999) seeks to use this approach for students who are culturally distinct.

As presented earlier, Henderson's 1996 multiple cultures model (as cited in McLoughlin & Oliver, 1999) allows for flexibility in educational design. What's more, Collins, Brown & Newman's 1989 investigation (as cited in McLoughlin & Oliver, 1999) stresses the importance of situated knowledge and authentic environments. In turn, Lave & Wenger's 1991 theory (as cited in McLoughlin & Oliver, 1999) present situated learning as capable of contextualizing education.

Communities of practice and situated learning for Natives. Defined by shared socio-cultural practices emerging as people interact to achieve common objectives, communities of practice offer flexible shared learning guidelines. This constructivist model enables educational design to accommodate pedagogical strategies for specific learning populations.

“For a community of practice to function it needs to generate and appropriate a shared repertoire of ideas, commitments and memories. It also needs to develop various resources such as tools, documents, routines, vocabulary and symbols that in some way carry the accumulated knowledge of the community”. (Wenger 1998; as cited in Smith, 2009, para. 14)

The former definition is well suited for indigenous learners. In order to contextualize on-line educational models for aboriginal students, designers must take in consideration: inquiry valued by the community; customs & traditions; genuine learning content; need for interaction and dialogue; and collective objectives (McLoughlin, 1999). Table 2 summarizes the contextualization of on-line education for indigenous people.

The interactive format offered by communities of practice is an appropriate avenue especially for indigenous students who may find a web-based platform challenging in the beginning. As they become accustomed to the interface and activities, the social environment

assists them in their quest for knowledge. With guidance and reinforcement from the on-line community members, learners' participation gradually progresses. Students eventually acquire the status of expert members in a specific community of practice.

The construction of knowledge through interaction and the use of culturally valid didactic materials are methods far more effective for indigenous students than learning in isolation with standardized resources. This kind of e-learning experience is "[...] designed to replicate the [...] features of a [...] community where members support each other and have a common goal." (McLoughlin, 1999, p. 237).

E-design operations and format

Is the e-learning conceptual framework, founded on the principles advanced by communities of practice, a viable format for the incorporation of structures and processes customized for the needs of indigenous societies?

McLoughlin (1999) correlates communities of practice and on-line cognitive operations while venturing to situate the learning needs of Australian aboriginal students. Using her framework as a starting point, the following connections between situated learning, indigenous education specificities and web-based tools arise.

Community needs. Communities of practice encourage investigations based on community needs, as well as knowledge exchange and interaction. Indigenous students, correspondingly, benefit from engaging in negotiations using the help of peer teachers or from conducting conversations to collaborate while learning. On-line tools that can support these needs are, for example, discussion forums, emails, participatory tasks and group projects.

Co-construction of knowledge. Situated learning processes (as part of the constructivist approach) value the sharing of experiences, which produces the co-constructing of knowledge. In

the same way, aboriginal learners feel comfortable with scaffolding or modeling methods; mentorship and the use of dialogue. On-line tutors and bulletin boards are resources that can help learners navigate through these procedures.

Students and teachers' roles. Constructivism positions the teacher as a facilitator. Indigenous community members are empowered by sharing experiences & talking to solve problems. Using the web for research and to share findings is a good way to accommodate collaborative inquiry.

Clarity and Flexibility. Another characteristic of communities of practice is the control of common environments by community members. This correlates with the aboriginal student's need to have access to clear learning objectives and to be given the means to devise flexible tasks in order to optimize knowledge acquisition. E-learning operations enabling this flexibility are, for instance: posting of communal problems and frequently asked questions (FAQ) spaces.

Mutual responsibility. Situated learning promotes student roles that favor responsibility and mutual support through discourse and cooperation. In turn, indigenous learners have been shown to appreciate reciprocated questioning; feedback and reflection through problem-based projects. On-line help as well as group forums and team work are operations and activities' design formats that make this type of mutual assistance possible.

