An Overview of the Elements of Information Technology Readiness North (InTeRN) at University College of the North

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Background

Information Technology Readiness North (InTeRN) was a pilot project funded by Canada's Future Skills Centre (fsc-ccf.ca). In March of 2020, University College of the North (UCN) was granted this funding to develop an entry-level Information Technology (IT) program focused on attracting Indigenous women from Northern Manitoba into the IT industry.

From March, 2020, to September, 2023, UCN developed the certificate program (InTeRN), trained Indigenous women, and established robust work-integrated-learning opportunities through partnerships with Computers-for-Schools (C4S, c4smb.ca) and other industry and community collaborators.

The InTeRN project was accomplished by a core team of one full-time instructor and program developer, one part-time instructor/developer, a part-time project manager, and a part-time student case manager. Wrapped around this core team were other players including administrative, finance, and student services of UCN as well as various contractors that provided varying (both incipient and longer term) services over the life of the project. Also, other instructors and case managers were involved for differing roles and durations, especially during the early years of the project.

The following document focuses primarily on the core team listed above, and makes reference to those team members.

Introduction

The purpose of this literature review is to provide an overview of the research related to the elements of the Information Technology Readiness North (InTeRN) program that have been identified as critical to its success. Those engaged with the program believe that these factors are critical in replicating InTeRN in other contexts. These three aspects include:

1. Active learning;
2. Successful learning environments for Indigenous adults, including space and infrastructure considerations; and,
3. Preparation for program implementation.

The literature review document explores each of these elements separately.

Active learning strategies

> "*It is hard work…It means that the house or the automobile, or the computer, could be the core of a rich, integrated curriculum, one that includes social and technical history, science and economic, and hands-on assembly and repair,*" (Mike Rose, 2005, The Mind at Work, p. 192).

The instructors in the InTeRN program have fully accepted Rose's perspective – curriculum emerges from a particular focal point. Deep learning results from the interactions learners have with instructors, each other, and the key ideas, skills, and professional attributes provided. In this case, the focus was on information technology.

Learning requires redundancy – many opportunities to take a concept or skill, play with it, and apply it to personal experience and others' experiences. *"Ask more questions, practice, reflect, practice, until finally that concept or skill is firmly rooted,"* said Jones (1992).

The design of InTeRN explicitly made space for exploration and guided practice, along with flexibility and a recognition of the learners' needs. Speaking of her colleague, an instructor gave an example of what this looked like in practice:

> *"He flips it (instruction) and he puts it to hands-on and he tells a personal story at every turn. Where the curriculum asks you 900 questions and you're going to get ten on the exam, he'll say "Ignore all that – don't worry about it. This is what you need to know." Then he'll tell a story from his previous workplace experience or something from his marriage where you're troubleshooting and this is real life. And the two just synergize each other,"* (instructor 1, interview).

Jones's (1992) work highlighted another critical feature of InTeRN – respecting and supporting the individual student. *"My task becomes one of taking each individual's interests and experiences seriously while giving the class a coherent focus"* (p. 19). This openness to seeing learners as people with lives outside the classroom was embraced by the program instructors.

> *"I've naturally always been a student-centred instructor. Usually, I'll start a year with students and some of the opening statements will be that during the time that we're together, someone will have financial problems, someone will have relationship problems, someone will have health problems, someone will lose a family member – and*

of course this affects staff as well. We have a couple of walking wounded knowing full well that we're wounded but just trying to continue as best we can," (instructor 2, interview).

What does an exploration of the literature on active learning tell us about the relevance of this approach for a wide range of adult learners? Were the instructors in the InTeRN program using effective, research-based strategies?

First of all, what is "active learning"? According to Charles Bonwell (n.d.), some of the major characteristics associated with active learning strategies include:

1. Students are involved in more than passive listening;
2. Students are engaged in activities (e.g. reading, discussing, writing);
3. There is less emphasis placed on information transmission and greater emphasis placed on developing student skills;
4. There is greater emphasis placed on the exploration of attitudes and values;
5. Student motivation is increased (especially for adult learners);
6. Students can receive immediate feedback from their instructors; and
7. Students are involved in higher order thinking (analysis, synthesis, evaluation).

In summary, in the context of the college classroom, active learning involves students doing things and thinking about the things they are doing.

A variety of authors agree that *"active learning can defy students' expectations of what is required of them in a college class and push them out of their comfort zones"* (Flaherty, 2023). In a 2019 study led by Louis Deslauriers, authors found that students in active learning classrooms felt they were learning less but actually learned more than in a traditional lecture setting. The authors suggested that this is a result of the increased cognitive effort required in active learning. Their study added more evidence to the observation that students learn more in active

learning settings, and that the positive effects are particularly noticeable for learners from marginalized groups (Deslauriers, et. al., 2019). Depending on learners' characteristics in a situation where InTeRN is being replicated, this finding could be very important.

Maryellen Weimer (2015) further emphasized this point: *"We know that learning is harder from the sidelines. If deep understanding is the objective, then the learners had best get out there and play the game. Watching others problem-solve, think critically, paint watercolours, or start an IV may provide a sense of how it's done, but that's not how you learn to perform on the field."* This author went on to say: *"Lecturing allows us to pledge allegiance to the content"* and by extension, *not* the learners. One of the InTeRN instructors also shared this view:

> *"Often, traditional instructors are present to the curriculum as the first priority. In these circumstances, assessment can be used as a battering ram, and not a teaching tool,"* (instructor 1, interview).

Elli Theobald, an assistant teaching professor at the University of Washington, is a strong proponent of the relationship between active learning and decreased inequities in the classroom. In a study published in 2020, she found that *"active learning is…effective across all subjects, class sizes, and course levels. High-intensity active learning classrooms, where students spend more than 2/3 of class time engaging in active learning activities, are effective across the board; low-intensity active learning classrooms, where students spend 1/3 to none of the class time engaged in active learning activities are not much better than lecturing."* The work of Theobold and her team found that there was a *"76% reduction in inequity and [increased] probability of passing between minoritized and over-represented students in STEM [when using active learning approaches],"* (Theobold, et. al, 2020).

These authors attributed some of this result to the *"heads and hearts hypothesis*". In this view, active learning supports inclusion as it provides a safe psychological space and sense of belonging (heart). Instructors demonstrate clearly that they are confident in their students'

ability to succeed. This doesn't downplay the difficulty of the work but rather highlights the instructors' belief in their students and as they provide support and opportunities for practice (head).

The instructors who built InTeRN exemplified this:

> *"So, I thought to myself – if I can start looking at everybody as this priceless piece of art, and I think the word is priceless, then start to say, "What are you going to do?" That worked for me. It evoked gentleness, little bits at a time, rather than just taking it to the carwash and washing it off. I've really had to relearn patience,"* (instructor 2, interview).

One of the instructors coined the phrase '*professional avatar'* as a concept which captured the need to create a persona who shows up in the workplace with all the necessary skills, attitudes, and dispositions. Initially, this was a response to the impact of COVID, which kept people behind their screens.

> *"Just as in a video game, the professional avatar – where you are donning tools, skills, language, expertise – you dress up as a character in that realm; you have entered the 'third space'. This allows you, no matter what you've been through, to function at that level. While everything is falling apart, the workplace becomes almost an escape. The avatar allows the woman to carry that trauma with them while they navigate what needs to happen to be successful in the workplace. With Sweetgrass, we provided the tools, the words – through stories – working through scenarios of 'how can we deal with this'. When you're in survivor mode, you can't thrive. The avatar is front facing in the workplace to enable the woman to navigate those levels successfully. Behind the scenes, we're working on the basic needs, and unpacking trauma when the time is safe to do so. When we were completely on-screen because of COVID, it was almost like Ready Player One everyday – inhabiting the avatar which effectively enabled each woman to get through the day. This helps people recognize that we are two different people – at work and at home,"* (instructor 1, interview).
>
> This instructor reflected further on the thinking behind the approach:
>
> *"Where I was coming from was the student perspective, the student point of view, the whole woman. If I can help one woman get a strong enough footing and reduce that*

> *pyramid of barriers that we always face – from housing, day care, equity, trainability – just give her a shot at a better life. Then, when she's ready at the right place and time, take that trauma informed care package and turn it into something that she can hold so that she can put out this professional avatar and use that through oral storytelling – I know its this big spaghetti mess – but it was basically cherry picking everything that I've done in practice that has worked, the research that I read that I think has some good pieces to it, and turning it into the day to day of how do we show up, how do we survive and how do we support? And, reduce those risk factors so they're willing to take a chance on learning something technical*," (instructor 1, interview).

Active learning and learning IT

What does the research indicate about the use of active learning approaches in the traditional fields of science, technology, engineering, and mathematics (STEM)? These are typically thought to be the 'hard' sciences, where rigour and competitiveness are the norm. Freeman et al (2014) noted that *"Heterogeneity analyses indicated that both results hold across the STEM disciplines: active learning increases scores on concept inventories more than on course examinations, and active learning appears effective across all class sizes, although the greatest effects are in small (N≤ 50) classes".* Given the small size of the InTeRN cohort, the instructors' choice to incorporate active learning strategies had the outcome Freeman's work demonstrated. This points to active learning being an appropriate choice when the learning outcomes include concept mastery. This finding also supports the choice of active learning approaches with a small group of students. Combining this research with that of Theobold, it is evident that active learning approaches with under-represented students who are expected to master skills and concepts, resulted in more learning than traditional approaches.

There are two closely-related aspects of active learning that are worthy of mention: authentic learning and classroom assessment techniques. Authentic learning involves the use of real or "realistic" problems (based on simulations or in simulator-type conditions) that allow learners to develop skills in real-world or approximate conditions. Another advantage of realistic problems is that the problem and activities can be reduced to a degree of complexity suitable for the students' ability level (Cronin, 1993). Although the complexity has been reduced, it can

remain authentic because students can have a feeling of accomplishment from the first attempt. The design of InTeRN incorporated authentic learning, which allowed for a set of highly-valued outcomes: higher order thinking, deep knowledge, substantive conversation, and connections to the world beyond the classroom (Chen, 2017, p. 21).

As we saw in the preceding section, active learning has more impact on conceptual learning than on examination results. What alternative assessment techniques are more aligned with active learning approaches?

