How to Ensure Academic Success of Indigenous Students Who 'Learn Where They Live'

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Abstract:

Background. Distance Education (DE) allows Indigenous students to learn where they live. However, barriers to successful completion of programs include limited flexibility of the course duration, lack of interaction with instructors or peers, and balancing one's learning needs with family needs (Ball, 2007). To better understand how DE programs can be enhanced, we examined Indigenous students and instructors to answer the following questions: 1) What are unique learning needs of Indigenous students completing DE pedagogies? 2) How can DE meet the Indigenous students' goals for academic success and *indigenization*?

Methods: The study was conducted using a qualitative, interpretive descriptive design (Thorne, 2008) and grounded in ways of Indigenous cultural knowledge (Mussell, 2005). A convenience and survey sampling method (Thorne, 2008) was used to recruit participants in the study area. A literature review, individual interviews, and sharing circles were conducted. Thematic analysis was used to characterize experiences of the learners' academic needs.

Findings: The following themes were revealed: 1) personal interaction with the instructor and peers is essential, 2) learning tools should be sensitive to learning needs and visual learners, 3) flexibility must be integral, allowing for learning/family needs balance; 4) preference for cultural relevance and appropriate materials enhance learning, and 5) technological access and ongoing support in its use is imperative.

Conclusion: With flexibility in the pedagogical design, ongoing technological support, and culturally relevant learning approaches, Indigenous learners can benefit from DE programs that allow them to learn where they live. However, addressing the barriers to personal interaction and teacher support, technological issues, and cultural appropriateness enhance course completion.

Keywords*:* Indigenous students, distance education, online education, academic success, technology support.

Résumé : TO COME

Mots-clés : TO COME

Introduction, Background and Rationale

The Diabetes Education for Health Care providers is a distance education certificate program for health workers. The program equips para-professionals with knowledge and skills to meet basic standards stipulated by their respective professional bodies (American Association of Diabetes Educators [AADE], 2016; Canadian Diabetes Association, Diabetes Educator Section [CDA], 2014). Diabetes is a significant health priority concern among Indigenous people who experience a three- to five-fold risk of developing Type 2 diabetes compared to non-Indigenous populations (Diabetes Canada, 2018; Public Health Agency of Canada, 2011). Thus, diabetes "self-management education and support … is a critical element of care for all people with diabetes" (Beck et al., 2017, p. 1409).

Previous research, however, indicates that the retention profile in programs among Indigenous students and their successful completion of distance education (DE) classes is often a challenge (Bell & McDougall, 2013). Factors limiting their successful completion include limited flexibility and interaction between instructors and peers, and difficulties balancing learning with family needs (Bell & MacDougall, 2013). This qualitative study representing experiences of DE instructors, and Indigenous students within a mid-sized academic institution's catchment area in western Canada, sought to answer the questions:

- What are the unique cultural learning needs of Indigenous students completing DE pedagogies?

- How can DE programs meet Indigenous students' goals for academic success and *indigenization*? *Indigenization* includes a "broader realm of a truly culturally relevant practice and scholarship" (Gray & Coates, 2010, p. 2).

The diabetes certificate program can provide students with the opportunity to improve skills and gain knowledge that can help to contribute to improved diabetes care and positive health outcomes. Thus, an in-depth understanding of self-management which reflects culturally competent diabetes care for Indigenous people who are disproportionately impacted by Type 2 diabetes is needed (CDA, 2013; Crowshoe et al., 2017; Truth and Reconciliation Commission of Canada [TRC], 2015).

The mid-sized western Canadian college that is the focus of this article started the diabetes DE program (in 2000). Since the start of the program the Indigenous student numbers have grown. With an improved understanding of how DE instructors respond to students' unique cultural learning needs, the program was able to identify the pedagogies needed. Also, a better comprehension of

culturally appropriate scholarship (Gray & Coates, 2010) contributed to advance students learning, and helped the instructors to tailor DE options.

Contextual Background

The TRC (2015) mandates academic programs focusing on health disciplines to be conversant about culturally appropriate self-management and health promotion needs of Indigenous peoples. Students who enroll in the college's diabetes DE program must pass six course modules and one face-to-face lab to demonstrate skills, and complete a clinical experience. Currently, Indigenous students represent 80% of all students in the diabetes program, with a completion rate of less than 65%. The discrepancy indicates that academic retention and success needs to be strengthened to aid students through successful course completion.

To uncover experiences of Indigenous students, and factors that may facilitate or hinder academic success, Thorne's (2008) interpretive description offered the best method to intertwine with the 'scaffold' of evidence (on Indigenous ways of knowing, adult learning, and/or e-learning). Although students who self-identify as Indigenous often receive funding support from the Health Canada and/or their First Nations community band (FN), it is important to understand their non-financial and holistic learning needs that can affect academic success.

Essentially, culturally appropriate DE programs can respond to technological, and specific individual and community needs of culturally diverse students (Kinuthia, 2009; Loewen, Kinshuk, Suhonen, & Chen, 2017; Pavlica, 2017; Taylor, 2012). DE instructors have a moral and academic responsibility to facilitate a learning environment that can promote a culturally relevant and learning-centered milieu for Indigenous students. Notwithstanding this necessity, there is also limited research examining both Indigenous students' perspectives of their unique learning needs and ways in which DE instructors can adapt the curriculum to advance indigenization. Yishak and Gumbo (2015), position educational approaches merging "indigenous foundations and theories, as well as in principles and ideas derived from the culture …. which allows an intercultural dialogue" (p. 60) as a most practical strategy.

Factors that Facilitate or Hinder Indigenous Students

Historical realities such as experiences with colonization and related racism or lack of cultural competency and safety can be disenfranchising for Indigenous students. Ball (2007) suggests that the virtual classroom may be more appealing to some students who feel deterred by negative, past, colonial learning experiences or other experiences that can hamper face-to-face classroom-based learning. Extra advantages of DE are that students can remain on their land (Gray & Coates, 2010) and with their families. They can also become positive role models to the younger generation (McMullen & Rohrbach, 2003). When students can immediately apply their learning in the

community, knowledge, and skills gained from the diabetes DE course could improve diabetes health outcomes.

