

# Developing Digital Competencies in Aboriginal Students through University-College Partnerships

W. S. Barber, S. L. King

**Abstract**—This paper reports on a pilot project to develop a collaborative partnership between a community college in rural northern Ontario, Canada, and an urban university in the greater Toronto area in Oshawa, Canada. Partner institutions will collaborate to address learning needs of university applicants whose goals are to attain an undergraduate university BA in Educational Studies and Digital Technology degree, but who may not live in a geographical location that would facilitate this pathways process. The UOIT BA degree is attained through a 2+2 program, where students with a 2 year college diploma or equivalent can attain a four year undergraduate degree. The goals reported on the project are as: 1. Our aim is to expand the BA program to include an additional stream which includes serious educational games, simulations and virtual environments, 2. Develop fully (using both synchronous and asynchronous technologies) online learning modules for use by university applicants who otherwise are not geographically located close to a physical university site, 3. Assess the digital competencies of all students, including members of local, distance and Indigenous communities using a validated tool developed and tested by UOIT across numerous populations. This tool, the General Technical Competency Use and Scale (GTCU) will provide the collaborating institutions with data that will allow for analyzing how well students are prepared to succeed in fully online learning communities. Philosophically, the UOIT BA program is based on a fully online learning communities model (FOLC) that can be accessed from anywhere in the world through digital learning environments via audio video conferencing tools such as Adobe Connect. It also follows models of adult learning and mobile learning, and makes a university degree accessible to the increasing demographic of adult learners who may use mobile devices to learn anywhere anytime. The program is based on key principles of Problem Based Learning, allowing students to build their own understandings through the co-design of the learning environment in collaboration with the instructors and their peers. In this way, this degree allows students to personalize and individualize the learning based on their own culture, background and professional/personal experiences. Using modified flipped classroom strategies, students are able to interrogate video modules on their own time in preparation for one hour discussions occurring in video conferencing sessions. As a consequence of the program flexibility, students may continue to work full or part time. All of the partner institutions will co-develop four new modules, administer the GTCU and share data, while creating a new stream of the UOIT BA degree. This will increase accessibility for students to bridge from community colleges to university through a fully digital environment. We aim to work collaboratively with Indigenous elders, community members and distance education instructors to increase opportunities for more students to attain a university education.

**Keywords**—Aboriginal, college, competencies, digital,

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universities.

## I. INTRODUCTION

THIS paper reports on first steps to develop an online partnership between a community college in an isolated area of northern Ontario and an urban university in the greater Toronto area in Oshawa Canada. Focused on indigenous students who live in geographically isolated regions with no access to a physical university, this pilot project aims to facilitate the transition from college to university, while allowing indigenous students to remain in their local communities.

Dion [1] states that the Canadian situation with respect to Aboriginal education and Metis education is grim at best. “More than fifteen years ago at the launch of the Royal Commission on Aboriginal People commissioners made a specific call to educators explaining that hope for new and better relations between Aboriginal people and other Canadians requires teaching and learning of our shared history.” She goes on to indicate that “a host of Aboriginal scholars have documented the depth of ignorance that exists on the part of most Canadians about the history of Aboriginal and non-Aboriginal relationships” [1]-[4].

This pilot project aims to begin to build bridges between northern Aboriginal college students and access to university degrees. Using an established undergraduate Bachelor of Education Studies in Digital Technology program, students with any two year college diploma are given the opportunity to pursue a pathways program, which they can undertake while remaining in their local environments. Using any mobile device, students can learn from anywhere in the world, and this project aims to leverage the synchronous web-based video classes to enable Aboriginal students to pursue post-secondary university classes, decreasing the transactional distance [5] that often creates situations where students feel isolated and drop out of programs [6]. Next steps in this partnership will be to use a validated and reliable tool known as the General Technology and Competence Use (GTCU) to measure student confidence and competence in the use of various technologies, as well as instructor confidence and competence.

## II. THEORETICAL FRAMEWORK

Baker [7] identified three typologies for structural configurations of school-university partnerships. The first of these is a “single-tier partnership configuration, the most simple and straightforward in which university professors work directly with classroom teachers in the school” [7]. Our pilot project described in this paper moves beyond this level.