Active learning and alternative assessment

The Centre for Teaching and Learning at Columbia University makes a number of resources related to active learning available on their website https://ctl.columbia.edu/resources-and-technology/. One of these deals with Classroom Assessment Techniques (CATs), *which "assess what and how students have learned from the learning activity"*. CATs allow instructors to remain current with students' learning so they can provide relevant and timely feedback, support, and enrichment. The quick and low-stakes nature of CATs remove the stress and anxiety of an exam, which is fraught for many leaners. A section from the website is reproduced as Appendix A in order to provide a more detailed description of this important tool.

While CATs offer a way of providing regular, useful, and focused feedback, there are situations in which learners must be prepared to be successful with an externally-set examination. In any replication of the InTeRN model, consideration should be given to a mix of assessment strategies to take this into account as the InTeRN students took Cisco (netacad.com) certification examinations as part of the program.

Because InTeRN students must successfully pass an industry mandated certification exam, it was imperative that they acquired a sense of confidence in their conceptual knowledge and have mastered a broad set of skills. The use of CATs, together with an emphasis on regular

practice, feedback, and debriefing, helped create a firm foundation. Focused examination preparation was used and will continue to be an essential building block of success.

In her exploration of what instructors and institutions can do to help students successfully write licensure or certification exams, Helen Taylor (2019) points to several approaches that have proven to be effective:

1. Ensuring there is curriculum review and alignment with examination learning outcomes;
2. Using higher order cognitive questions; and
3. Providing tutoring and review.

The instructors in the InTeRN program were very familiar with the curriculum and how it this related to questions posed in the external exam. Not only did they use higher order cognitive questions in the daily classroom experience, they also ensured that demonstrations and in-class assignments were challenging and achievable. This emphasis on ensuring that students were achieving at a high level was part of the program since its inception. Additionally, the ongoing provision of ready access to instructors and “in the moment” tutoring and review, was also in line with Taylor’s observations.

In summary, there was strong alignment between the philosophy and practices demonstrated by InTeRN instructors and best practices of active learning as gleaned from the literature.

Successful learning environments for Indigenous adults

This section of the literature review will examine best practices for Indigenous adult learners, and a brief consideration of the role that Indigegogy played in the design of teaching and learning. Consideration is also given to both the physical and social environments, with a focus on the use of cohort models to support student success. The use of flexible learning

spaces will be discussed as a factor that created a successful and comfortable environment for adults.

Intentionally Equitable Hospitality

As we move from an exploration of active learning and how it supports marginalized and non-traditional learners to looking at the environment and psychological 'surround' of the InTeRN model, we'll introduce the concept of Intentionally Equitable Hospitality (IEH). This shift in thinking about what can happen in learning spaces captures aspects of practice that were demonstrated in the InTeRN model.

> *"IEH begins with the notion that the teacher or workshop facilitator is a "host" of a space, responsible for hospitality, and welcoming others into that space. IEH requires intentionality about who is involved in the design of that space, noticing for whom the space is hospitable and for whom it is not. IEH is iterative design, planning, and facilitation in the moment. It also includes the interactions outside of formal gatherings that influence formal, synchronous interactions. As Priya Parker (2018) has suggested, the way we gather matters. This observation holds for educational contexts. A class is often a unique entity, with its own chemistry or "personality". It holds particular memories. A class occurs at a particular time in one's life, and it is experienced in a particular place. Learning together holds the potential for unique growth moments, and can be truly transformational if it is tied to a sense of belonging. If a student gains the experience of being included and heard, it makes a critical difference in what kind of learning is possible for all,"* (Bali and Zamora in Quinn, et. al., 2022).

> Maha Bali and Mia Zamora (2022) stated that:

> *"This aspiration [to create welcoming spaces] is often at odds with institutional mandates that hem teachers in with an emphasis on content and prescribed learning*

outcomes. How can teachers foster an authentic and collective sense of belonging when designing for impactful learning? How can they create an equitable environment that is hospitable to diverse students?"

One of the instructors spoke to the frustration that institutional barriers created:

> *"That was the biggest part of the program for me, and watching it from the project side, we had a lot of barriers to that – a lot of institutional barriers in-house because people, especially during COVID, you know they're behind a screen, they're at home – they don't see the need of the human before you; they see a number, they see a student registration that wasn't completed and the assumptions that come with that – well, if they wanted it they'd do it – right? So overcoming that piece*," (instructor 1, interview).

IEH is a values-based approach that promotes co-learning among students, who might be different in a wide variety of ways, by prioritizing the needs and wants of the most marginalized among them. This approach was a significant part of the intentional design of InTeRN. In a conversation, one of the instructors noted:

> *"For my colleague and I [the students are] everything – that's your starting point. They need to be cared for first, they need to have the roadmap of where we're going next. I always feel that we're pointing our faces to the wind, and its the girls who set the compass. And we just help give them the tools they need to get there, and then we need to get the hell out of their way (laughs),"* (instructor 1, interview).

The students also recognized the welcoming nature of the program, and spoke to the difference this made:

> *"The difference from the InTeRN program is that like you felt welcome. And you felt like you were needed. Like you actually feel like you wanted to come to school,"* (student interview).
>
> *"There's been a wide range of opportunities for everybody. Everyone has their own strengths, and we support all those strengths. I love how we support each other,"* (student interview).

A key perspective within IEH is the idea that *"We have a responsibility to elevate voices historically oppressed by privilege,"* (Bali & Zamora in Quinn, et. al. 2022). Those participating in the InTeRN community understood this, whether or not there were overt conversations about it.

> *"I like that it was Indigenous and it was going to be all women. I just felt that it would be a comfortable space to come and learn,"* (student interview).

From the instructor perspective:

> *"And we gave [the students] the power to design their own logo and it's an Indigenous woman [with] her hair braided to the side. And it's got three feathers on the end, two are representative of something but the third is actually the inside of a jump drive…they did that project on their own. They put InTeRN in the writing there and they are very, very proud of that ownership of the program,"* (instructor 1, interview).

For Indigenous learners, the environments in which many of them have experienced school have been inequitable. Bali and Zamora noted that:

> *"Learning environments, whether virtual, hybrid, or in-person, are inherently inequitable, for two reasons. First, because they mirror the outside world, encompassing the range of oppressions including white supremacy, heteropatriarchy, capitalism, colonialism, ableism, xenophobia—and all of the intersections within participant identities in the learning space. Second, because learning spaces introduce their own power dynamics, related to institutional cultures and how learners are expected to interact with authority figures, and related to hidden curricula that encourage or hinder certain behaviors including, for example, host controls over muting/unmuting in video conference platforms, seating arrangements in in-person classrooms, and angling of cameras and location of microphones in Hyflex/Dual Delivery classrooms. Individuals within these learning spaces have an unequal opportunity to learn, to contribute to everyone else's*

learning, to grow. If we cannot control oppression and social injustice outside of the learning spaces we design, at the very least we can resist them within spaces we are able to control and influence, recognizing that our work will always be a journey, it will always be partial and that we continually strive for more, because…marginality can be visible and invisible… Those at the centers can never see what it looks like to be on the margins, because the world looks different from the margins…" (Bali and Zamora, 2022).

The InTeRN model recognized this inequity and tried to meet each student where they were. One of the instructors identified the moment when he understood what that would mean in the day to day living experience of the model:

> *"Very early on in the process I decided I would keep my mouth shut as much as possible and keep my ears as open as much as possible. We'd been working together and talking together, and I'd been listening to my colleague and there was a moment of serendipity there – my gut feeling, after being involved with education all these years – it was an afternoon, and I just got on the phone and said to our AVP, "This isn't going to work. We need something else and I think my partner's got it. This support can't be a front end kind of support the way that universities and colleges do it, and then turn the students loose. We have to build something into the program that's going to follow the program all the way through". It turns out that at about the same time, my colleague walked into his office and said virtually the same thing,"* (instructor 2, interview).

This recognition that 'we need something else' ties back to Intentionally Equitable Hospitality, as well as to approaches such as Liberating Structures (K. McCandless, 2013) which are *"easy-to-learn microstructures that enhance relational coordination and trust."* When we consider the point from which many of the InTeRN students were starting from, a Liberating Structures approach makes sense.

> *"Our women that are students were depressed, isolated, socially cut off, financially cut off, even the ability to buy food or get to a place to buy food, running water – it was third world conditions for many of them, and this was part of the discussion – how do we do this and do it well? And that's what came back every time was – talk to me, tell me a story, tell me a personal story connected to culture and relevant meaning. And then let's*

touch on a little bit of the learning and address the trauma elephants in the room and give them space and give that avatar the chance to do the learning piece. And then fail at it horribly – we want them to bomb at it so we can go back and do the gap fill. And then we look at those multiple intelligences and learning styles and then we come up with a hundred other ways to teach that concept until they have it to the industry standard or hopefully above is what we were hoping for." (instructor 1, interview)

The Liberating Structures website (https://www.liberatingstructures.com/) provides a menu of 33 activities that open up dialogue and engagement. The outcome of using Liberating Structures is aligned with the idea that everyone has a place in the classroom community, everyone has ideas to contribute, and each voice is important.

Among the ten principles underlying the design of LS, the two most relevant for IEH were:

1. Include and Unleash Everyone; and

2. Practice Deep Respect for People and Local Solutions.

Several examples of specific Liberating Structures and how they relate to IEH are included in Appendix B.

The approach to creating curriculum within InTeRN reflected both of these crucial principles, *include and unleash everyone* and *practice deep respect for people and local solutions* (knowledge, culture, experience). One of the instructors gave an example:

"So, with the input of some of my students, I wrote the Sweetgrass curriculum. And I would take it to them, and I would show my literacy students and they would tell me – that is stupid – and they would say it just like that, it was wonderful. So, my first statement would be "fail, and fail fast". And that kind of became a theme for the whole project. So, I'd write something, or I'd integrate an oral storytelling that I had from my father, or my home community and go ah – that's not right, that's not the way you tell that story, that's stupid. We would laugh and they would retell it, and I'd would try to gather those pieces. And then we'd take the seven essential skills that people look for in

the workplace, and we'd take the oral storytelling and we'd braid it in," (instructor 1, interview).