Indigenous students are most attracted to DE programs that are accessible, interactive, respond to their learning needs, and incorporate their cultural ways of knowing. For example, Hammond, Rennie, and Dickson's (2007) study presented a community-based DE program for Inuit counsellors (n = 21) and 81% counsellors graduated. The authors attribute this success to the use of a culturally appropriate model of learning, and a flexible course structure that supported the students' needs. Offering the course through DE also increased participation by circumventing travel barriers through reduced financial costs and inclement weather difficulties. Hammond et al.'s (2007) findings correspond with other Canadian studies showing that, except for potential technological challenges, students often find Web-based learning modalities usable (Collina et al., 2013; Sharpe, Philpott, & Bourgeois, 2011; Pavlica, 2017; Valaitis, Akhtar-Danesh, Eva, Levinson, & Wainman, 2007).

Bell and MacDougall's (2013) pilot program showed that employer support was an enabling factor that facilitates successful completion. This included allowing dedicated study time during working hours and providing technological support such as access to computers and mentoring. Also, on completion of the DE program, a special recognition bestowed to graduates was valued. Doering and Henrickson (2014), indicate that course appeal can be further increased by designing culturally competent learning experiences for schools in remote communities and underscore the importance of incorporating traditional knowledge in the school curricula. Technology support and design must also be used to integrate Indigenous ways of knowledge pertinent to the students (McLoughlin, 1999; Taylor, 2012).

Learning Where You Live—Program Accessibility

Access to learning opportunities can be a challenge in many rural and remote FN communities (Ball, 2007). To circumvent isolation in DE courses, instructors must create more opportunities for Indigenous student-instructor interaction. Additionally, Simon, Burton, Lockhart and O'Donnell's (2013) study interviewed members from FN's community and found that the primary benefit was the ability to live with one's family or work without leaving their community. Butler et al.'s (2016) study also describe their 'learn where you live' DE model as a learning-centred "approach [used] to provide students with choices for post-secondary education [for] Indigenous people" (p. 42). Thus, a 'learn where you live' model can add value by improving Indigenous student retention while equipping them with knowledge and skills (Beaton & Carpenter, 2014).

Importance of Instructor Interaction

Indigenous students appreciate an instructor who has the ability to connect to or understand the culture, and can interact with students (Loewen et al., 2017; McMullen & Rohrbach, 2003; Pavlica, 2017; Taylor, 2012). Bell and MacDougall (2013) stress the importance of selecting instructors with prior experience of Indigenous cultures. Thus, it is important that opportunities for student and instructor interactions be built into DE programs (Simon et al, 2013). Other key instructor attributes are demonstrating a genuine interest in and availability to communicate with students when needed (Bell & MacDougall, 2013) via synchronous interaction options.

Online studies specific to Indigenous populations demonstrate that these students may require more effective individualized support (Sharpe et al., 2011). Built-in interactions with Indigenous students via telephone conversations have been found to be more effective than electronic communications (Bell & MacDougall, 2013). Ball (2007) also suggests adapting learning activities to involve the students in completing dialogue exercises in their local settings. For example, paraprofessionals find it easier to connect with "facilitators" who understand Indigenous challenges to provide good quality tutorial support as needed (Bell & MacDougall, 2013; Sharpe et al., 2011).

Challenges Encountered by Students

Through information and communication technologies (ICT), conditions can be created to enable Indigenous peoples to remotely connect to DE while living sustainably in their traditional territories. Beaton and Carpenter (2014) describe how ICT support learning through decolonization. Colonization and decolonization are complex phenomena that can influence power imbalances among individuals of different races (TRC, 2015). Instructors must acknowledge, respect, and be conversant about effective decolonization approaches as it is critical to provide an orientation at the beginning of a course which addresses technology use and connectivity issues. Unfortunately, limited access to computers in remote FN communities can be a barrier to effective completion of programs (Ball, 2007; McMullen & Rohrbach, 2003; Beaton & Carpenter, 2014). For example, although Health Canada funds some students taking the diabetes DE program, they do not subsidize software costs. Ball (2007) adds that poor computer literacy, irregular access to computers, and/or limited connectivity can impede equal participation and some communities may not have high-speed Internet access (Bell & MacDougall, 2013; Pulla, 2017).

Expectations for students to be independent and autonomous in creating a workable pace and schedule can be a barrier for some students who struggle to stay focused when working without a flexible structure (Bell & MacDougall, 2013; McMullen & Rohrbach, 2003). Many students also seem

to have trouble with time management, motivation and technological expertise (Ball, 2007). Extra support and flexible timelines are beneficial.

Culturally Appropriate Education Pedagogies

Creating programs sensitive to the cultural learning needs of Indigenous students will ensure that DE is relevant to the target population (Simon et al., 2013). Education programs that are culturally competent must incorporate Indigenous ways of knowing (TRC, 2015) including elders who can reinforce their beliefs and traditions. Also, mentoring DE instructors, engaging effective "on-site tutors," nurturing "personal [student-instructor] relationships," and employing "flexible [DE] delivery models" (McMullen & Rohrbach, 2003, p. 9; Sharpe et al., 2011) can foster academic success.

Uzuner (2009) urges instructors to avoid a "one size fits all" approach and recognize that students have diversity. Specifically, one example of creating a culturally relevant approach is the use of materials in English and native languages as described by Doering and Henrickson (2014). Students appreciate the addition of relevant concrete examples that can help them to contextualize learning and relate better to the content (Bell & MacDougall, 2013). Iseke (2013) also encourages instructors to incorporate stories that validate experiences and Indigenous ways of knowing and foster relationships while sharing knowledge.

Theoretical Framework

The constructivist theoretical and analytic lens considers the interconnectedness of phenomena being studied with its unique context (Simonson, Smaldiono, Albright, & Zvacek, 2012; Thorne, 2008) of Indigenous ways of knowing (Mussell, 2005). Thus, it is an ideal framework for DE research as it considers the learning environment, learning needs of students, interactive learning processes, and instructor's dynamics such as the preparation of faculty (Juvova, Chudy, Neumeister, Plischke, & Kvintova, 2015). Because adult students are self-motivated, coupled with the fact that Indigenous peoples are increasingly at risk of Type 2 diabetes (Diabetes Canada, 2018), it is important to capture the different realities and perspectives (Thorne) of DE instructors. Using interpretive description created an opportunity to learn from stories and experiences of participants, and from a variety of worldviews and perspectives of people (Thorne, 2008), and the unique realities of Indigenous students/instructors.