Active involvement and solidarity. Finally, communities of practice encourage the use of support systems within and outside the community. Members actively involved in the experience profit from social interaction and contribute to the group's solidarity. This aspect of situated learning is obviously in harmony with the indigenous learners' need for access to peer scaffolding and outside expertise, as well as various forms of communication and reciprocal

dialogic exercises. On-line learning tasks designed for collaboration are excellent ways of endorsing these specific cultural components.

Table 3 presents the correlations between communities of practice, aboriginal preferences and technological tools.

The linkage between communities of practice, aboriginal e-learning preferences and available on-line functions clearly shows affinities between the overall structure (communities of practice); indigenous communities' specific needs (in terms of operation and format); and on-line tools. However, the correlation also displays limitations when it comes to specific pedagogical tactics that would benefit indigenous learners.

Part 3

On-line practices and aboriginal pedagogy

Web-based distance learning: best practices

A research on four courses delivered on the web demonstrated that the general strength of e-learning education consists in: active student participation; communication between learner and teacher; and an integral respect for diversity. The researchers also found deficiencies that needed to be addressed. Among others: lack of cooperation between learners; need for timely comments; and problems with interface usability were noted (Graham, Cagiltay, Craner, Lim & Duffy, 2000).

All of the abovementioned pedagogical processes can be related to indigenous educational needs and, according to Reeves & Reeves' 1997 inquiries (as cited in McLoughlin, 1999) the design of interactive e-learning tools must take in consideration such cultural sensitivities. However, when it comes to literacy and pedagogy, what are the specific qualities that characterize indigenous learners?

Holism & emotional intelligence

Holistic education. In their presentation prepared for an ICT summit, Currie & Kaminski (2008) put forward a series of principles defining on-line pedagogy for First Nations. To start with, they recommend a holistic approach to education. In their view, the concept of holism is linked with emotions (relational), the mind (intellectual), the body (physical), and the spirit (spiritual). In the research paper she presented at the National Network for Aboriginal mental Health internship program Smillie-Adjarkwa (2005) states that, for on-line distance education to appeal to indigenous values, it must be holistic. She mentions the significance of community engagement and the need to feel ownership of the learning experience. Examining specifically the case of aboriginal women, the author also confirms the merit of including conversational elements in the web-based design in order to motivate online participation.

Emotional competence. Similarly Brown (coordinator of the indigenous educational department, University of British Columbia, n.d.), sheds more light on the importance of harmonizing the heart and the mind in native education. His videotaped observations center on emotional competency: a combination of skills allowing Aboriginals to facilitate the transformation of their destructive emotions in constructive experiences.

From this perspective, the education goals of indigenous communities are different from the goals of mainstream public education as it stands now. What this erudite elder suggests, in his videotaped interview, is to teach how to identify emotions; how to communicate those states; how to use feelings as guides; how to become aware of our values; and how to develop emotions skills.

Emotional intelligence and academic achievement. Scientific research has shown that a child's brain goes through major development until early adulthood.

A secure [emotional] base [...] can create an environment that lets children's brains function at their best. [...] When children are taught to better manage their anxiety [it helps them] focus their attention. This enhances their ability to reach an optimal zone for learning as well (Lantieri, 2008, p. 2).

According to Zins & Elias (2001), emotional skills have positive effects on the performance of mathematical equations; language proficiency and social studies skills. A healthy management of emotional states encourages an optimistic approach to education and increases the frequency of successful experiences. There is no decrease reported on test scores. On the contrary, marks have been shown to ameliorate significantly.

The researchers have also noted the development of the use of sound to encode meaning in language (phonology). Furthermore, with boosted success in many areas of their learning experiences, students' metacognition is enhanced. Without emotional blockages, they get better at planning and at finding viable solutions to problems.

Finally, wholesome emotional internal conditions allow learners to improve their nonverbal way of thinking: the ability to analyze information and solve problems using visual and hands-on reasoning. Table 4 represents the relationship between emotional competence and academic performance.

Integrated tools and activities

In conjunction with emotional intelligence, holistic planning factors should also include the design of operational tools and take into account indigenous cultural specificities. For instance, instead of perceiving dialects as limitations, due to the predominance of English on the

web, the designer may create an interface facilitating activities on video clips and oral transmission of information.