In this example, students' voices, reactions, and interactions were vital. These conversations demonstrated what an equitable, intentional learning environment can look like.

Before we leave the idea of creating learning spaces that ensure that all members of the community are seen and heard, it's important to consider the theoretical underpinning, critical pedagogy.

Critical pedagogy

Critical pedagogy is the application of critical theory to education. In this way of thinking, teaching and learning are seen as a political act in which knowledge and language are not neutral, nor can they be objective. Therefore, issues involving, for example, social, environmental, or economic justice cannot be separated from the curriculum. Critical pedagogy's goal is to emancipate marginalized or oppressed groups by developing, according to Paulo Freire (1970), *conscientização,* or critical consciousness in students.

Critical pedagogy disrupts the traditional classroom where teachers are positioned at the center of the curriculum and the front of the classroom. The curriculum and classroom with a critical pedagogy stance is student-centered and focuses its content on social critique and political action. Such educators propose a liberatory practice in which the central purpose of educators is to liberate and to humanize students so that they can reach their full potential. Using power dynamics analyses, they seek to undo structural societal inequities through the work of schooling. They emphasize the importance of the relationship between the educators and students, as well as the co-creation of knowledge. Education is a way to freedom, and new ways of living one's life (Margolis and Mead, 2022).

Critical pedagogy recognizes that social injustices are multidimensional. One typology of social justice is Nancy Fraser's (2005), which differentiates between:

1. Economic injustice, such as access to digital devices and infrastructure, which can be redressed via redistribution or resources;

2. Cultural injustice, which involves the erasure or misappropriation of certain cultures, such as the absence of Indigenous and non-white cultural perspectives from many Western curricula, and can be redressed via re-appropriation; and

3. Political injustice, which involves the inability to participate in democratic decision-making about one's own fate and circumstances, and can be redressed via participatory parity.

Using a critical pedagogy framework allows educators to give students, especially those from marginalized communities, the intellectual tools to see their world, and their experiences through a different lens. Although the instructors in InTeRN didn't explicitly label their approach "critical pedagogy", their observations included a recognition of the impact of the current system, and how things could be changed:

> *"I think the way our college programs and our semestered systems are set up, are so colonialized. They were never built with the student in mind. They were built with here's the exam, here's our hoops, now jump through them. I think where [Instructor 2] and I really coalesce together is our belief system, and that the system is terrible. We've both worked in it for a long time and we've seen it do more harm than good. We wanted to come at it with a different approach…"* (instructor 1, interview).

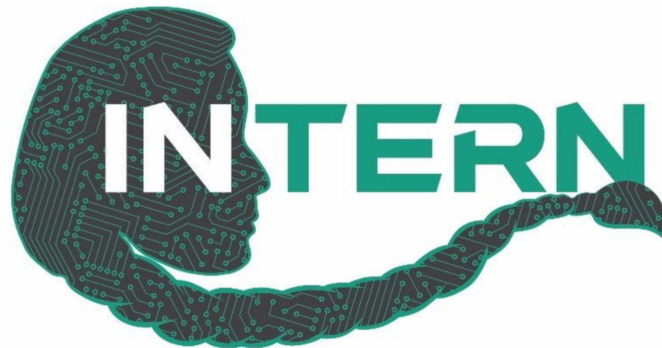
In thinking about the injustices listed above, it is safe to say that the InTeRN program was not created with a particular target on economic injustice, cultural injustice, or political injustice. Nonetheless, each of these topics of injustice became part of the program. For example:

a) The students were painfully aware of economic injustices that plague northern and remote communities in Manitoba. As a global pandemic crippled much of the world, the universal answer was often one of making use of digital technology to sustain the community fabric of schools, religious institutions, social enterprises, governments, and others. This proved, to varying degrees, workable in most of the southern parts of Canada, but impossible in Manitoba's north where few homes are connected to workable internet connections, few homes are equipped with the prerequisite computer technology equipment, most of the landscape has no cellular connectivity, and housing shortages force living conditions on individuals that would never permit work from home or study from home successes. The students of InTeRN were intimately aware of these challenges as they were living them.

   This economic disparity that they knew became the wind that fanned the flame of the C4S work conducted within the classroom. In the face of these economic conditions, the students were able to engage in meaningful work related to picking away at the connectivity and digital equipment issues. They were re-building equipment that went into homes. They were assisting businesses to remain open through the pandemic. They were working on projects to connect areas suffering from poor connectivity. The were taking on social injustices with concrete action.

b) Cultural injustice needs little explanation to the students of this program, but it did require explanation to the Quality Assurance team within UCN's Teaching and Learning Services group. This group is responsible, among other things, for ensuring that all courses taught at UCN address, by some means, Indigenous content or methods. In the creation of the program, the InTeRN team was questioned regarding its intentions of inserting Indigenous content into a technical program such as IT. Our response was that, rather than insert Indigenous content, we wished to infuse decolonization of IT into the program. This lead to lively debates regarding the current western, white, male

domination of most of North America's IT landscape. This, in practice with the students, translated into recognizing cultural injustices and mis-representation, and pushing back at it with an Indigenous female perspective. It made for lively discussions. And, it influenced the look and feel of the classroom including the sign on the door.



c) Political injustice was addressed in the small 'p' political environment of the classroom / workshop. The students were not simply participants, but had a sense of ownership and real power in the classroom. They were part of the planning, the scheduling, the peer teaching. They had voice and, for some, they had to find that voice and grow into it, as they had not had that before.

Storytelling and Indigegogy

Turning to the theme of storytelling, Bali and Zamora recognized the importance of storytelling as a way of creating an equitable and inviting learning environment:

> *"Learners honour the stories of others—whether empathizing with those stories comes naturally due to shared experience or uncomfortably—via epistemic listening to stories from perspectives one has never encountered fully before. This intimate and deliberate*

design work allows for narrative emergence in classroom spaces and aspires to create the conditions for co-learning in compassion," (Bali & Zamora in Quinn, et. al. 2022).

At the centre of the InTeRN experience was an approach known as 'Sweetgrass' – a deep understanding of the needs of Indigenous adult learners. Based on experience, observation, and research, Sweetgrass used the analogy of 'braiding' to capture the relationship of the learners as whole persons with the curriculum and related learning experiences.

One of the instructors shared the story that she told the students as a way of recognizing the value of narrative in their culture, and the impact of learning through stories. According to the instructor, *"What I was looking for was this braid, and then sliding in [the] curriculum. This is how we can flip education, pedagogy on its head and take trauma-informed care out of the textbook and into Northern practice, not just practice,"* (instructor 1, interview).

Because of the central role this story took on, it is shared in its entirety here along with the context in which it was experienced. This represents the instructor's recollection from her childhood:

"So, my dad told me this when I was probably six – I think I was kindergarten age. We were back up North – we'd come back North for the summertime all the time – and be set free all summer long. And my granny would take care of all the cousins – there was like 12 to 22 of us depending on the summers. We were pretty wild and free. And we were called to go help – when the men needed help we would go do the wood, do the hunting that stuff. And of course we're not used to rules so we're all over the place. And the men have chainsaws and we're trying to mark trees and take wood. And I saw this beautiful yellow flower so I go running over to it and I want to pull it out of the ground right 'cause it's pretty and I want to take it home to my granny. My dad – "stop" – stops his chainsaw, puts it down. "You can't pick those don't you know what that it is?" "No, it's just a flower." "Sit down" so he called us together. And I'll never forget it, it's like a big memory in my history and the same with all my cousins we all know this story now because of that moment.

And the story of Moccasin is about a little girl who is in her tribe by a river and they're quite a great deal away North of the next settlement, community or next tribe. And in her tribe, her family gets sick. It is almost an exact design of COVID, of what happens. So in her community she's raised by her grandmother and she's with her brother and her brother is next in line to be the next chief. And he's a warrior so he's quite a fit, healthy young man; he provides, he's in a leadership role within the community and everyone knows he's next in line. And she's his 10-year old little sister so she's kind of the helper of "go do this, go do that" but she's not seeing herself as an important person.

The community starts getting sick and the grandmother falls ill first, and then within the week the rest of the community is fevered, and people are isolated. There's nobody able to feed them, to get food, to prepare water for boiling, to help except for her. So she's the one going tent to tent, and tipi, and caring for the community as best as she can. Her brother is trying to help her too, and he's providing the food; and she's following in his shadow and thinking what a strong magnificent warrior he is, I'm going to do what he does. So she's walking in his shadow throughout this.

It comes to the point where they know they need medicine or they're not going to survive. So it's decided amongst the Elders that are well enough to speak that the young brother will go, he'll be the one to journey – this is the dead of winter and he's going to make the trek to the next community that has the medicines that they need. So he's going to set out in the morning and she prepares the food and has him completely fed and energized, and takes care of his needs. And gets his moccasins sewn up and winterized and ready to go, and they all go to bed. And in the morning, when they wake up it's still dark, he's sick, he's fevered, and he can't get up. So now she is the only one that hasn't fallen ill. Her grandmother tells her to stay and just keep bringing the water to everybody, and she decides to do packages to each family, enough to get them through. She figures she can do it herself.