The added value of this study is that it could increase our nuanced understanding of Indigenous students who 'learn where they live' and give voice to DE learning experiences, opportunities, and challenges. This qualitative study seeks to share the concerns of research participants (Thorne, 2008), and reveal factors that support or hinder academic success among Indigenous students. As well, we

applied this lens to understand how other DE instructors promote academic success through indigenization.

Method

Design

Thorne's interpretive description and Mussell's approach to Indigenous ways of knowledge informed the methodology of sampling, data collection, and analysis used in this study. The authors teach in DE programs for diabetes students and nursing students, with more than half of the student population in both programs self-identifying as Indigenous. Therefore, past, current and potential Indigenous students, and DE instructors provided the appropriate participants to examine the phenomenon of interest.

Additionally, Thorne's (2008) interpretive description provides a link between theory and a new understanding of everyday practice and realities. In respect to applying Indigenous ways of knowing, participants in this study were engaged using sharing circles (Raven Speaks Canada, 2015). Sharing circles, to a certain extent, are similar to the focus group concept, but adopt ways in which Indigenous communities discuss issues and each member of the circle has an equal opportunity to participate.

In this study, we followed the Indigenous Ownership Control Access and Possession (OCAP) principles (National Aboriginal Health Organization, 2007), and Saskatchewan Polytechnic Human Subject Research Ethics Protocol (HSREP). All participants provided informed written and verbal consent. Identifying information was removed from all participants' transcripts before data analysis.

Procedures for Data Collection and Analysis

A purposive sampling approach (LoBiondo-Wood, Haber, Cameron, & Singh, 2013) was used to select participants with targeted population characteristics (i.e., former, current, and potential Indigenous students of the target program). Data was gathered through semi-structured questions (Thorne, 2008) and topics for individual interviews (done via phone or email), and sharing circles, respectively. This study consisted of three sharing circles and eleven individual interviews. In keeping with Indigenous culture (Mussell, 2005), an elder was present at each sharing circle to guide the process of sharing wisdom. Individual interviews were done by the first author and a graduate student who was trained in research methods.

Forty-one Indigenous persons (either a potential, past, or current student), six instructors who taught Indigenous students along with five former Indigenous students who completed the diabetes DE program, participated in the study.

Questions used in the interview/sharing guides for the different participant groups were derived from literature and authors' experiences. Each gathering discussed barriers and recommendations on how participants adapt to online learning to integrate cultural ways of knowing, learner preferences, and factors that increase potential for academic success. Two of the sharing circles included students presently enrolled in the diabetes education program. The third group included Community Health Representatives (CHRs) employed in FN communities who either represented former or potential students pursuing DE opportunities. The first author took notes during the sharing circles.

Instructors were either phoned or emailed a set of questions. Examples included: 1) how do you incorporate Indigenous ways of learning and goals specific to the culture in your program? 2) Can you give an example of an approach that you have used to circumvent challenges or ensure student success? All the in-depth interviews were digitally recorded and transcribed verbatim for transcription accuracy.

A thematic analysis of the interview and sharing circle narratives was conducted manually following multiple readings of the transcripts. According to Thorne (2008), the themes uncover new patterns of looking at the data (i.e., experiences that enhance or hinder success among Indigenous students). Some themes, e.g., instructor-student interaction/support, were also corroborated by the literature (Bell & MacDougall, 2013; DiGregorio, Farrington, & Page, 2010; Sharpe et al., 2011), and participants' narratives.

Results

Participants Characteristics

This study reports perspectives of Indigenous students, 40 females and one male, while the Instructors were comprised of four females and two males. Participants engaged via three sharing circles: 10 (Former), 12 (Current) and 25 (Potential) students for the diabetes DE program. Students who participated in the study were employed in the following roles: Community Health Representatives (CHR) (n = 29), Home Health Aides (HHA) (n = 9), and Diabetes workers (n = 3). Potential diabetes DE students were CHR employed in Indigenous communities; few participants had experience in taking DE while the majority had not. All six instructors reported that they had a college degree, and their years of teaching in FN students ranged from three to nine years. Eighty-three percent of the participants lived in FN communities, 11% travelled from a city to work, and 6% commuted from a nearby village.

Factors Influencing Academic Success of Students Who Learn Where They Live

Six overarching thematic patterns, with some degree of overlap, that emerged from the interviews included: 1) importance of instructor-student and peer interactions, 2) learning tools should match

learning needs, 3) learning where you live has added value, 4) flexibility facilitates learning-family-needs balance, 5) cultural relevance and appropriate materials enhance learning, and 6) technological access and ongoing support is imperative.

Importance of Instructor-student and Student-peer Interactions

Collaboration with one's instructor and student-peers can foster participation. A former student said: "As Indigenous students, we really like the connectedness of other people around us, like physically around us in terms of learning from each other and just learning in general." This view was reinforced by one instructor who said: "It is vital to make a caring connection with them." Hence, some educators create an "open door" or "free access" policy allowing students to text or call them at any time. Both instructors and students think that online classes can hinder their ability "to have [regular] face-to-face connections" or foster a degree of physical presence with peers. A former student stated that "without having a formal structure for connecting, they felt alone at times, really removed, or isolated." One catalyst perceived as helpful was "to build in a face-to-face session both at the beginning and half-way throughout the [diabetes DE] program" (Former student).

There were varied perspectives from all students about what comprised ideal instructor-student interactions, from "every day", "often", "ongoing basis", "once a week/month", to "as needed." This indicates the need to individualize instructor-student interactions to suit students' needs. For example, one instructor indicated that "while a synchronous virtual classroom can be designed to support peer interactions, a shy student may prefer interaction with an instructor on an as needed [basis] rather than being called out." In addition to giving regular feedback, another instructor "schedules monthly virtual video or voice connection with a student and finds this beneficial for disengaged students." The virtual classroom can also be designed to help or allow students to interact with not only their instructor but also with each other as needed. All groups of students suggested dedicated IT support personnel to support students with limited technological literacy. Instructor-student interactions can use both asynchronous and synchronous communication options. Even though students learn through computers, "they should still talk about the lecture or whatever they are getting online with instructors." Utilize "web-based voice interactions such as Skype, teleconferences and chat rooms where students can hear everyone's voice" (Current Student) or elicit peer interactions via "media such as TV" (Potential Student). An instructor also advocated that "texting the instructor is cost effective in many communities and students have cell phones." Implementing these various technological modalities will also depend on access, cost, and expertise.