For many native communities oral tradition is already imbedded in their customs and has been the vehicle for the communication of knowledge and wisdom for centuries. Nowadays real-time web, video and audio conferencing offer opportunities to tap into a mode of delivery adapted to oral cultures. Together with academic and fact-based knowledge, the information distributed through oral lore may also take the form of adages, legends or songs.

Quaternity: knowledge, thought, intuition, and the senses

This predilection for oral transmission of knowledge leads to a reflection on the importance of interconnectedness for indigenous populations. This worldview, which treasures oneness, is among the most distinctive traits of indigenous learning communities. Their notion of quaternity, encompassing the concepts of knowing, thinking, feeling, and sensing, seems to be derived from their fondness for mythical stories and imaginary tales as a way of dealing with the concepts of truths and realities.

In her “First Nations Pedagogy for Online Learning” site [Kaminski](#) (2008), a Métis from the Ketegaunseebee Anishnaba or Garden River First Nations lands (Ontario, Canada), stresses the importance of quaternity; which she defines as a “discursive pattern of writing” unique to native people. In her view, this type of discourse challenges the conventional essay writing structure (introduction, body, conclusion), which is qualified as “uni-dimensional, monolithic, definite, linear and text-bound” ([Kaminski](#), 2008, p. 19).

E-learning design options compatible with the inclination for orality include: listening activities; dialogues; or circle talks that could be accomplished with on-line audio tools, to give a few examples. This category of knowledge construction could also satisfy the need for cyclical

forms of discourse. Repetition and reiteration of experience, expertise and know-how could be transmitted through on-line journals, public forums, personal blogs or wikis and in chat rooms.

Inclusion of elders in education

The formal roles of elders in aboriginal traditions. Of course, when a discussion about the oral delivery of knowledge arises, elders immediately come to mind. In native cultures elders, who may be men or women, personify wisdom. They often preside over ceremonies and usually possess a variety of spiritual gifts. Some interpret dreams; others are knowledgeable herbalists or healers, for instance.

Furthermore, Kaminski (2008) asserts that elders are the formal transmitters of traditions, tribal knowledge, and values such as introspection, self-directed learning, and connectedness. Whereas, in non-native cultures, elderly citizens' knowledge may be informally appreciated, in aboriginal societies elders play an official role perceived as a key element of a holistic approach to learning.

In her paper called "Aboriginal literacy and education: a wholistic perspective that embraces intergenerational knowledge", Córdoba (n.d.) reiterates the need to adopt a holistic perception of literacy for indigenous learners. She points out that the contribution of elders is vital for the delivery of language, through legends that recount the rich history of aboriginal nations. The writer also believes this approach to be deeper than the well known 3 R's (*reading, 'riting and 'rithmetic*). Indeed, she considers the elders' active participation in indigenous education as: "embodied learning and performed knowledge" (Córdoba, n.d., para. 6) seeking to nurture relationships between the individual, the family, the community, the nation and all sentient beings.

E-learning platforms are ideal to facilitate the involvement of elders in the education of indigenous students. Web-course designers can undoubtedly find videos or organize the creation of digital films providing precious interviews with Elders speaking in their native tongue. For young native learners who may not be fluent in their tribe's language, sub-titles are easily added, or a simultaneous translation is also possible. For easy downloads, an audio only option may be advisable. With the use of an I-pod (or a modern telephone), students can effortlessly access these types of interviews.

These pedagogic methods are far from superficial in their scope. On the contrary, they allow for authentic indigenous knowledge to reach the learners. This genuine transmission of knowledge is crucial for young and mature native students. It offers a counterpart to the mass media's sensationalist depiction of aboriginal peoples and promotes healthy, respectful representations of indigenous realities, past and present.

Socially situated education

The threat of globalization. Through their examination of global youth culture and identity, Heaven & Tubridy (n.d.) highlight the negative consequences of consumerism. They petition the world governments to acknowledge this global phenomenon. Globalization, as defined by a youth group in Ghana (West Africa) lures young people in its grip. "We are driven [...] into a [...] consumerist lifestyle, stimulated by transnational corporations [and ...] mass media. [...] we witness at the same time [...] poverty widespread [...] in our region" (Heaven & Tubridy, n.d., p. 157).