She puts on her moccasins that her grandmother made for her, and she starts this journey alone in the dark. And as she travels, she has an idea where she's going but the snow is really deep and she's having a hard time. And slow and it's cold. And she's hearing spirits in the wind with the trees rustling, and the sun goes down by the first day early and she sees the Northern Lights and the spirits are calling to her, and they are telling her to keep going, and some of them are playing games with her, too where she thinks she sees the place, but she doesn't. So she carries on through this journey and she gets almost to the village – she can see the light of the fire in the distance, and she falls through snow and she's stuck. And she's struggling, and struggling and struggling and fighting and trying to swim her way up and she's buried and it's not until she realizes that she has to stop fighting that she can wiggle her way out. So she finally does her wiggling her way out, and she loses her moccasins. So she's barefoot and she gets out

and as she's walking with each step she takes she's leaving blood on the ground behind her as she steps forward. She gets into the next village, and she collapses just outside the village and it's another granny that sees her and goes and scoops her up and brings her in, and warms her up and feeds her and takes care of her and tells her you just rest. She wakes up and goes my village, my people I have to get this medicine, I have to go. And so they arrange within themselves that they'll send a whole group with her, with the medicine in the morning when it's not so dark. She's not OK with that – she knows how critical it is and how sick everybody is. She grabs the medicine, she waits for the older woman to fall asleep, she leaves. And she's still barefoot and she makes this journey all the way back and the same spirits are playing with her, and there's different teachings like the Seven Grandfather Teachings come out from her journey back just to cut this story down a bit. She makes it back and she starts with her brother, and she gives him the medicine. And then he gets a little bit stronger to get well again, and then they help the grandmother and then on and on it goes and everybody helps. And the little girl finally collapses and falls so ill she's in bad shape for the rest of the winter. And she's not able to stand up again until the springtime. And her name is Moccasin is what she's named as her tribe, and her brother the warrior is so proud of her. When she's well, he wants to take her to see if they can go find her moccasins. So they start making the journey back and they're trying to find the way and each place that they go to there are yellow flowers on the ground like footsteps. So they're whole pathway back was led by everywhere her blood had touched the ground there is a moccasin or the lady slipper. And these plants will live for a hundred years, and their root systems are interconnected."

This instructor went on to provide an interpretation of the value of this story:

> *"For me, the story was just -- when we were in the thick of COVID this was it. This was exactly the story that touched into the IT – the IT is the medicine, it's the money, it's the income to bring back into our Northern communities where our mothers and young women can stay and not have to leave to make an income. They can be at home connected, bringing home the medicine. And that little girl, Moccasin, is the one who did the journey, and when she did it, she had left a pathway for others to do the same thing,"* (instructor 1, interview).

Using stories as part of the deliberate design of the program did much to counter a pervasive artifact of the colonial nature of post-secondary: *"The individualistic and competitive culture in postsecondary institutions sometimes conflicts with Indigenous students' cultural values,"* (Brunette and Richmond, 2018).

There is further contextualization to this storytelling approach:

> *"So that's the biggest storytelling that anchors the program. And then as we come across other situations more stories come, and they're shared and they're shared from the women, they're shared by me, they're shared by others. And it's … When we do these, they happen so organically. At the start we had formal sharing circles, and then we didn't need them anymore because it would just became a teachable moment. It was pretty powerful stuff. And when I shared it with the girls on the biggest landmine where the two employees decided to leave InTeRN. That was the time that I shared this story, and after that attendance went up, they started working together, they started pulling the curriculum, and we slowly started braiding things back together,"* (instructor 1, interview).

This is an example of the daily practice of decolonization within InTeRN: *"Most importantly, decolonization privileges Indigenous peoples' voices, agency, knowledges, languages and educational priorities,"* (Brunette and Richmond, 2018).

Within this framework of a welcoming, culture-affirming environment, the role of appropriate pedagogy was important. Cree scholar Dr. Stan Wilson coined the word "Indigegogy" to combine "Indigenous" and "pedagogy". This term is an umbrella to describe culturally sensitive concepts of teaching and learning. Educators in a variety of post-secondary settings, including education and social work, are activating this approach through such elements as Elder-in-Residence, Circle Pedagogy, Wholistic Evaluation, and Culture Camp. In a 2014 article by Gus Hill and Alicia Wilkinson, they identified these four components as essential because each *"affirms Indigenous ways of being, knowing, and doing, and places control and ownership of helping practices firmly in the hands of Indigenous people"* (Hill and Wilkinson, 2014, p. 175).

In the InTeRN program, each of these components listed above were incorporated. They were, however, included in a fundamentally different way. Instead of scheduling a visit from an Elder, setting aside time for Circle Teachings, or booking Land-based Training, each of these activities occurred when the students needed them. Unfortunately, that often meant bringing these activities and resources following a trauma of some form, a disruption within the class community, a pending

change, etc. But, because they were teachable moments, these activities were, no doubt, more transformative than if they were simply add-ons to a course schedule. More times than not, the students drove the scheduling and inclusion of these components. Importantly, the Instructors were full participants. The Learning Community was being tested, and time to bring others in was agreed upon by all in the community.

In the InTeRN model, Indigegogy was reflected through a number of practices, as discussed by the instructors, and can be a contrast to other college programs. One such practice was how each day unfolded. Seen from the student perspective, this was an important ritual:

> *"So for example, in the mornings, we come a little earlier to just catch up with each other, do a little bit of like touchstones like positive affirmations to start with. And then we talk about how our day is going to play out. And then we get to our work and yeah, it's just nice to start the day with some positive affirmations and we'll catch up with each other,"* (student interview).

The ability for the instructional team to understand the value of ongoing support for learners resulted in a re-valuing of the curriculum and attendant support mechanisms. As Aikenhead and Michell (2011, p. 114) indicated, *"As two-eyed seeing implies, people familiar with both knowledge systems can uniquely combine the two in various ways to meet a challenge or task at hand."* Because both of these instructors brought their experiences and were open to each other's expertise in content and cultural knowledges, they were able, with two-eyed seeing, to meet the challenges of introducing northern, Indigenous women to IT.

In brief, as one Canadian literacy site describes it, successful Indigegogy reflects: *"developing cultural understanding, teaching meaningful content, and promoting Indigenous culture"* (ABC Life Literacy Canada, abclifeliteracy.ca).

Creating community

One thread that wove its way through the InTeRN model was the sense of community. The community built by instructors and students was highly valued by the participants, and represented something more than the sum of the parts because it combined culture, content, and space. This “third space” has been described in a variety of ways. For Aoki (1996), the third space is a hybrid of cultures in contact; an ambivalent space which is simultaneously one, the other, and the bridge between the two. In this sense, “third space” does not represent a transition from one culture to the other, but rather a bridge as a space all its own; an in-between space drawing on cultures in contact and reconstructing a new, joint understanding of self and others (Aoki, 1996). The InTeRN program demonstrated the power of this “third space” through the impact it had on students.

> *“It's amazing. I got to meet a lot of great women, and I'm definitely not the same person as I was when I started this course. I am much more sociable. I was never a student who liked being the center of attention or, like, I would always just sit at the back of class or be quiet. And now that I'm around these girls, it's a really comfortable atmosphere. So I can step out of my shell a little bit. And even they have noticed like, you weren't like this at the beginning of the year,”* (student interview).

Without her experience in this ‘third space’, this student might never have grown in the ways she described. She had the opportunity to be in contact with people like herself, as well as those who had come from different backgrounds. Further, she explored the culture and knowledge that came from her Indigenous roots, as well as learning IT content. The resulting confidence and comfort in her own skin was palpable in her comments.

Another element in the creation of a strong community was the cohort structure of the model. For InTeRN, the students started the program at the same time and finished at the same time thereby functioning as a team, as is common to cohort models of education. This structure strengthened the learning community of the program as familiarity, security, and trust was critical to functioning as a community of learning.

A 2017 study by Todd Oldham was designed to investigate the impact of a cohort on student completion rates in a college program. Using data collected by the community college, the study compared students in a cohort-based learning model with those in a traditional program, i.e., individual student registrations in a program. The author found a statistically significant association between the cohort-based model and education completion rates where cohort students were more likely to complete. The Close the Gap Foundation (closethegapfoundation.org) asserts that a cohort model can have powerful effects: building relationships, emphasizing social skills and communication, and helping long term learning. Comments from students reflected this:

> *“[the experience was] Overwhelming, frustrating at times. But we have a great support – teachers, classmates and everybody. So we got over those humps, and it was totally worth all those stresses and doubts. We have people here telling us that we can totally do it … The support system is great, and if it wasn’t there I wouldn’t have completed my program,”* (student interview).

> *“We are a community – one of the new students this year was having difficulty so I jumped in, and became her support. She’s still here and very grateful and told her that she could do it. I’m glad she stayed. I’m passing it on!”* (student interview).

> *“All the students that I was with in my first year, our instructors -- they all really helped change the way I think about social interaction and how learning is not that hard if it's around people that you trust,”* (student interview).

The first cohort of InTeRN started the program and finished it together. When the second cohort started, the year 1 and year 2 groups were combined within a single learning community / classroom. Our hypothesis was that the first cohort had the experiences and growth that, with the new group of women entering the programming, would serve to bring the new students into the existing community. The community was then extended rather than having to be re-created. The combined group proved, in this iteration, that the hypothesis held true.

Creating spaces that work

"Spaces that are flexible, accommodating different approaches and uses, improve the odds for effective learning," (Oblinger, 2006).

Theatre-style classrooms which position the instructor at the front of the room can be intimidating, especially to adult learners who have been away from school for some time. The InTeRN model incorporated the use of flexible learning spaces which reflected the research in this area.

The Centre for Teaching and Learning at Columbia University suggests that:

"Flexibility in learning spaces can be both physical (e.g., reconfigurable room design, moveable furniture, portable technology) and abstract (e.g., a space that can respond to changes in "demographic shifts, community needs, or policy mandates"; Monahan, 2002, p. 1), and whether designed intentionally or not, they offer a number of benefits to both students and instructors. As Lomas and Oblinger (2006) wrote, "Flexibility … fosters different teaching and learning styles. Not all faculty can, or should, use the same instructional style. Pedagogies should be tailored to the subject, the learners, and the intended outcomes. Student needs and learning preferences vary as well. Spaces that are flexible, accommodating different approaches and uses, improve the odds for effective learning" (p. 5.9). Therefore, in allowing for different styles and approaches to teaching and learning in a single space, flexible learning spaces also invite exploration and discovery. These affordances converge to help "[create] a community of learners, [help] students work at their optimal level of challenge, and [encourage] students to learn holistically," (Rands & Gansemer-Topf, 2017, p. 29-31)."

While flexibility is important so that the space can be used to support a variety of learning approaches (e.g. circle work, individual time at a computer, small or large group demonstrations), there is also a need for consistency. Gee (2006, p. 10.9) noted that people will *"seek out familiar places or create places with familiar attributes*". We typically see this when participants sit in the same seat in class.