One instructor suggests that some students may benefit from tutorial support received from another Indigenous resource person who understands the subject matter (e.g., teaching assistants or tutors). "[There is a need] for someone who is 'on the ground' in the community to help students with tutorial

support." Some students found practical learning beneficial: "I am so glad that I was able to sit with the [lab] Instructor as it helped me to get started on approaching clients and feel comfortable to provide diabetes education. I now can apply what I am learning in the diabetes course to the clients, and to myself" (Current student). These excerpts highlight the value of interpersonal interactions.

Student-to-student interaction is also valued. "When I get feedback from the instructor, I talk to other students and I find that they are, also like me, progressing. Doing this has helped to keep me motivated" (Current student). For instance, "we share our emails so that we can stay in contact the other students" (Current student). "I think that I missed that connection, that human contact with taking online classes, and this is an important issue to me as an Indigenous student" (Former student). Another potential student reiterated "personal conversations with other students and instructors" would be beneficial. Given the quick pace of some DE courses, students state that timely instructor feedback or turnaround on assignments "is important."

Learning Tools versus Learning Needs

Both students and instructors reinforced the importance of engaging students to match or capture their different styles of learning. For example, students who are visual learners thrive in courses that incorporate visual connections. As discussed earlier, most students prefer or become engaged through a variety of learning tools. Students liked participating in "online discussion boards", "group projects" while others preferred to "get that phone call" from their instructor. Students identified interactive tools that may be useful in enhancing their engagement including: "YouTube videos", "e-library", "twitter", "anatomical images or pictures", and "jeopardy style" online quizzes.

It was noted by an instructor that support from other sources such as elders are highly valued within Indigenous communities, "providing an avenue for elder knowledge; for example, is an area where technological supports are still lagging behind." Another instructor stated that "tutors and school counsellors are valued human resource assets in remotely located FNs' communities, and these helpers ought to be familiar with how they can be reached using technology."

Preparatory orientation sessions are imperative as part of the course introduction for the students to become comfortable with the technology: "Have an initial online learning package on how to navigate our way through the website and do various things and allow more time to actually play with the website together" (Current student). Having an "IT Helpdesk or support, and/or a bandwidth person to address student connectivity issues [is an asset]. Once that was in place, my burden was eased" (Instructor).

Student success is also dependent on their ability to use the learning platform (i.e., *Brightspace)*, ability to access website readings and utilize basic communication tools such as email. Instructors may also

require ongoing professional development on the use of online tools that can help to facilitate students' IT-related needs. One instructor pointed out:

> The reality is that it takes more time to deliver DE courses. In a face-to-face environment, all the students can benefit from the question. In an online setting, you may get the same or similar question twenty times. You may have to answer it that many times if you don't create a discussion forum.

Contrary to synchronous pedagogies where it is likely that an instructor can respond to students' questions multiple times, two instructors felt that online courses can create an unbalanced workload. To ensure connectivity with the student, "colleges must address DE instructor workload head on rather than the piecemeal way it has been done to date if this form of education is going to be taken seriously" (Instructor). Without access to ongoing courses in which instructors can enroll to develop knowledge and skills about using technology to enhance teaching, instructors may find time management in DE programs a challenge that can limit their teaching effectiveness.

Learning Where You Live Has Added Value

Current students consistently described the primary DE advantage as "being able to learn from home and wherever you live." The opportunity to work at one's own pace, on one's own time, achieved through 24-hour accessibility to the course website was appreciated. One student commented that because of their personal connectedness in FN culture, it is hard for many students to leave their communities for long periods to attend classes. After developing mastery of online platforms, students also felt more comfortable in creating a learning environment within their homes. Some believed that DE courses both create an avenue to avoid relocation, and never having to take too much time off from work: "It would be difficult to complete the comprehensive courses if I had to attend my classes physically" (Former student). DE does not require students to adapt to new surroundings or make living arrangements in an unfamiliar place where they need time to learn to adapt. As well, family commitments that make it impossible to leave home for school, such as having young children or finding new accommodation, can be accommodated by DE: "Family is a very important part of any FN culture. Besides additional cost, it can be very difficult to try and balance things out away from my home" (Former student).

Instructors also echoed student advantages of learning where one lives. One instructor remarked on how "DE experiences increase student confidence level and their ability to work more independently when there are flexible assignment timelines." Still, there are barriers to self-directed learning for some students. Although the students may prefer to stay in their own home environment, "not meeting face-to-face was a big challenge" for some (Instructor). It is hard for some students to navigate and maximize the experience of learning where they live. Some students find it difficult to assign sufficient time to adequately complete the course requirement: "I can't keep up with having to

do and manage a lot of readings on my own" (Current student). For some students, it was "hard to imagine studying, work, and having kids at home especially when my access to a computer is only from my workplace (Potential student).

Flexibility Facilitates a Learning and Family Needs Balance

A flexible syllabus is vital to allow students to attend to routine and emergent family needs. Study time can be limited for those with "no time to study at work", "not being able to ask a question on the spur of the moment during class" (Current student). This limitation has resulted in one current student having "feelings of isolation." Some students felt as though they were on a "balancing act" (Former student) or "struggling to help their family meet each other's needs before mine" (Current student). Hence, as described by one instructor: "the most important aspect of teaching DE is flexibility. The instructor needs to have empathy for the needs of the students and be willing to think creatively to meet those needs." While most former and current students indicated that they like that they do "not have to attend class at a scheduled time," this was perceived as one of the major benefits. An "advantage of DE compared to the traditional classroom is that, if your life was upside down, where you sleep during the day and are up at night, you don't feel that pressure of being in class on time" (Former student).

Time Management

Student participants used different structures to address time management. Former students suggested having "a day per week for assignment discussions, and [troubleshooting] challenges related to completing course outcomes." They also mentioned "setting timetables for each course [with clear timelines]" to keep them motivated. Current students suggested carving out a certain time of the day to do the classes as "it was easy to fall behind." Being "self-disciplined" and not postponing were suggested as important personal goals. "I need personal time to study even though I need time for work" (Current Student). Common remarks included "juggling full-time work with family needs" or "needing time for self" and not knowing what to do when a "family crisis gets in the way." Other areas to consider are: "adjusting one's workday [and interweaving] personal as well as school commitments" (Current student) can be easy and also difficult. "I would like the instructor to contact me regularly to give me a 'push' to keep moving" (Current student). Perhaps some of these hands-on supports can be met by on-site tutors or clinical instructors. One way "this could be done is via texting reminders sent to students via text messaging or supported by human connection, and [flexible] timelines."