Baker identifies a second level partnership which he describes as a “multi-tier partnership which is more complex, involves active participation by many actors at various levels of authority and decision-making. Professors and teachers are still involved but many others have joined the partnership” [7]. One might classify this project as multi-tier as it does involve both individual classroom initiatives and school-wide projects. However, this project falls more clearly in the third level identified by Baker as a “complex brokered partnership configuration, where university leaders go outside their institutions to hire experts who bring their expertise to both university and K-12 educators” [7]. As we will be working with local Indigenous elders and community leaders, the partnership becomes greater than just the college university link, and thus, the course modules are personalized to the local learners. Johnson and Liber discuss the critical importance of a “Personal Learning Environment” [8], which describes a “fundamentally learner-driven model of education, where the traditional provider-centric of institutions is challenged. The rationale for this second view is drawn from the recent rise in personal technology, particularly the emerging situation where the power of personal technology is often seen to outstrip the technological provision of the institution” [8].

#### A. Site Description Community College

The community college [9] is located in the region of Timmins, Ontario, Canada, but has access to four regional campuses. The college offers more than 75 full and part time programs, but has no local university in its catchment area. Students who leave the college upon graduation must then go to larger southern cities, and if they leave the area many do not return. This makes it difficult for sustaining educated leaders and workers to solve the complex problems that arise in isolated communities. Students have an average age of 25.2 years, and the overall population is 15% Aboriginal. Founded in 1967, the catchment area for students covers over 160,000 square kilometres, over 65+ communities and 17 Indigenous communities. For these reasons, it is imperative that partnerships, such as this one, develop bridges to allow students an online strategy to attain a university degree, which otherwise might not be possible.

#### B. Site Description University

The University of Ontario Institute of Technology [10] provides innovative and unique undergraduate and graduate programs to over 10,000 students, with programs that are designed to meet student interests and career aspirations, along with the market-driven requirements of employers. Students in the Faculty of Education BA program take synchronous fully online classes, and can work full time while attending this flipped classroom model. Through independent and problem-based learning strategies, students develop high levels of competence in using technology across a broad range of subjects. With an overall university population of 15,000 students, the university prides itself on providing online learning courses through the faculty of education. These web-based courses are available to students from other faculties

such as Business and Information Technology, Science, Health Science, Engineering and Nuclear Science. The university’s broad partnerships with business such as General Motors and the Ontario Power Generation Corporation provide real world and authentic experiences for students. This means that UOIT’s market driven programs appeal to students bridging from community colleges which tend to be more skill-based, thus making this potential partnership streamlined and seamless for students [10].

#### C. GTCU

The General Technological Competency and Use survey will be administered to students and instructors once the partnership is fully established. This tool has been used extensively through the Education Informatics Lab in the Faculty of Education at the University of Ontario Institute of Technology [11]. The tool measures frequency and confidence (thus implying competence) of the use of a variety of technological tools. Future data will enable us to help Aboriginal students and their instructors to improve technological competencies, and thereby, the overall success in the online learning environment. This tool measures four orders of use, including technological competence, social competence, informational competence and epistemological competence. Individuals will receive a summary report after completing the survey which indicates areas of strength and areas where improvements can be made. This will help the authors to design pre-courses and strategies to support Aboriginal students in the online learning environment.

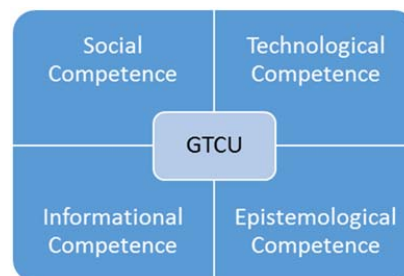


Fig. 1 Elements of the General Technology Competency Use Model [11]

#### D. Fully Online Learning Communities

Recent work by Van Oostveen et al., [12] and Childs et al. [13] refers to the social, cognitive, and affective elements of FOLC [13]. Key elements of this model include student-centred safe and trusting environments based on building meaningful relationships. Problem-based learning strategies [14] provide a socially constructivist way to allow Aboriginal students to situate their course work in real world authentic situations. Critical reflection is encouraged and diverse perspectives and solutions to assignments provide opportunities for students to discover ways to work collaboratively, provide and receive feedback, and design activities that work for their own cultural and social belief systems [12], [13]. We aim to create within the digital space both cognitive presence and social presence, within which

students can drive the learning process based on their own needs and learning goals. Instructors act as facilitators and guides, and learning becomes centred around Aboriginal community values, issues and goals.