In conversations with instructors and students, it was clear that the following aspects of the physical space were important to the group, and should be considered if the InTeRN model is to be replicated:

1. Having a designated space that is used only by the InTeRN program;
2. Furniture that can be easily re-arranged
    - Tables and chairs,
    - Soft furniture (sofa, chairs) to encourage social interaction or quiet individual study,
    - Natural light,
    - Adequate storage,
    - Kitchenette with suitable food storage (food and refreshments were part of the social environment),
    - Adequate number of electrical outlets to support an IT program,
    - Office space for instructors that is (ideally) close to the classroom.

These spaces can encourage conversation, contemplation, and a compassionate understanding of how others learn, think, and manage the challenges of a demanding program. That was clearly demonstrated within InTeRN.

The next section of the literature review will explore the various ways in which readiness comes into play – for the people, places, and processes involved.

Preparation for program implementation

The InTeRN model grew out of a desire to create opportunities for northern, Indigenous women to enter the world of information technology and contribute to their communities. The program was successful in supporting learners to reach beyond the constraints they experienced:

> *"I never would have dreamed that we now have, full-time, our first employed Indigenous female right under our own roof assisting with IT in the library using her new-found skills, now at UCN – and that was her dream job. We took her from that violent moment to "She's made it, she's there now, and she's got the skills to stay there and knows how to circle back to get the help that she needs,"* (instructor 1, interview).

This instructor was referring to one of the first students from the first cohort to be employed full time. Additionally, in September, 2023, an InTeRN graduate became an instructor in IT programming at UCN, a first for the institution, and a measure of how the InTeRN model has driven change (personal communication). The question is, can this model be used for other technically-focused programs to create more success for learners, open access to a wider population of students, and ensure that under-served communities have access to skilled individuals to assist them in being part of the digital transformation? As Howard Rheingold, writer and scholar of contemporary media has said, *"Soon the digital divide will not be between the haves and the have-nots. It will be between the know-hows and the non-know-hows"* (TEDtalk, 2005). A critical outcome of the InTeRN model was that learners were able to use their know-how and share it with a wide variety of learners in both formal and informal settings.

When we examine the foundational practices that have propelled the learners to complete the program to a high level of expectation, they fall into two categories: building community and fostering a culture of persistence.

Building community embraces the social, emotional, and physical space that instructors and program staff co-constructed with the students. For example, each day began with conversation and time for checking in, having coffee, and a review of projects that were underway. These predictable routines provided stability and a sense of belonging.

A *culture of persistence* is critical to supporting learners' self-confidence, ability to see themselves as reaching their goals, and fostering self-efficacy. Students' comments reflected this:

> *"Overwhelming, frustrating at times. But we have a great support – teachers, classmates and everybody. So we got over those humps, and it was totally worth all those stresses and doubts. We have people here telling us that we can totally do it … The support system is great, and if it wasn't there I wouldn't have completed my program,"* (student interview).

> *"We are a community – one of the new students this year was having difficulty so I jumped in, and became her support. She's still here and very grateful and told her that she could do it. I'm glad she stayed. I'm passing it on (laughter),"* (student interview).

> *"We do stuff together as a group. I never had that big support before. I've learned so many skills, and so much knowledge. I didn't have any idea that I had the ability to learn these skills. My confidence is so much higher – I had doubts at the beginning but throughout the course, my confidence has gone up and up. In year two, some of it is more difficult but we're pushing through and helping each other out. We did other things like making websites – there's been a wide range of opportunities for everybody. Everyone has their own strengths, and we support all those strengths. I love how we support each other,"* (student interview).

The use of active learning strategies, the application of Indigegogy, an examination of how Indigenous culture has been braided into the program, and a discussion of the importance of physical space have been explored earlier in the literature review. These approaches have proven to be supportive of the overall aims of InTeRN.

One of the individuals who was interviewed emphasized the value of Indigegogy to the learning community of InTeRN and to reconciliation:

> *"A critical principle of [Indigegogy] is that it's looking after one another, not leaving anyone behind. Thinking about who came before us, and who's coming after us. It's recognizing, respecting, embracing the knowledge of Northerners and Indigenous people and the Elders, and how land and culture and language all come together and fit,"* (administrator 1, interview).

Attention to the Truth and Reconciliation Commission of Canada's Calls to Action (National Centre for Truth and Reconciliation), especially as they relate to education, is increasingly part of institutional strategic and operational planning. If a program based on the InTeRN model is offered by a community provider, it is strongly recommended that the Calls to Action be reflected in program delivery and supporting policies.

From an operational perspective, there are several points that have come out of conversations with those who were involved with InTeRN. Consideration of these is useful in any replication efforts.

1. Relationship to how classrooms are scheduled – is it possible to schedule the classroom(s) as a dedicated block? This approach ensures that the space is used throughout the day, provides for flexible use of furniture to support a range of teaching and learning (individual work, small and large group activities; varying instructional approaches, e.g., demonstration, presentation, mini-lecture), and takes into account the need for a predictable and safe environment. Further, it ensures that ongoing projects aren't disrupted by others using the space.

2. Ensuring that the technological requirements are met, e.g., access to high-speed Internet, charging stations, enough electrical outlets to support workstations.

3. Work space for instructors and program staff – ideally separate from the classroom but in close proximity to it.

4. Recognition of the importance of creating positive working relationships with Facilities staff as that team (or individual) will be important in ensuring that the space is clean, safe, and continues to meet the needs of learners and instructors.

As thought is given to the social and learning environment, a significant part of the preparation for implementation framework is the community of practice approach. Etienne Wenger (1998) noted that:

> *"Communities of practice are groups of people who share a concern or a passion for something they do and learn how to do it better as they interact regularly"* (Wenger, 1998, p. 1).

This describes the InTeRN model, which provided consistency, immersion in an environment that provided both challenge and support, and one in which members had compassion for each other. The impact is evident to those outside the community:

> *"What I love about the InTeRN program is the sense of community and camaraderie that they have there – it is unlike anything that I've seen in any other classroom, any other setting of students. Without a doubt, the InTeRN program is one of the most unique, interesting, fun classrooms. I've never seen a group of students gel like that before,"* (staff member 1, interview).

> *"… it sounds like they're creating community, it sounds like they're creating family. And that emulates what we as a people, how we've survived for millennia, is that we weren't*

individualized, we knew survival and success came as a group with support for one another," (administrator 1, interview).

Taking a community of practice approach changes the instructor/student dynamic, as explained by an experienced instructor:

"Again, it's helping instructors develop that confidence and changing the way they think about the relationship with students. It's not a hierarchical relationship – it's a community of learners. As an instructor, I'm always learning, learning with my students. Yeah, I have certain knowledge and responsibilities in the classroom and so do my students. Yeah, it's changing that power dynamic – it's not a bad thing, and it doesn't have to be scary. In fact, for me, it takes away a big burden – I don't need to know everything. I have a collective here and we're all working together toward that same end goal," (staff member 2, interview)

The community focus is reflective of the cultural milieu of the students. The Sweetgrass component braided Indigenous ways of being and knowing with information technology knowledge and skills. The fact that this was reflective of, and responsive to, learners is important. There is recognition that the cohort built its own culture, and that this was an ingredient in persistence, as seen in earlier comments from learners. In several interviews, individuals mentioned that peer support was critical in helping them stay, especially when the content was particularly challenging or they were experiencing personal setbacks.

The culture of the learning community is affected by changes in membership or structure, e.g., when an instructor left or when adding a case manager who approached the curriculum differently thus requiring negotiation around roles, responsibilities, and the overall approach. This ability to "go with the flow" and accommodate to new group members was a reflection of the psychological health of the group. Focusing on this culture, Wenger et. al (2002) presented several principles for designing communities of practice for "aliveness".

> *"Designing for aliveness requires a different set of design principles. The goal of community design is to bring out the community's own internal direction, character, and energy."* (Wenger et al., 2002)

The principles they described include:

1. Design for evolution;
2. Open a dialogue between inside and outside perspectives;
3. Invite different levels of participation;
4. Develop both public and private community spaces;
5. Focus on value;
6. Combine familiarity and excitement; and,
7. Create a rhythm for the community.

Each of these principles can be seen in the InTeRN experience. For example, *combining familiarity and excitement* can be seen in some of the additional experiences offered to learners:

> *"I think the biggest difference is that we've done so many other things outside of the curriculum. You know, we all did chainsaw safety and maintenance and we've done stuff through the Construction Association of Manitoba like fall protection and supervisor safety training. Oh, yeah, we've done extra things that I think are just like a really good supplement to learning and to keep you encouraged and interested. So for me, that's the biggest part I think"* (student interview).

Ensuring instructional quality

Instructional quality was a bedrock feature of the InTeRN program and can't be emphasized enough. The instructors had a high level of professional expertise and technical knowledge. They possessed the ability to make abstract concepts concrete:

> *"… sometimes you can't get it easily, so you just have to push through so that we did that a lot. But other times we took breaks and did more hands on things because the things we were struggling with were very heavy in the theory. So like concepts that you can't really see. [Instructor 2] is really great at using analogies like baking for the parts of a computer, and using that as a base for how things work together. He relates it to real world things,"* (student interview).

Finding the right instructors for a program like InTeRN wasn't easy because the design was based on values and approaches not always seen in other post-secondary situations. For example, many instructors in colleges and universities demonstrate a teaching style which is strongly influenced by their student experience. A teaching and learning specialist noted:

> *"I think for many instructors, it's "I'll teach how I was taught". It's a default to that comfort of 'This is what I know, this is what has worked for me, like to some degree because I made it through.' So that default is where it's at. And that there isn't typically those conversations about pedagogy, about teaching, about learning – yes, that worked for you however…"* (staff member 2, interview).

The expectations that many instructors have about their role, and how institutional norms are interpreted, are also at play. For example, a professor from a university arts program commented that:

> *"You know, some professors are extremely shy people and when you look behind the scenes at what a professor does, and how they spend their time, so much of it is individual pursuit, whether you're preparing courses, whether you're marking, whether you're researching, even presenting in front of a group of people. I think that all plays*

into it. Just the colleagues that I've known – it's all over the board. Some people are very personable, and they are very interested in their students, and want to have those connections, and other people less so. You know, they're there for whatever reasons, for example, their publishing agendas are pretty central. Teaching is not the fire that moves them the same way," (faculty member 1, interview).

Finding instructors that could adapt to / adopt the learning community model proved challenging at times for the InTeRN program.