Not all the student learning challenges required program and/or instructor related actions. A former student describes an enveloping need for support saying, "I need support, a lot of emotional support. Every student is going to have different needs because of their home environment and/or is still

living with real-life issues while you transition." Employer support including time release was viewed as helpful: "Employers should embrace the student and allow for a designated class time during work hours" (Former student).

In summary, instructors need to explore and understand better ways to engage students who are not self-directed learners.

Cultural Relevance and Appropriate Materials Enhance Learning

One way to enhance cultural relevance is by creating courses that are responsive to the target groups' social needs. Instructors proposed the need for ongoing dialogue between the academic institutions providing DE and traditional programs of different Indigenous population groups. "A course must gather the gifts of both worldviews and blend academia and tradition into one" (Instructor). "The diabetes program has improved my ability to work with clients with diabetes in my own FN reserve, I use elder teachings to validate the importance of eating a proper diet (Former student)." The skills and knowledge can be integrated into practice. "I try to understand where the clients are at, I help them to navigate their care needs, diet, and physical activity, and I make timely referrals to the physician, diabetes nurse, dietician, or an elder" (Current student). Learning in an Indigenous context, students also learn to apply theory to support client care needs. Former students indicated that the diabetes DE program enhanced their knowledge and skills, increasing their ability to provide culturally competent care and promote self-management.

Receiving a certificate upon course completion acknowledged that graduates had achieved "higher education." Accordingly, this growth was explicit for many students. "I changed my own personal and cultural lifestyle after learning about the risks of diabetes. I now take the elder's teaching seriously on what I eat such as food from the land, you know, fresh fish and berries." Three current students stated that the courses also improved their work situation. One student even received a pay increase upon completion. Overall, most formers students found the program also "empowered" them to learn about their own culture.

Instructors provided insight into how they enhanced indigenization and integrated traditional values. One instructor stated that transferring relevant culturally appropriate materials to the workplace will enhance learning. Another noted that she is invited to sit in different classes in her college in an advisory capacity. "I joined in the development of the … course to help stimulate discussions that incorporate more indigenization. We explored ways to facilitate relational building within the course." While another instructor stated that she met with elders to identify and develop underlying principles that were critical to incorporate student-elder dialogue in the course: "I created the courses with the target group in dialogue with the institutions."

Storytelling bolsters students' understanding of key course concepts. In addition, "Using stories derived from real-life work situations help students understand why they are learning what they are learning" (Instructor). An instructor summed her insights as follows:

> Our western world is vocal and assertive, but FNs are very symbolic, and they cherish oral traditions and connecting socially. They work with metaphors from the land and with nature. Basic activities like a traditional feast can be used to teach students new knowledge in unique ways such as storytelling (e.g., a feast can be used to explain concepts and show how to apply concepts). FNs often work from whole to parts; learn by watching and then doing versus the western society that [deconstructs] and does the parts to the whole.

For student participants, pre-recorded instructor stories and opportunities to share personal learning experiences increased self-esteem and confidence while explaining their role to others. "Stories validate the real-life situations" (Instructor). Another instructor claimed that she was remiss in not having storytelling in one of her classes and stated: "Now I don't miss an opportunity to share a story." What's more, "Stories are engaging because they grab your emotions like nothing else. So, we need to incorporate them more and FNs live it, big time" (Instructor). Storytelling also provides instructors an opportunity to demonstrate knowledge application to practice.

Elders are also viewed as "self-enhancing and edifying student learning" (Instructor). All student groups said that it is important to incorporate elders. "Elders can advance learning when engaged as a pedagogical knowledge sharing tool to support and enhance a culturally relevant learning and personal growth for students" (Instructor). Another suggested including elders and ceremonies via Skype meetings when face-to-face gatherings are not possible. "Listening to the voices of elders can also be enriching for the student's self-esteem" (Instructor).

Technological Access and Ongoing Support in its Use are Imperative

Technology proved to be both a vital asset and a hindrance. In sharing circles, potential students highlighted a conspicuous concern related to Indigenous students' difficulty in accessing computers. Some had no computer at home or worked in FN health centres where they had to share computers with the clinic staff: "During business hours, there are often too many people who want to be online at once, and this can overwhelm the server. So, where computers are available, and offered, using them after work allows for better access" (Instructor). Table 1 below provides a synopsis of computer and related technology access. Of note, although many students have their own computer or access to at least one computer, two different instructors stated that they have provided computers for students to use. The lack of computers is a huge barrier to successfully completing an online course.

Table 1. Participants' Self-reported Access to a Computer, iPad, and/or Cell Phone.

What do you have access to?	Responses*	% of total responses
Personal computer	11	31%
Work computer	33	92%
Home computer	13	36%
IPAD	8	22%
Cell Phone	30	83%

*Multiple responses per participants

Several participants also lacked confidence in using computers. For example, only 22% were "very confident." This low capacity demonstrates that access to technology is as important as providing support in its use. It is also imperative as two instructors suggested that "a comprehensive assessment of the student's ability to use computers and the technology to determine their needs." is essential. This may include a computer course before commencing the desired DE program.

Table 2. Participants' Self-reported Computer Self-confidence.

Level of confidence in using computers 1 *(less confident)* to 5 *(very confident)*

Confidence Level	No. of Participants**	%
1	2	6%
2	3	8%
3	7	19%
4	13	36%
5	8	22%

**Participants include current, prospective, and past DEPHCP students (n = 33)

Internet access was another issue that can create challenges resulting in decreased ability to communicate or complete work online: "The Internet is not always available across the north" (Instructor). "With advancing technology and improved cell phone access, resources are needed to eliminate the distance due to educational inequalities" (Instructor). Perhaps when cell phone connectivity improves across remote FN communities, this may create more opportunities for post-secondary courses' mobile learning strategies.

As noted by instructors: "Instructors must be willing to exploit available technology to connect with students." Also, "IT help needs to be in-build on the course, enhance or improve the use of technology by new students, and help them to be capable to learn in the best way possible" (Potential student). Developing a viable relationship with the instructor and student-peers, as well as maintaining connectivity, can enhance successful course completion. "It was the relationships that they built via computers that helped the students to overcome technology rather than the technology itself" (Instructor).

Learning how to navigate the course webpage portal and use a DE online system is an important skill-set that must be supported from inception: "If there is difficulty in accessing the online course or even problems attaining a password, the student may drop out, and not continue out of frustration" (Instructor). Sometimes problems are as basic as difficulty renewing one's password or problems with accessing reading links. Many issues arose with the technology: "Many [students] are not just taking a course; they are learning how to use a computer at the same time" (Instructor).