Fostering an enlightened aboriginal global involvement. In their attempt at presenting indigeneity's alternative worldview, Harris & Wasilewski (2004) touch on the meaning of dialogue and consensus in aboriginal cultures while cautioning against the harm of globalization.

On the one hand, they see interconnectedness as wholesome, with the potential of developing communication opportunities. They endorse free, non-forceful participation. However, they alert their readers of the present state of affairs, which imposes partaking in global economical and political power struggles.

Self-governance as a learning skill

In the same vein, on-line educational content for aboriginal students must be ecologically situated. The expression refers to the importance of placing the subject matter in a greater context. In order to achieve this goal when it comes to indigenous legacy, oral history becomes vital. Thus, we return to the importance of the elders and their traditional manner of recounting and transmitting their versions of past events.

This form of investigation of pre-colonial, colonial and post-colonial knowledge leads the way to self-governance. It is by studying native history, sociology, and economic realities that indigenous students can ascertain their abilities and entitlement to govern their own communities (Currie & Kaminski, 2008).

Case study: Australia's Pathways to Learning

One way of encouraging the pride and confidence that propel young and competent aboriginal people's efforts in the way of self-determination can be encountered in web-based education. The on-line unit of study created for Australian Aboriginals called *Pathways to Learning* offers an example of a web-design process considerate of indigenous students' unique cultural traits and pedagogical needs (McLoughlin, 1999).

Acknowledging empirical knowledge. In this case study, students' previous knowledge (related to their culture and their community) is actively triggered and combined with new information in order to construct novel learning acquisition paths. To accommodate the need for

communicating and sharing of information, the *Yarning Place* (a term that signifies “chat” in Aboriginal vernacular) extends an invitation to participate in virtual conversations. The topics of discussions are intertwined or woven into the themes developed with the unit. Thus, students have the opportunity to chat informally about the subject matter without being pressured to find meaning on their own. On the contrary, the community of practice created in this type of activity allows for risk taking and linkage of ideas in order to collectively de-construct and reconstruct the information at hand.

Minding the feelings and intuiting the mind. The *Yarning Place*, far from representing a superfluous attempt at ensnaring indigenous students in a thread of convoluted educational gadgets, presents a genuine attempt at considering emotional intelligence as a valid learning aid.

However, aside from the technological instruments available, what is imperative is to give students the freedom to choose what they want to research and enquire. Ultimately, the objective of the didactic experience is to allow the students to become autonomous, capable of applying their knowledge without the help of a teacher. To go even further, the purpose of this training is to promote lifelong peer tutoring among indigenous students; thus transforming the apprentice into a facilitator of knowledge.

To achieve this *mutual enhancement of autonomy*, the *Pathways to Learning* project’s educational design offers opportunities for self-reflection (an on-line journal) in addition to the collective knowledge building processes. Research tools also enable students to make distinctive and meaningful contributions to their learning environments. The *news* is another section of the *Pathways to Learning* web interface allowing members to connect of their own free will and to access message boards and updated information.

All these technological processes contextualize the learning by presenting knowledge acquisition within a social platform adapted to indigenous students. This type of situated learning is facilitated by a structure founded on the principles advanced by communities of practice. Furthermore, the on-line communal experience encourages higher thinking processes. Students question each other; investigate motivations and values; and express their rationale for making decisions. All these social interactions impact the conditions of learning and favor the indigenous students' learning preferences (McLoughlin, 1999).

Challenging the four R's. Indigenous literacy challenges the conventional 3 R's (reading, writing and arithmetic) by presenting 4 R's (related to the concept of *quaternity*): "respect; relevance; reciprocity and responsibility" (Currie & Kaminski, 2008). The lessons learned in the Australian *Pathways to Learning* show the way to the fulfillment of these 4 R's.