Mentoring

One effective way to attract and support students and instructors to participate in a program like InTeRN is through mentoring. Close and early mentorship of new instructors, or those new to a specific program, can improve student outcomes as, through their mentors, instructors can become better acquainted with the unique needs and strengths of the students, and be introduced to valuable resources, relevant policies, and procedures. While such actions with instructors should improve students retention, mentorships should also be available to the students as they encounter new knowledge and scenarios. Aligning with this thought, at a workshop focused on mentoring in STEM disciplines, Sandra Laursen (2017) identified mentoring as "*a practical support to do the work and the emotional support to recognize that failure is normal, to brainstorm together through a problem that seems difficult."*

Within the InTeRN program, both instructor and student mentorships were enacted. With respect to the mentoring of instructors, InTeRN was designed by individuals with expertise related to both content and pedagogy who sought to "replace themselves". These were not faculty members looking for long-term employment as instructors for InTeRN. Rather, these experts recognized their roles as "growing" the instructors for InTeRN. Similar to the mind-set of the InTeRN initial instructors, the mentors that worked with the students of the program saw value and a return on investment for spending time with the individual students. It was the mentors opportunity to give back so that others could grow forward. Mentors such as those

from the University of Waterloo (cemc.uwaterloo.ca), Natives Rising (joinnativesrising.com), Girls Who Game (dell.com), and others were willing to invest in the women of InTeRN.

In the extension of the InTeRN program into the Train-the-Trainer program (years 2 for the graduates of the first cohort of InTeRN), mentoring of students and instructors became one and the same. The students in the Train-the-Trainer program were being mentored by instructors so that they too could be instructors.

The use of mentorship in InTeRN demonstrated effective models of mentoring that have been used elsewhere and that can be implemented when the program is delivered in another setting:

1. **One-on-one mentorship with an advanced faculty mentor**. A new instructor can be assigned a mentor with a requirement that the mentor and mentee meet a certain number of times. This model is simple enough to implement, and its success is contingent on the 'fit' of mentor and mentee. It's also helpful if the mentor has access to the support of a teaching and learning specialist, or faculty development office so they feel prepared for the role.
2. **One-on-one mentorship with a near-peer mentor**. Another approach is to pair up a new instructor with someone who is in more of a peer position. Sometimes a new instructor (or someone new to the program) can get a better sense of the context from someone who is a peer. A potential drawback to this option is that the mentee may miss out on some of the wisdom and deeper institutional knowledge of an instructor with more experience in the program.

Within the learning community of InTeRN, point 1 and point 2 above were, in essence, combined into a single seamless mentoring experience. Depending on the content under

discussion, students and instructors sometimes acted as advanced experts and sometimes as peers.

Thinking about the replication of this, the following are some research-driven strategies that can be considered when implementing a mentorship program:

1. Ensure that both the mentor and mentee are familiar with the purpose, aims and timeline of their relationship. For example, instructors may agree that their time together will be spent improving lesson planning and implementation. The pair may also agree that the mentor will visit the mentee's classroom a couple of times during the semester to give support based on observation.

2. If the situation allows (number of individuals able to mentor for example), it is beneficial if a new instructor can interact with multiple mentors. Informal gatherings or formal program meetings where instructors can discuss shared concerns are useful for someone new to the role or program.

3. Both mentor and mentee need to treat their conversations as confidential, with respect to personal and professional concerns, so they are better able to create a relationship built on mutual trust.

4. Given that many mentorship programs are not funded, try to build in some form of recognition for the time and energy the mentor is contributing (Jacobs, 2023).

Within the InTeRN program, all four of these points were implemented to varying degrees.

Ensuring the institution is ready

A critical consideration for replicating the InTeRN model within a post-secondary setting is the relationships with other areas within the organization. An understanding of the existing internal systems (registration, finance, HR) with clarity around roles, responsibilities, timelines, and reporting, can make the implementation of a new program smoother for all involved. A specific example of how internal resources can be used is in the area of learning management and support for online and hybrid delivery:

> *"Thinking about readiness and capacity, and building upon bridging and adapting for students who require upgrading, a lot of our students come in with gaps that would preclude them from many programs. We have the capacity to offer that online, these are important components that we have that others might not be aware of,"* (staff member 3, interview).

Ensuring that there is a strong working relationship between instructors and other professionals across the organization contributes to better experiences for everyone, and potentially higher quality learning. Roberts (2019) furthered this point: *"A key way to make real improvements is to form relationships and learn your way forward together*."

She went on to say:

> *"But there is another piece of work required and that is about helping people to build the conditions that will allow changes to be made not just now, as you need them at this point in time, but on an ongoing basis, in a co-evolutionary kind of way. One-off change often doesn't 'stick' longer term. You might initially get a financial saving, or economies of flow, etc. but unless you create the right conditions that enable changes to flourish on an ongoing basis, your 'win' may be short and sharp and it is likely that the situation will, at some point, rebound right back to where it started,"* (Roberts, 2019).

This is an important reminder that any new initiative within any organization requires continual attention and recalibration.

InTeRN as jazz performance

A good metaphor for what emerged in UCN's experiment with delivery of InTeRN is captured in the ideas of improv and jazz. While the focus was on having deep skills so instructors could create timely and appropriate variations in instruction, they also had to be comfortable with every player taking a solo with confidence as well as playing together in harmony. In both jazz and improv, the ability to listen and respond in the moment is at the heart of the art form. As one of the InTeRN instructors stated, *"I decided I would keep my mouth shut as much as possible and keep my ears as open as much as possible."* This approach corresponds with the ideas of improv espoused by Laura Lindenfeld of the Alan Alda Centre for Communicating Science at Stony Brook University: *"Improv is not about acting or being on stage; it's about being present in the moment. It's about listening and hearing and empathy,"* (Gallo, 2020).

In summary, planning for implementation is part experimentation, part trust, part strengths-based, and part living in the moment – responding as events occur. The jazz/improv analogy captures the excitement of creativity and the goal of collective achievement.

Conclusion

This document summarizes the practices and principles considered important in the successful development and delivery of the InTeRN pilot project at UCN. Our purpose, however, was not to create a checklist to be adhered to, nor a recipe that had to be followed. Rather, our purpose was to stimulate discussion and encourage creative experimentation in developing programming and settings that focus on student successes. Further, we pluralized "successes" to emphasize that, for the students in particular, success was more than just a simple pass/fail

ratio of courses. We trust that this sentiment is evident in the words of the participants within this document.

Acknowledgements

This project was conducted on the traditional territories and homelands of many Indigenous peoples, in particular the Cree, Dene, Red River Métis, and Oji-Cree. These Indigenous people entered into treaty relationships with the Crown (within our region these include signatories to treaties 4, 5, the treaty 5 adhesion, and treaty 6 lands located within the treaty 5 adhesion). The territory has also become home to other Indigenous peoples, and we uphold the treaties and collaborate with all Indigenous peoples to share truth, reconciliation, and learning.

We wish to acknowledge and thank the team at the Future Skills Centre for their funding, ideas, help, and constant support through this entire project. None of this could have happened without you.

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REFERENCES

ABC Life Literacy. No date. 3 Adult Teaching Strategies for Indigenous Learners. Retrieved from https://abclifeliteray.ca/blog-posts/3-adult-teaching-strategies-for-indigenous-learners/#.

Aitkenhead, G., and Michell, H. 2011. *Bridging cultures: Indigenous and scientific ways of knowing nature*. Pearson Canada Inc., Toronto, ON. Quoted in Bartlett, C., Marshall, M. & Marshall, A. (2012). Two-eyed seeing and other lessons learned within a co-learning journey of bringing together Indigenous and mainstream knowledges and ways of knowing. Journal of Environmental Studies and Sciences, 2: 311-340.

Aoki, T. 1996. Imaginaries of 'East and West': Slippery curricular signifiers in education. In *Constitutive interplay midst discourse of East and West: Modernity & postmodernity renderings in adult & continuing education* (pp. 1-10). May 1, 1996. Alberta. Quoted in Alexie, O., Alexie, S. & Marlow, P. (2009) Creating Space and Defining Roles: Elders and Adult Yup'ik Immersion. Journal of American Indian Education 48(3), 1-18.

Apkarian N, Henderson C, Stains M, Raker J, Johnson E, Dancy M. 2021. What really impacts the use of active learning in undergraduate STEM education? Results from a national survey of chemistry, mathematics, and physics instructors. PLoS One. Retrieved from https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0247544.

Baha, M. & Zamora, M. 2022. Intentionally equitable hospitality as critical instructional design. Retrieved from https://pressbooks.pub/designingforcare/chapter/intentionally-equitable-hospitality-as-critical-instructional-design/.

Bajak, A. 2014. Lectures aren't just boring, they're ineffective too, study finds. Science. Retrieved from https://www.science.org/content/article/lectures-arent-just-boring-theyre-ineffective-too-study-finds.

Bonwell, C.C. No date. *Active Learning: Creating Excitement in the Classroom* - Active Learning Workshop. Retrieved from https://ufv.ca/media/assets/teaching--learning-centre/images/Active_Learning_Creating_Excitement_in_the_Classroom.pdf.

Brunette, C., and Richmond, C. 2018. *Guide for working with Indigenous students*. Western University, London, ON. Retrieved from: https://teaching.uwo.ca/pdf/teaching/Guide-for-Working-with-Indigenous-Students.pdf.

Centre for Teaching and Learning, Columbia University, New York, NY. No date. Blog post. Retrieved from https://ctl.columbia.edu/resources-and-technology/teaching-with-technology/teaching-online/flexible-spaces/.

Chen, V. 2017. *Are Active Learning Classrooms Authentic Learning Environments? An Examination of Students' and an Instructor's Lived Experiences in an Active Learning Classroom.* Retrieved from https://qspace.library.queensu.ca/bitstream/handle/1974/23790/Chen_Victoria_201712_PhD.pdf?sequence=2.

Close the Gap Foundation. No date. Cohort based learning. Retrieved from https://www.closethegapfoundation.org/glossary/cohort-based-learning#:~:text=Helps%20long%20term%20learning,to%20isolated%20self%2Dstudy%20methods.