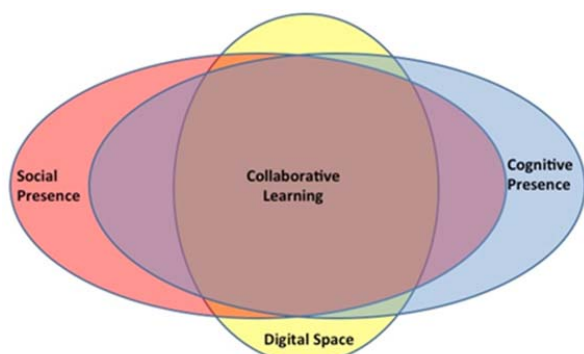


Fig. 2 Van Oostveen's Elements of FOLC [13]

### III. METHODOLOGY

The project will be a joint endeavour of a rural isolated community college and an urban university. As such, we will appoint an Advisory Council consisting of members of all institutions, as well as Indigenous elders and community leaders as needed. This group will provide oversight to the project, meeting two times during the year online and requiring a summary report from the project team.

1. Our first goal is to develop a new stream in the BA program focused on serious educational games, simulations and virtual environments. Using the accumulated experiences at UOIT and the affordances of our Educational Informatics Laboratory (EILab.ca), we will provide the necessary technological expertise to develop this stream. Instructors/course developers will be selected to develop each of the four modules including but not limited to: Serious Game Development, Developing Learning Simulations, FOLC, and Building Digital Micro Worlds. These will be co-developed with instructors from participating institutions.
2. Second, we will administer the General Technology Competency and Use (GTCU) to all students. Along with the main college campus in Timmins, Ontario, there are also four regional campuses located across Northwestern Ontario, in the communities of Kirkland Lake, Haileybury, Moosonee and Timmins. As the project grows, additional Indigenous Peoples and First Nations will be invited to participate. The GTCU will provide students with an individual profile and enable them to identify areas of strength and areas of improvement. The tool also provides overall group trends and will allow us to explore data based on four orders: technological, cognitive, social and epistemological. This can then be used for participating institutions to assess students' skills with digital technology and help prepare them for success in the online community and transition to work.
3. Data Analysis: Using the affordances of the EILab.ca at UOIT, we will analyze the overall community data

regarding students' technological skills and competencies for the partner institutions. Findings will be shared with the Advisory Board.

4. Course Developmental Methods: The project will use different multimedia methods that can be used both synchronously and asynchronously. A typical 36 hour (three credits) university course will be articulated as smaller learning modules to allow students to focus on the particular aspects necessary to prepare them for success in fully online learning at the university level. Each module will consist of online material with self-assessment, peer feedback and supports. This format provides flexibility and constructivist models that elicit initial concepts, challenge these preconceptions and allow for collaborative evaluation of ideas through an interdisciplinary approach. Components in a module include online video clips and learning resources, synchronous group activities and discussions, identification of problems and creation of solutions by small groups.
5. Problem Based Learning for Individual Contexts: The modules will be developed using a problem-based learning (PBL) approach. In this way, students will select problems that have real-life relevance to their own communities. Each module will begin by providing an ill-structured, open-ended or ambiguous context or situation. This allows for students to engage in intriguing, real and relevant intellectual inquiry, and to learn from life situations. Teams of individuals will work in real-time and asynchronously, but what is important is that they work together. Synchronous collaboration tools are vital for the effective implementation of PBL online because tools such as chat, shared whiteboards, video conferencing and other social media platforms are central to facilitating collaboration between members of the problem-based learning team. Students in this stream will have access to a wide variety of Open Educational Resources (OER).
6. The students will be learning using a team approach and will develop collaborative projects for their culminating tasks. This community/team approach provides social, emotional and cognitive support as well as allowing for constructive feedback and opportunities for growth and challenge.