Respect. On the one hand, on-line education for indigenous learners must respect their cultures and traditions by making them an intrinsic part of the studies, as does the *Yarning Place*.

Relevance. Authentic activities, relevant to community issues, must be incorporated in conjunction with the academic knowledge conveyed in lessons or units. The case study acknowledges students prior knowledge for this reason.

Reciprocity. In the *Pathways to Learning*, a vast array of advanced communication tools honors cooperation.

Responsibility. Finally, students are given the freedom to choose how they wish to fashion their study path. At the same time, the inclusion of self reflection fosters the promotion of equity and pride, leading to autonomy and ultimately self-determination.

Recommendations

Limitations of interactive design. Some challenges include the development of clear and valid assessment guidelines for participatory activities (McLoughlin & Oliver, 1999). Another complex matter is the use of the internet. On the one hand, the resources are accessible and abundant. However, the consequences of accessing possible misguided information about aboriginal communities are far reaching (Smillie-Adjarkwa, 2005). That being said, the vast choice of media (television, phones, iPods, etc.) consigns the threat of web research to a somewhat less isolated problem.

The visual and auditory aspects of e-learning are essential to meet the needs of indigenous students in an on-line environment and need to be further developed. Graham et al. (2000) also recommend timely feedback; user-friendly interfaces; and tutorials on asynchronous communication for both students and teachers.

Conclusion

This paper endeavored to demonstrate that, to accommodate indigenous students, e-learning can be designed holistically and knowledge can be contextualized. Rather than assimilate students from aboriginal cultures, web-based educational design should seek to celebrate their specificities and encourage self-determination while providing access to the communication age.

A successful e-learning experience for native students is typified by a wide selection of participatory tools and processes. This collaborative requirement is well satisfied with the on-line structure embodied by communities of practice. The communal construction of knowledge, built using a globally situated content, favors both the active participation of students as well as their predilection for contemplation.

Another sine qua non for indigenous learners is the inclusion of emotional management in their studies. This goal is best achieved with the previously mentioned sharing approaches as well as with the use of authentic activities (McLoughlin & Oliver, 1999) epitomized by the guidance of elders through artistic creations; story-telling; songs; anecdotes; vision quest; etc. For this purpose, technological processes like video conferencing (Ginsburg, 2002) or the use of digital short films as well as tools allowing real audio are invaluable pedagogical strategies (McLoughlin, 1999).

Implementing the suggestions enumerated in this paper may enable designers to help diminish the digital divide by creating opportunities for various aboriginal groups to contact each other through international forums for (McLoughlin, 1999; Smillie-Adjarkwa, 2005). The use of symbols representing particular nations (the *Yarning Place*, for instance) or the appreciation of indigenous languages within formal educational settings are various ways of promoting and protecting their distinctive identities.

Lastly, encouraging a form of literacy adapted to a lifelong learning philosophy interlacing education with relationship, reciprocity and responsibility challenges the Eurocentric models of schooling (Harris & Wasilewski, 2004). More importantly, this collective and situated form of learning is well suited to deliver 21st century skills, such as interconnectedness and relevance (Partnership for 21st century skills, 2004), and positions indigenous learners as leaders in the implementation of educational innovation.

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Tables

Table 1:

Mainstream Educational Paradigms

Paradigm	Description	Limitations
Inclusive	<ul style="list-style-type: none"> recognizes pluricultural realities, motivated by fairness 	<ul style="list-style-type: none"> partial multiculturalism inclusion of the non common, yet debatably authentic or representative limited endorsement of specificities
Inverted	<ul style="list-style-type: none"> views society as imbalanced embraces minority perspectives 	<ul style="list-style-type: none"> circumvents cognitive requirements minimal tertiary learning opportunities
Unidimensional	<ul style="list-style-type: none"> cultural minorities are invisible culture is portrayed as homogenous 	<ul style="list-style-type: none"> dominant cultures only are recognized culture is seen as marginal

Adapted from: McLoughlin & Oliver (n.d.), p. 4

Table 2:

Contextualizing Indigenous On-line Education

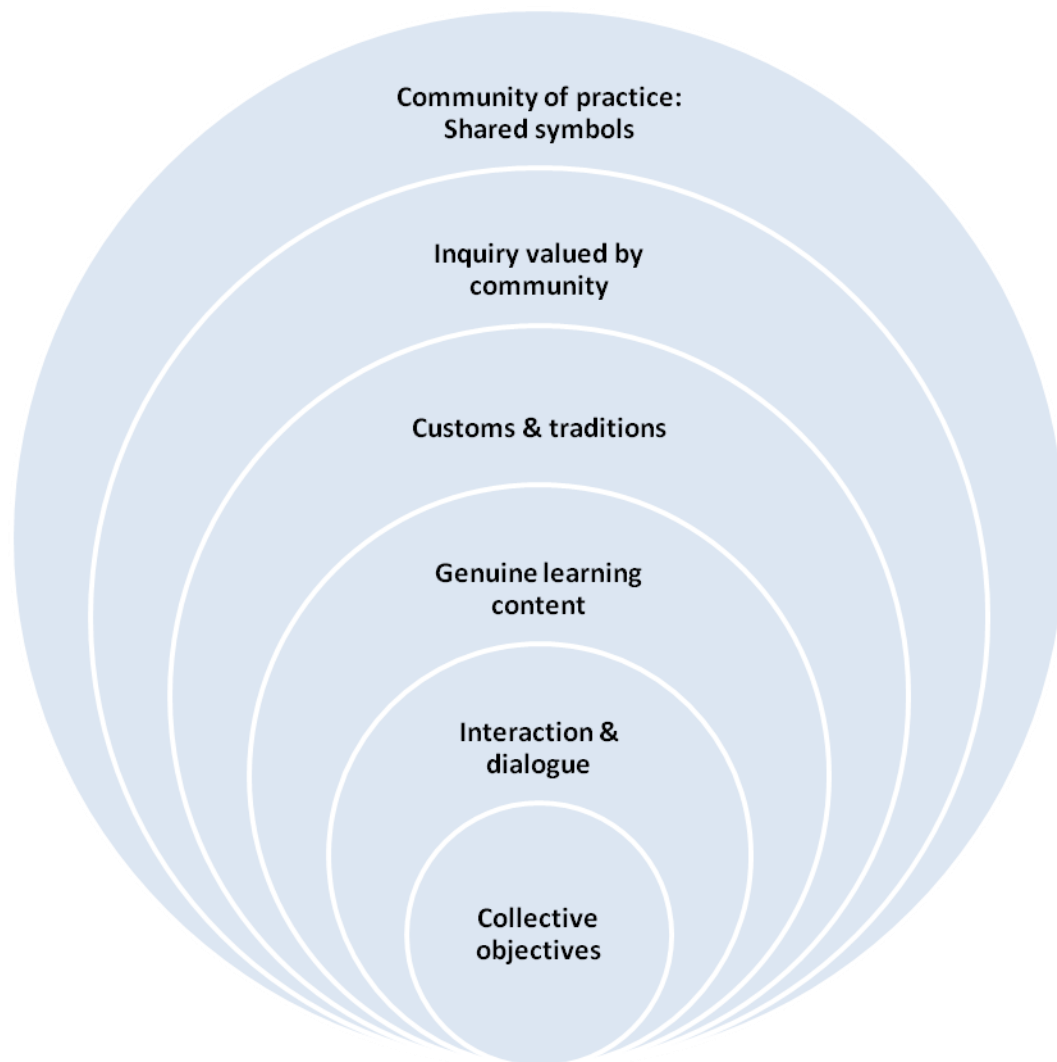
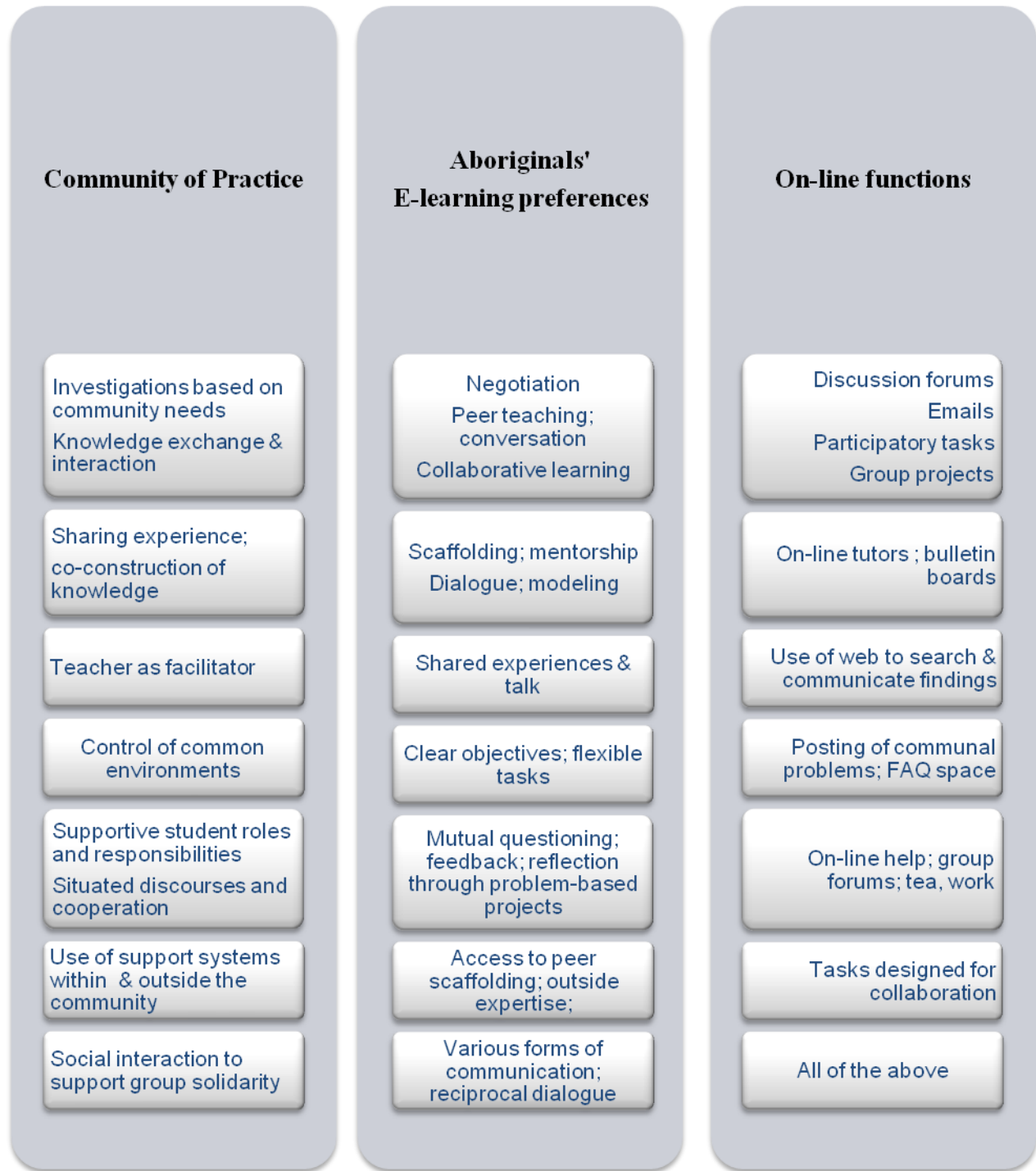


Table 3:

Correlating Communities of Practice, Aboriginal Preferences (Operations and Format) and On-line Functions



Adapted from: McLoughlin (1999), p. 238

Table 4:

Social and Emotional Learning Outcomes Related to Performance in School

Improved math, language arts, and social studies skills
Increases in achievement over time (elementary to middle school)
Higher achievement test scores and no decreases in scores
More progress in phonological awareness
Improved learning-to-learn skill
Better problem solving and planning
Improved nonverbal reasoning

Adapted from: Zins & Elias (2001), p. 5