Columbia University. 2023. Classroom Assessment Techniques (CATs): Low-Stakes Strategies to Assess Active Learning. Retrieved from https://ctl.columbia.edu/resources-and-technology/resources/assess-active-learning/.

Cronin, J. F. 1993. Four misconceptions about authentic learning. Educational Leadership, 50(7), 78-80. Retrieved from http://eric.ed.gov/?id=EJ461143.

Deslauriers, L., McCarty. L.S., Miller, K., Callaghan, K. and Kestin, G. 2019. Measuring actual learning versus feeling of learning in response to being actively engaged in the classroom. PNAS, 116 (39). Retrieved from https://doi.org/10.1073/pnas.1821936116.

Flaherty, C. 2023. A Matter of Teaching (Styles): Active Learning and Student Identities – Inside Higher Ed blog, March 29 2023 Retrieved from https://www.insidehighered.com/news/2023/04/05/what-know-about-active-learning-and-college-student-identities.

Fraser, N. 2005. Reframing justice in a globalizing world. *New Left Review*. https://newleftreview.org/issues/ii36/articles/nancy-fraser-reframing-justice-in-a-globalizing-world.

Freeman, S., Eddy, S.L., McDonough, M., Wenderoth, M.P. 2014. Active learning increases student performance in science, engineering and mathematics. PNAS, 111(23). Retrieved from https://doi.org/10.1073/pnas.1319030111.

Friere, P. (2007). *Pedagogy of the oppressed*. New York, NY: Continuum.

Gallo, C. 2020. Alan Alda's communication method offers a powerful tool to build trust in science. Forbes. http://www.forbes.com/sites/carminegallo/2020/12/20/alan-aldas-communication-method-offers-a-powerful-tool-to-build-trust-in-science.

Hill, G., and Wilkinson, A. 2014. INDIGEGOGY: A Transformative Indigenous Educational Process. *Canadian Social Work Review / Revue Canadienne de Service Social*, *31*(2), 175–193. Retrieved from: http://www.jstor.org/stable/43486320.

Jacobs, S.R. 2023. The Most Effective Approaches for Mentoring New Faculty. https://www.higheredjobs.com/Articles/articleDisplay.cfm?ID=3448&Title=The%20Most%20Effective%20Approaches%20for%20Mentoring%20New%20Faculty.

Jones, E. 1992. *Teaching adults: An active learning approach.* National Association for the Education of Young Children. Washington, DC.

Margolis, J., May-Varas, S., and Mead, T. 2022. "Educational Learning Theories: 3rd Edition". Education Open Textbooks. Retrieved from https://openoregon.pressbooks.pub/educationallearningtheories3rd/chapter/chapter-13-critical-pedagogy-2/McCandless, K. H. L. & Lipanowicz, H. 2022a. 1–2-4-All. *Liberating Structures.* https://www.liberatingstructures.com/1-1-2-4-all/.

McCandless, K. H. L. & Lipanowicz, H. 2022b. Conversation café. *Liberating Structures*. https://www.liberatingstructures.com/17-conversation-cafe/.

McCandless, K. H. L. & Lipanowicz, H. 2022c. Introduction. *Liberating Structures*. https://www.liberatingstructures.com.

McCandless, K. H. L. & Lipanowicz, H. 2022d. TRIZ. *Liberating Structures*. https://www.liberatingstructures.com/6-making-space-with-triz.

McCandless, K. H. L. & Lipanowicz, H. 2022e. Troika consulting. *Liberating Structures*. https://www.liberatingstructures.com/8-troika-consulting/.

McMurtrie, B. 2019. The Chronicle of Higher Education – Teaching newsletter March 21. Retrieved from https://www.chronicle.com/newsletter/teaching/2019-03-21.

MIT Teaching + Learning. No date. Lab blog: How active learning can improve equities in STEM. Retrieved from https://tll.mit.edu/how-active-learning-can-improve-inequities-in-stem/.

National Academies of Sciences, Engineering, and Medicine. 2017. Effective Mentoring in STEMM: Practice, Research, and Future Directions: Proceedings of a Workshop in Brief. Washington, DC: The National Academies Press. https://doi.org/10.17226/24815.

National Centre for Truth and Reconciliation. No date. Retrieved from https://nctr.ca/.

Nguyen, K.A., Borrego, M., Finelli, C.J. 2021. Instructor strategies to aid implementation of active learning: a systematic literature review. *IJ STEM Ed* 8, 9 (2021). Retrieved from https://doi.org/10.1186/s40594-021-00270-7.

Oldham, T. M. 2017. *The impact of a cohort-based learning model on student success within vocational technical certificates at a community college (Doctoral dissertation, Northeastern University)*. Retrieved from https://repository.library.northeastern.edu/files/neu:cj82pw09w/fulltext.pdf.

Parker, P. 2018. *The art of gathering: How we meet and why it matters*. New York, NY: Riverhead Books.

Prince, M. & Reimer, M. 2017. Understanding student resistance to active learning – *The Teaching Professor.* Retrieved from https://www.teachingprofessor.com/topics/teaching-strategies/active-learning/student-resistance-active-learning/.

Quinn, J., Burtis, M., Jhangiani, S., Denial, C.J. 2022. *Designing for care*. Creative Commons Attribution Non-Commercial. Retrieved from https://pressbooks.pub/designingforcare/.

Reimer, M. 2015. More evidence that active l earning trumps lecturing – June 3 *Faculty Focus.* Retrieved from https://www.facultyfocus.com/articles/blended-flipped-learning/more-evidence-that-active-learning-trum.

Reuell, P. 2019. Lessons in learning. The Harvard Gazette, September 4. Retrieved from https://www.facultyfocus.com/articles/blended-flipped-learning/more-evidence-that-active-learning-trum.

Rheingold, H. 2005. *The new power of collaboration*. Retrieved from https://www.ted.com/talks/howard_rheingold_the_new_power_of_collaboration/transcript?language=ga.

Ribiero-Silva, E., Amorim, C., Aparacio-Herguedas, J.L., Batista, P. 2022. Trends in Active Learning in Higher Education and Students' Well-being: A literature review. *Frontiers in Psychology*, 18 April 2022 Vol. 13. Retrieved from https://www.frontiersin.org/articles/10.3389/fpsyg.2022.844236/full.

Roberts, P. 2019.. *Creating the conditions of change with systems and complexity thinking*. Pauline Roberts Change Practitioner Ltd.

Rose, M. 2005. *The Mind at Work: Valuing the intelligence of the America worker.* Penguin Books, New York, NY.

Taylor, H.C. 2019. *Examining student preparation for certification examinations: An exploratory case study*. Brock University, St. Catharines, ON Canada. Retrieved from https://dr.library.brocku.ca/handle/10464/14591.

Theobold, E.J., Hill, M.J., Freeman, S. 2020. Active learning narrows achievement gaps for underrepresented students in undergraduate science, technology, engineering, and math. PNAS, 117(12). Retrieved from https://doi.org/10.1073/pnas.1916903117.

Wenger, E. 1998. *Communities of Practice: A brief introduction*. Retrieved from https://scholarsbank.uoregon.edu/xmlui/bitstream/handle/1794/11736/A%20brief%20introduction%20to%20CoP.pdf.

Wenger, E., McDermott, R., & Snyder, W.M. 2002. *Cultivating communities of practice: A guide to managing knowledge*. Cambridge, MA: Harvard Review Press.

Williams, M., Uhing, K., Bennett, A., Voigt, M., Funk, R., Smith, W. M., & Donsig, A. 2022. Conceptualizations of active learning in departments engaged in instructional change efforts. *Active Learning in Higher Education*. Retrieved from https://doi.org/10.1177/14697874221131300.

APPENDIX A

What Are Classroom Assessment Techniques?

If you plan to implement a learning activity that is designed for students' active learning, classroom assessment techniques (CATs) can be a great way to assess what and how students have learned from the learning activity.

CATs are **quick, low-stakes methods used to gauge student understanding and knowledge**. Traditionally, they are designed to be administered in real time during a live class session, but they can also be conducted asynchronously with the help of technology (e.g., via CourseWorks Quiz or Discussion, Ed Discussion polling or discussion threads, Poll Everywhere, etc.).

Through CATs, you collect information about ongoing student learning so that you can provide students with feedback and guidance. With such support, students can become more self-directed learners who actively engage in their learning process.

Three Essential Elements of an Effective Classroom Assessment Technique

An effective CAT should have a clear purpose of assessment, should help students produce a concrete and assessable learning artifact, and should be followed up with a clear instructor response on how the results will impact student learning.

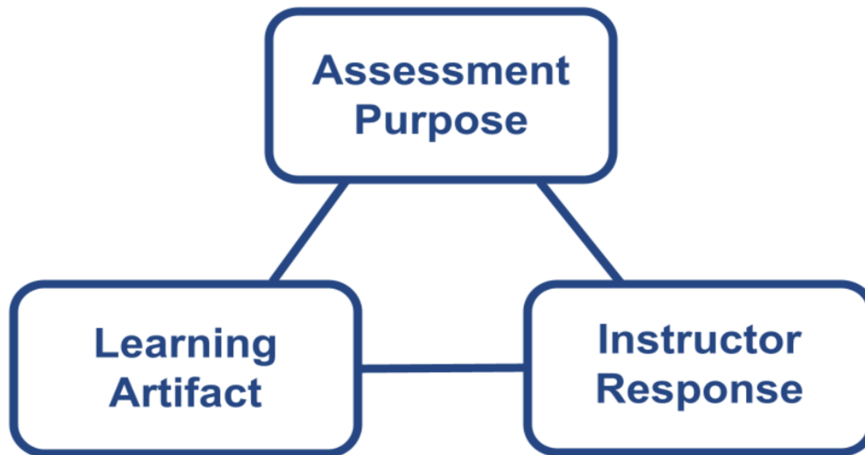

Image 1: Three essential elements of an effective classroom assessment technique

1. Clear assessment purpose

Within the overarching goal of collecting information about students' ongoing learning, what specific aspect of student learning do you want to assess? There can be many different purposes for assessing student learning. These might include assessing:

- how well students have recalled and understood new information that they have encountered in class;
- how well students have applied and integrated the given information they have learned as they engaged with course content;

- what meaningful connections students have made in their learning process as they reflected on their own learning.