### IV. FUTURE OUTCOMES/FINDINGS

As Dion states [1], "We hope to accomplish change within a system that has for generations failed Aboriginal learners and failed to teach all students the history and culture of people who are indigenous to these lands we call home" [1]. While there is an urgent need in Canada to build bridges between Indigenous peoples and across cultures, there is much mending to do. Some barriers to the partnership include broad academic structures and institutions that do not consider Aboriginal or Indigenous ways of knowing as important. Research into narrative and story-telling traditions may help to build pathways for indigenous students to retain their culture

and ways of living in the community, while taking their rightful place in the digital world that awaits outside their often isolated communities. However, this will entail a willingness on the part of universities and instructors to be open-minded, collaborative, and bring a learners' mind to the process of college-university pathways and partnerships. The Truth and Reconciliation Commission [15] heralds horrific stories of how Canada's history of residential schools in the 1800's aimed to eliminate Aboriginal culture, language and removed students from their communities. This project aims to do the reverse, to allow indigenous peoples access to fully online learning opportunities, at college and university, regardless of physical access. In addition, the problem-based learning approach allows students to apply their own cultural beliefs and approaches to their course work. As we await the empirical data, we hope that this paper engages colleagues in collegial debate and discussion about using digital means to build partnerships between colleges and universities, to make online education accessible, affordable and available to indigenous students.

#### V. CONCLUSIONS

This paper was a qualitative report of initial steps to partner a community college program with a pathways program to allow indigenous students' to complete their degrees in fully online learning environments. Future research will involve having students and instructors complete the GTCU survey online, to help define confidence and frequency of use; thereby, allowing researchers and administrators to identify areas of technological strength and areas of improvement. Additional steps will involve analyzing the nature of these FOLCs, and how this research can enable Canadians to build bridges with Indigenous peoples through education and technology.

#### REFERENCES

- [1] S. D. Dion, Our Place in the Circle. A review of Metis content in Ontario Faculties of Education. 2012.
- [2] O. P. Dickason and D. Long. *Visions of the Heart: Canadian Aboriginal Issues* (3<sup>rd</sup> edition). Don Mills, ON: Oxford University Press. 2011.
- [3] V. St. Denis. "Rethinking culture theory in aboriginal education". In M. Cannon and L. Sunseri (Eds). *Racism, Colonialism and Indigeneity in Canada: A Reader*. pp. 163-182. 2011.
- [4] S. D. Dion, *Braided Histories: Learning from Aboriginal Peoples' Experiences and Perspectives*. Vancouver, UBC Press. 2009.
- [5] M. G. Moore, "Theory of transactional distance". In Keegan, D. (Ed.) *Theoretical Principles of Distance Education*. New York: Routledge. 1993.
- [6] R. M. Lehman and S.C.O. Conceição. "Concerns and opportunities for online student retention. In Lehman, R.M. & Conceição, S.C.O. (2014). *Motivating and Retaining Online Students: Research-Based Strategies That Work*. San Francisco: Wiley & Sons. (2014)
- [7] P. Baker, P. (2011). "Three configurations of school-university partnerships: an exploratory survey". *Planning and Changing*, vol. 42, no. ½, pp. 41-62.3. 2011.
- [8] M. Johnson and O. Liber, O. "The personal learning environment and the human conditions: from theory to teaching practice" *Interactive Learning Environments*, vol. 16, no. 1, pp. 3-15. 2008.
- [9] Northern College Official Website. Retrieved April 25 2017 @ <http://www.northernc.on.ca/>.
- [10] University of Ontario Institute of Technology Official Website. Retrieved April 25 2017 @ <http://uoit.ca>.
- [11] F. J. Desjardins, R. Lacasse and L. M. Belair. "Toward a definition of

four orders of competency for the use of information and communication technology (ICT) in education." In *Proceedings of the Fourth IASTED International Conference 2001* (pp. 213-217). Calgary: ACTA Press.

- [12] R. Vanoostveen, R., E. Childs, K. Flynn, and J. Clarkson, "Integration of PBL methodologies into online learning course and programs." A full paper presentation for the *IADIS e-Learning 2014 Conference*, July 15-18, 2014, Lisbon, Portugal.
- [13] E. Childs, R. vanOostveen, K. Flynn, and J. Clarkson. "Community building in online PBL courses: Instigating criticality". A full paper presentation for the *Higher Education in Transformation Symposium*, March 30 – April 1, 2015, Dublin, Ireland.
- [14] M. Savin-Baden. "Challenging models and perspectives of problem-based learning." In De Graaff, E. & Kolmos, A. (Eds.) *Management of change: Implementation of problem-based and project-based learning in engineering*, pp. 9-30. 2007.
- [15] *National Centre for Truth and Reconciliation Report*. University of Manitoba. <http://nctr.ca/reports.php> 2015.