Discussion

Quality programs that can enhance access to post-secondary DE courses like the diabetes DE program from home cannot be underestimated. Qualitative findings from the students and instructors who participated in this study indicate that DE programs can increase students' independence, and facilitate learning. This learning from wherever one lives is also facilitated by technology and Internet access (Bell & MacDougall, 2013). Additionally, findings revealed the importance of instructor-student engagement, which has also been documented in other studies (McMullen & Rohrbach, 2003; Butler et al., 2016). Our findings also underscore the benefits of engaging Indigenous students using methods or tools that enhance their preferred learning styles, as well as helping them to integrate their cultural ways of knowing (Beaton & Carpenter, 2014; Cochran et al., 2008; DiGregorio et al., 2000). This correlates with the findings in non-Indigenous populations as well (Simonson et al., 2012), and demonstrates potential applicability of the findings to post-secondary students in other rural and remote locations.

    a)   Learning Styles

Past research also corroborates the importance of enhancing "hands-on" approaches that capitalize on both visual and auditory learning including storytelling. As McMullen and Rohrbach (2003) and Iseke (2013) discuss, the teaching-learning methods that foster oral communication, such as those encompassing elder teachings, the utility of metaphors, and the sharing of stories, enrich a learning process. This level of applying ways that foster Indigenous scholarship (Gray & Coates, 2010; Kearns, 2012) may lend virtual communication that supports synchronous engagement built into a program.

Although visual and auditory learning styles are most preferred by Indigenous students, McMullen and Rohrbach (2003) also caution that students and cultures are diverse; students must also be viewed as unique individuals. This study is unique in that it encompasses past, present and potential students specific to distance education. All students were First Nations and resided in Indigenous communities. As well, all the instructors interviewed had taught Indigenous students in an online setting. In this study, we also found that instructors and Indigenous students indicated that individual and cultural learning should not be decontextualized (Ball & MacDougall, 2013) but must be viewed as complementary.

Tools that enhance instructor-student interactions can also be incorporated to enhance storytelling in DE programs. Storytelling is considered an important approach to acquiring (traditional) knowledge and a communication exchange modality for Indigenous people (Bell & MacDougall, 2013, Iseke, 2013). McMullen and Rohrbach (2003) also recommend relationship building through at least one in-person visit and providing recorded introductory information about the instructor for students. As authors, we have found that having one strategic in-person visit from an instructor tends to motivate a student to not feel alone or isolated. Furthermore, visual learners, especially adults, can be engaged when a variety of technological tools (Simonson et al., 2012) and concrete, meaningful real-life examples are used.

b) Technology Issues

A variety of technology, connectivity, support, and training issues were highlighted by students and instructors in this study. For example, if efforts are put in place for students to learn more about the expectation of using video conferencing modalities this can promote non-verbal connectedness. These experiences are similar to those encountered by the authors and underlined in the literature (Doering & Henrickson, 2014; Raven Speaks Canada, 2012, TRC, 2015). For instance, students who struggle with an inability to navigate the course webpage and understand a post-secondary DE course, such as the diabetes DE program's online platforms, may lack computer skills and this can definitely impact their timely assignment submission. However, instructors can directly contact students via DE technologies or secure social media platforms to circumvent this. Notwithstanding that instructors may need skills and knowledge to facilitate virtual interactions for better learning. Instructor courses may involve exploring how Indigenous students' cultural needs are (un)met (TRC, 2015). Hence, the TRC actions are designed to reduce multigenerational effects and promote academic success and retention among Indigenous students.

c) Connectivity

All participants stressed the importance of creating a positive learning atmosphere to enhance connectivity between the instructor, students, and peers. Additional individual support may be

required for students to grasp new concepts (Bell & MacDougall, 2013; Beaton & Carpenter, 2014). Offering both synchronous and asynchronous pedagogies increases confidence in the ability to complete the courses, connect with their peers, and develop online communication skills (Ball, 2007). Because most student participants in this study had access to cell phones, the diabetes DE and other related programs may benefit from evaluating new opportunities to utilize new media in teaching such as texting to do quizzes.

d) Flexibility

Flexibility in adding social, economic, and cultural activities to enhance course delivery for students is also important (McMullen & Rohrbach, 2003), for instance, when a school calendar conflicts with hunting and fishing practices (Doering & Henrickson, 2014). DE courses with flexible schedules may increase retention and improve academic success by allowing students to engage in their cultural activities while remaining a student. Similarly, DE programs appear to be more successful when employers support students' time and resource needs as this facilitates an effective work-life balance and allows students to attend to family commitments. Online delivery of courses should provide flexibility for individual students who want to pursue their studies at their own pace (Ball, 2007).

Limitations

This use of a small sample of Indigenous adult students and instructors limits the generalizability of the findings. Because Indigenous students are likely to have diverse learning needs and styles (McMullen & Rohrbach, 2003), experiences of participants who were not included in this sample may differ, and findings may not reflect the experiences of non-FN adult students or young FN students. Also, there may be instructor variations that differ from those presented by participants in this study, which may be influenced by their teaching expertise or IT support/connectivity issues, among others. A pilot study on the use of cellular phones could add more insights.

Although connectivity issues are assumed for Indigenous students located in remote FN communities, future studies may need to explore if these thematic views apply to other students taking other post-secondary courses via DE. Future research could also investigate how instructor-student and peer interaction, technological access, and matching learning tools with students learning needs, applying culturally relevant material to support learning, and creating leaning-life balance issues may differ. Support for post-secondary education must also be adaptable to both the diverse learning needs of students and to equipping instructors with relevant knowledge and skills to apply a variety of modalities to their courses. By blending interpretive description and Indigenous ways of knowing (Musell, 2005; Thorne, 2008; TRC, 2015) as a framework for this study, authors realize the need to facilitate the continuous interpretive processes with the cultural dialogue of Indigenous scholars and communities.

Although there are significant advantages to learning and living in one's home, added planning is needed to ensure that Indigenous students who live in remote locations encounter fewer challenges and receive relevant and quality DE (Butler et al., 2016). However, it may also be advantageous to understand similarities and variations between the experiences and perspectives of students who 'learn where they live.' It appears that with further disparities found related to access to quality DE among those living within FN communities (Pulla, 2017; Sharpe et al., 2011), Indigenous students have an enhanced need to live where they learn. Our results show that although DE can increase access to qualified service providers in remote locations, programs must be evaluated regularly for quality, and the ability to meet student learning needs. Paying attention to these issues can enhance student confidence and improve retention and academic success.