2. Concrete and assessable learning artifact

You can ask students to produce concrete and assessable learning artifacts through an assignment or activity. These learning artifacts then become the basis of your assessment and corresponding feedback you provide to your students. Examples of such learning artifacts include:

- Poll results
- Written responses to pre-work such as watching video clips, reading selected texts, etc.
- Online discussion posts
- Case analysis
- Written or oral reflections

3. Instructor response to learning artifact data

Determine how you will interpret the data you collected and what you will do with the data. Some questions you might ask include:

- Why might some students have performed well in a given assignment or activity while others might not have performed as well?
- Based on the collected data, what changes or adjustments might you make in the way you structure your future lessons?
- What kind of feedback will you provide to your students?

After thinking about these questions, share the assessment results with your students, how you interpreted them, and what you will do in response. Your response can range from simply

sharing your observation and feedback with your students to restructuring upcoming lessons or assignments.

Angelo, T. A., & Cross, K. P. (1993). *Classroom assessment techniques: A handbook for college teachers* (2nd ed.). Jossey-Bass Publishers.

Barkley, E. F., & Major, C. H. (2015). *Learning assessment techniques: A handbook for college faculty*. John Wiley & Sons

APPENDIX B

Liberating Structures (LS) are designed to promote equitable, respectful collaboration, through the sequence of steps, distribution of timing and group size. Originally designed for in-person collaboration, most LS work well with virtual breakout rooms.

Three particular structures demonstrate Intentionally Equitable Hospitality (IEH) by respecting all voices equitably:

1. **1-2-4-all** (https://www.liberatingstructures.com/1-1-2-4-all/) is a dialogue version of "think-pair-share". In 1-2-4-all, a facilitator shares a prompt. Each participant thinks about it on their own first. This gives people who are more reflective, non-native speakers and marginalized groups a chance to think quietly without interruption and formulate their thoughts before sharing in the second stage of sharing with pairs. The next stage is discussion in a group of four before sharing with the larger group. When people test out their ideas in small groups, they all contribute and gain confidence while building on each others' ideas before sharing with the larger group. It ensures everyone participates, in contrast to most large group discussions, where certain individuals tend to dominate the discussion.

2. **Conversation Café** (https://www.liberatingstructures.com/17-conversation-cafe/) places participants in groups of 4-5 to respond to a prompt, giving micro-timing for individual participation within rounds (and thus it helps if someone volunteers to be the "timer"). In the first round, each person takes one minute to respond to the prompt, and in the second round, each person responds to other people's responses in one minute. Afterward, there is some open conversation time before wrapping up with key takeaways that a "volunteer note taker" writes on a shared document. This approach approximates equity by giving equal time, but of course, some people need time to think before speaking (and would benefit from 1-2-4-all). Others might need different amounts of time to express their ideas, either because they are non-native speakers, they take time to express complex ideas, or they just speak more slowly. IEH might ask people who speak more quickly to give up their time for others, give people time to write quietly in a shared space before sharing orally, explicitly give more time to marginalized groups (e.g. students in a student-faculty conversation), or let marginalized groups speak first.

3. **Troika Consulting** (https://www.liberatingstructures.com/8-troika-consulting/) is another LS that uses microtiming and introduces reciprocity well. Each group of 3 works together in 3 rounds, switching roles each round. Every person has the opportunity to act as a "client," asking for consultation from others, and the other two perform a quick

consultation using a specific format; all of this occurs within 10 minutes. This structure is surprising in how quickly, in the space of 10 minutes, one can receive useful ideas for a challenge one is facing, from people who may not be experts. The reciprocity of asking for help once and giving help twice in the same structure tends to also be satisfying for participants. This kind of structure done within faculty development workshops empowers faculty to set the agenda for what they want to discuss, to seek help from peers rather than faculty development experts, and when used in class, encourages students to seek help from colleagues not just look to teachers for help. It may help people to be given time to prepare for their “challenge” ahead of time before they go into groups since the time is usually limited and the process quick. It is important for facilitators to create a relaxed atmosphere before sending people into their groups so as not to create anxiety over the time limits.

For any LS, whether participants are strangers or not, it helps to dedicate time for people to introduce themselves or say hello before the activity. This alleviates the stress of working on the task, which could be difficult for some people to do without a warm-up.

A limitation of LS is that they require participants to “buy into” the participatory approach. If someone with lots of power decides not to follow the process, they may not end up making room for others to speak. Moreover, following a process that listens

and builds upon ideas of all voices in a one or two hour workshop does not mean this will automatically transfer into changing the culture in a work environment unless there is further intentionality.

Some ways of addressing this is to use the facilitator's power with what Priya Parker calls "generous authority". Parker writes: "A gathering run on generous authority is run with a strong, confident hand, but it is run selflessly, for the sake of others. Generous authority is imposing in a way that serves your guests. (Parker 2018, p. 81). Replace "gathering" with "learning space" and "guests" with "learners/participants". Generous authority" is using power to achieve outcomes that are generous, that are for others" (Parker 2018, p. 82). It involves protecting participants from others who may hijack the experience for their own agenda, temporarily equalizing participants despite hierarchies outside the space, and helping participants connect with one another (Parker, 2018).

In practice, when using LS, the facilitator or teacher needs to explain the process to everyone and perhaps make explicit ground rules around sharing space and having all voices heard. If the groups are extremely unfamiliar with such approaches, there may need to be some co-facilitators present with small groups or moving between groups to check in and help out. The facilitator is likely to succeed better if they use inclusive warm-up activities that allow participants to get to know one another and get into the mood with low-stakes activities and discussions that do not build on anyone's authority.

Some participants will resist unless they know the purpose of every step. It is sometimes worthwhile to stop and make time to discuss purpose before or after an activity, to help more participants stay on board.

The facilitator's generous authority involves reminding people of timing—its importance for equitable and productive dialogue—and designing who ends up in which group with thoughtfulness. For example, if the facilitator knows the audience well, they may avoid placing extremely dominant participants with extremely shy ones, unless they can have a co-facilitator to support equity in that group. The facilitator may decide to ensure marginalized groups are not tokenized in groups, e.g. never have one student among five faculty, but rather 2-3 students with two faculty. There also needs to be a safe way for a participant to report issues or seek help from the facilitator at any point. Finally, participants unwilling to try these ways of doing things may choose to "pass" but not be "counted" among participants, possibly observing, but indicating clearly so facilitators don't count them among active group members in something like Troika. It is important to recognize that people who resist these approaches may come from all walks of life: they may be very powerful people unwilling to give up on hierarchy, or they may be marginalized groups unwilling to make themselves vulnerable. It is important to remind ourselves of the purpose of a gathering, invite the right combination of people first, and design the groupings and the flow of the experience in ways that help us meet the purpose; it is also important to remind ourselves these decisions can be really complex (Parker, 2018).

APPENDIX C

The following questions and ideas have been developed from conversations with the InTeRN team, students, and professionals playing adjacent roles within UCN. They are shared here as a resource for others considering implementing a program modelled on InTeRN.

Who needs to be involved?

1. Are roles driven by the concepts underpinning InTeRN or are they emergent to respond to changed in the environment or students' changing needs.
   The implication of this is that academic leaders and instructors need to be able to deal with the ambiguity that comes along with introducing something new. This means constant communication, trust to share mistakes or uncertainties and knowing that the process of correcting course is ongoing.

How can relationships be nurtured?

1. How can an environment be created with provides deep relationships between instructors and students, and students/students?
2. How is this nurtured and maintained for the life of a cohort?
3. What do instructors need to help them feel comfortable developing relationships with students that respect professional and personal boundaries, and a level of comfort?

4. What are the conditions that support the creation of an instructor's psychological commitment to students? Some examples include:

    - Get faculty involved earlier with students e.g. at the student selection stage if that is part of the enrolment process
    - Plan an orientation before class
        - One of the students mentioned how important it was to have a first day of the program which allowed people to get to know each other, become familiar with the structure of InTeRN, and generally become comfortable with being in a classroom setting
    - Provision of 'outside of the classroom' experiences
        - Several students mentioned the value of the chainsaw use and maintenance and safety-related courses as "refreshing" and "useful survival skills in a Northern community"
    - Cohort structure
        - This is one of the InteRN model's greatest strengths:
            - Students consistently commented on the fact that they have a community, do things as a group, have each other's backs, have more friends, don't leave anyone behind

        - The emotional bonding of students to each other, and to their instructors has kept individuals in the program as seen in excerpts from student interviews

Are there best practices related to the replication of InTeRN? In conversation with both the project lead and the director of Institutional Planning and Analysis, we began to move away from the idea of 'best practices' which can lead to a checklist approach rather than a careful program plan that is right for a specific context. An alternative to 'best practices' is to identify critical elements and a framework that can be used.

Some of the following elements of this framework have been mentioned in the literature review and include:

- *Contextual knowledge*
    - Observation on-site
        - What's available in terms of space, instructional capacity, and cultural capital?
        - What's already happening in terms of attitudes to innovation, flexible systems and processes, and senior leadership support?

- *Readiness*
    - Are students ready for a program with strong emphasis on technical skills
        - Are instructors prepared for students with a wide range of skills and backgrounds?
    - Is the post-secondary institution ready for this model
        - Registration processes
        - Instructor support and training e.g. Teaching for Learning certification, mentoring
        - Access to counselling
        - Attitudes to and provision of 'wrap around' supports (e.g. housing, dependent care, transportation)
    - What are the values of the institution/entity/host and how are people kept accountable to these values e.g. If a value is that students will have mastered a specific set of skills, do instructors have the appropriate expertise to support this outcome? Does the teaching/learning environment support the outcome in terms of equipment, space and access to learning support outside of class time?
    - Does the host entity (post-secondary institution, non-profit, industry partner) have resources to navigate a change management strategy?

- *Relationships*
    - Are there a variety of ways to support instructors creating and sustaining a psychological investment in their students?
        - One of the observations that has come out of the interviews is that it is vital for the instructional team to have opportunities to share experiences, understand each other's working styles, and to see themselves as a team with a shared purpose. It is important to recognize that this is not typical of many post-secondary settings nor of how many instructors see themselves.