Study Implications

This study offers significant inferences for DE and technology practice and policy for remote FN communities. O'Donnell et al.'s (2016) literature review focused on the adoption and use of digital technologies in remote and northern Indigenous communities in Canada. Although there is improved access to digital technologies (e.g., smartphones, computers, and tablets) in their homes, schools and work, our findings suggest that more efforts are still needed to advance better digital mastery and technological access. Social media is also a potentially untapped area. For example, among urban and (non-) Indigenous cultures, people are using social networking sites, gaming consoles, and online shopping more often. However, instructors and DE students indicated that high-speed Internet services are still not available in some rural and remote locations.

In this study, all participants completed the same DE course. Findings underscore the importance of equipping DE instructors to use virtual interactive modalities that can foster instructor-student and peer-to-peer interactions. This finding is supported by McIntyre et al. (2013) using constant "face-to-face orientation with a focus on building intellectual and social communities …and opportunities to connect learners (p. 37). To make learning for Indigenous students relevant and allow for an in-depth comparison of variations by the learners, curricula should balance cultural appropriateness and academic relevance (Loewen et al., 2017). Moreover, the Canadian climate towards promoting adequate access and redressing imbalances of the past impacting access to Indigenous education and (TRC, 2015) academic success is a priority concern.

Decolonization includes Indigenous learning grounded in the language and traditions of Indigenous culture (Gray & Coates, 2010; Yishak & Gumbo, 2015). This may also include enabling Indigenous persons to learn where they live, participate in their own programming, and the development of IT tools that support local needs and priorities (Beaton & Carpenter, 2014; Butler et al, 2016). Because Indigenous students tend to benefit more from experiential teaching-learning approaches (Doering &

Hendrickson, 2014), our study also supports a need for creating ways to embed culturally appropriate DE using functional modalities that support interaction. More research is needed to learn whether there are specific cultural differences within the Indigenous population in Canada that need to be addressed. For instance, Uzunner (2009) revealed that Asian students were not as comfortable with online collaborative work compared to American students. Therefore, understanding that cultural differences exist, it is safe to say that instructors must pay attention to cultural appropriateness for any culture that one is teaching. Although Indigenous students were the focus of this study, the general principle of understanding the cultural and curricular context of technology (McLoughlin, 1999; Kinuthia, 2009), applies in other contexts as well.

Conclusion

Online education is perceived to be an effective way to deliver courses that bridge the geographical barriers in remote locations (Bell & MacDougall, 2013). Research in this area can be applied to enhance educational programs by increasing their sensitivity to the particular needs of the Indigenous students (LoBiondo-Wood et al., 2013). There is an increasing number of Indigenous and non-Indigenous students seeking access to accredited education (Ball, 2007). Based on the findings, DE allows Indigenous students to stay on their land and learn where they live. Online education is an effective way to deliver courses but addressing the barriers to teacher support, technological issues, culturally appropriateness to the workplace and flexibility in the pedagogy design will enhance student completion.

References

American Association of Diabetes Educators. (2016). *Competencies for diabetes educators and diabetes paraprofessional: A companion document for the practice levels for diabetes educators and paraprofessionals*. Retrieved from: https://www.diabeteseducator.org/docs/default-source/practice/practice-resources/comp003.pdf

Ball, J. (2007). Indigenous students online: The future is not what it used to be. Paper presented at the *4th International Conference on Indigenous Education*, University of Victoria, Vancouver, Canada. Retrieved from http://www.ecdip.org/docs/pdf/Ind%20Ed%20Conf%20paper%2007.pdf

Beaton, B., & Carpenter, P. (2014, May). A critical understanding of adult learning, education and training using information and communication technologies (ICT) in remote First Nations. Paper presented at the *Annual Meeting of the Canadian Association for Study of Indigenous Education*, Brock University, St. Catherines, Ontario. Retrieved from http://firstmile.ca/wp-content/uploads/2015/03/2014-Beaton-CSSE-Final-paper.pdf

Bell, M., & MacDougall, K. (2013). Adapting online learning for Canada's Northern public health workforce. *International Journal of Circumpolar Health, 72,* 10.3402/ijch.v72i0.21345. http://doi.org/10.3402/ijch.v72i0.21345

Beck, J., Greenwood, D. A., Blanton, L., Bollinger, S. T., Butcher, M. K., Condon, J. E., . . . Wang, J. (2018). 2017 National standards for diabetes self-management education and support. *The Diabetes Educator, 44*(1), 35-50. doi: 10.1177/0145721718754797

Butler, L., Bullin, C., Bally, J., Tomtene, M., & Neuls, E. (2016). Learn where you live, teach from a distance: Choosing the best technology for distributed nursing education. *Northern Review, 43,* 39-49.

Canadian Diabetes Association, Diabetes Educator Section. (2014). *Standards for diabetes education in Canada.* Toronto, Canada. Retrieved from https://www.diabetes.ca/getmedia/63683bc6-f94e-443d-b805-d6a2436f486c/diabetes-education-booklet.pdf.aspx

Cochran, P. A. L., Marshall, C. A., Garcia-Downing, C., Kendall, E., Cook, D., McCubbin, L., & Gover, R. M. S. (2008). Indigenous ways of knowing: Implications for participatory research and community. *American Journal of Public Health, 98*(1), 22–27. http://doi.org/10.2105/AJPH.2006.093641

Crowshoe, L. L., Henderson, R. I., Green, M. E., Jacklin, K. M., Walker, L.M., & Calam, B. (2017). Exploring Canadian physicians' experiences with diabetes care for Indigenous patients. *Canadian Journal of Diabetes, pp: S1499-2671*(16), 30803-6. doi: 10.1016/j.jcjd.2017.06.012.

Diabetes Canada (2018). Clinical practice guidelines for the prevention and management of diabetes in Canada. *Canadian Journal of Diabetes,* 2018:42(Suppl 1):S1-S325.

DiGregorio, K. D., Farrington, S., & Page, S. (2000). Listening to our students: Understanding the factors that affect Aboriginal and Torres Strait Islander students' academic success. *Higher Education Research & Development, 19*(3), 297-309. doi:10.1080/758484344

Doering, A., Henrickson, J. (2014). Designing for learning engagement in remote communities: Narratives from north of sixty of Minnesota. *Canadian Journal of Learning and Technology, 40*(3). Retrieved from https://files.eric.ed.gov/fulltext/EJ1038392.pdf

Gray, M., & Coates, J. (2010). 'Indigenization' and knowledge development: Extending the debate. *International Social Work, 53*(5), 1-15. DOI: 10.1177/0020872810372160

Hammond, M., Rennie, C., & Dickson, J. (2007). Distance education for Inuit smoking counsellors in Canada: A case report. *International Journal of Circumpolar Health*, *66*(4), 284-286.

Iseke, J. (2013). Indigenous story telling as research. *International Review of Qualitative Research, 6*(4), 559-577. Retrieved from http://irqr.ucpress.edu/content/6/4/559.full.pdf+html

Juvova, A., Chudy, S., Neumeister, P., Plischke, J., & Kvintova, J. (2015). Reflection of constructivist theories in current educational practice. *Universal Journal of Educational Research, 3*(5), 345-349. DOI: 10.13189/ujer.2015.030506

Kearns, L.L. (2012). Integrating Aboriginal perspectives into the school curriculum: Purposes, possibilities, and challenges. *Alberta Journal of Educational Research, 38,* 478-482.

Kinuthia, W. (2009). Reflecting on embedding socio-cultural issues into instructional design. *Multicultural Education & Technology Journal, 3*(4), 266-278, doi.org/10.1108/17504970911004273

LoBiondo-Wood, G., Haber, J., Cameron, C., & Singh, M.D. (Eds.). (2013). *Nursing research in Canada: Methods, critical appraisal, and utilization* (3rd Canadian ed.). Toronto: Elsevier Canada.

Loewen, J., Kinshuk, Suhonen, J., & Chen, N. (2017). I-SLATE: Designing a culturally relevant framework for authentic learning. *Smart Learning Environments, 4*, 9. doi.org/10.1186/s40561-017-0048-4

McLoughlin, C. (1999). Culturally responsive technology use: Developing an on-line community of students. *British Journal of Educational Technology, 30*(3), 231-243. doi.org/10.1111/1467-8535.00112

McIntyre, M., McDonald, C., & Racine, L. (2013). A critical analysis of online nursing education: Balancing optimistic and cautionary perspectives. *Canadian Journal of Nursing Research, 45*(1), 36-53.

McMullen, B., & Rohrbach, A. (2003). *Distance education in remote communities: Barriers, learning styles and best practices.* Prince George, Canada: College of New Caledonia Press.

Mussell, W. J. (2005). *Warrior caregivers: Understanding the challenges and healing of First Nations men.* Ottawa, ON: Aboriginal Healing Foundation. Retrieved from http://www.ahf.ca/downloads/healingmenewebrev.pdf

National Aboriginal Health Organization. (2007). *OCAP: Ownership, control, access and possession*. Retrieved from http://cahr.uvic.ca/nearbc/documents/2009/FNC-OCAP.pdf

Pavlica, M. A. (2017). *Getting connected: Improving online distance education for rural and remote First Nations.* [Master of Public Policy Thesis] Retrieved from http://summit.sfu.ca/system/files/iritems1/17856/etd10508_MPavlica.pdf

Public Health Agency of Canada. (2011). *Diabetes in Canada: Factors and figures from a public health perspective.* Retrieved from https://www.canada.ca/en/public-health/services/chronic-diseases/reports-publications/diabetes/diabetes-canada-facts-figures-a-public-health-perspective/report-highlights.html#chp6

Pulla, S. (2017). Mobile learning and Indigenous education in Canada: A synthesis of new ways of learning. *International Journal of Mobile and Blended Learning, 9*(2), 39-60.

Raven Speaks Canada. (2012). *About sharing circles: Instructions for conducting a talking circle.* Retrieved from http://ravenspeaks.ca/wp-content/uploads/2012/04/Sharing_Circle_Instructions_SECONDARY.pdf

Saskatchewan Polytechnic School of Nursing. (n.d.). *Diabetes education for health care professionals—Advanced certificate.* Retrieved from http://saskpolytech.ca/programs-and-courses/programs/Diabetes-Education-for-Health-Care-Professionals.aspx

Sharpe, D., Philpott, D., & Bourgeois, M. (2011). *A pan-Canadian survey of e-learning for Aboriginal high school students.* Retrieved from http://citeseerx.ist.psu.edu/viewdoc/download;jsessionid=D8130FCECDB10122DD55D5F41CFC3611?doi=10.1.1.230.8146&rep=rep1&type=pdf

Simon, J., Burton, K., Lockhart, E. & O'Donnell, S. (2014). Post-secondary distance education in a contemporary colonial context: Experiences of students in a rural First Nation in Canada. *The International Review of Research on Open and Distance Learning, 1*(15), 1-19.

Simonson, M., Smaldino, S., Albright, M., & Zvacek, S. (2012). *Teaching and learning at a distance: Foundations of distance education* (5th ed.) Boston, MA: Pearson.

Taylor, A. (2012). More than mobile: Migration and mobility impacts from the 'technologies of change' for Aboriginal communities in the remote Northern Territory of Australia. *Mobilities, 7*(2), 269-294. doi.org/10.1080/17450101.2012.654997

Thorne, S. (2008). *Interpretive description*. Walnut Creek, CA: Left Coast Press.

Truth and Reconciliation Commission of Canada. (2015). *Truth and Reconciliation Commission of Canada: Calls to action.* Retrieved from

http://www.trc.ca/websites/trcinstitution/File/2015/Findings/Calls_to_Action_English2.pdf

Uzunner, S. (2009). Questions of culture in distance learning: A research review. *International review of research in open and distance learning, 10*(3).

Valaitis, R., Akhtar-Danesh, N., Eva, K., Levinson, A., & Wainman, B. (2007). Pragmatists, positive communicators, and shy enthusiasts: Three viewpoints on web conferencing in health sciences education. *Journal of Medical Internet Research, 9*(5), e39. http://doi.org/10.2196/jmir.9.5.e39

Yishak, D., & Gumbo, M. (2015). A stand-alone, blended and restructured indigenisation approach to curriculum? A critical perspective. *International Journal of African Renaissance — Multi-, Inter-, and Transdisciplinarity, 10*(1), 60-82. doi:10.1080/18186874.2015.1050215

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