A Community-University Approach to Substance Abuse Prevention

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Abstract

In response to high rates of substance abuse in their communities, members of the Maskwacis four Nations invited university researchers to partner in culturally adapting, implementing, and evaluating an evidence-based substance abuse and violence prevention program, the Life Skills Training program (Botvin & Griffin, 2014). This project used a community-based participatory research (Israel, Schulz, Parker, & Becker, 1998; Minkler & Wallerstein, 2003) approach, and was carried out by university and First Nation community partners. To evaluate the impact of the adapted program, students completed pre and post questionnaires, and community members participated in focus groups. The adapted Maskwacis Life Skills Training program was delivered in schools for three years. Students' knowledge increased significantly during program delivery, and strong support was documented from community members. This project demonstrates the impact that can be facilitated by culturally adapting and delivering a prevention program, and by forming a community-university partnership.

Introduction

The Maskwacis First Nations, located in central Alberta, Canada, include four communities: LouisBull, Montana, Samson, and Ermineskin. These neighboring Plains Cree Nations have a combined population of approximately 15,000 with roughly 53% of the population aged 17 or under (Grekul & Sanderson, 2011). The Nations are governed by independent chief and councils, and have separate education directors and schools.

National media attention has focused on high rates of crime and gang violence in Maskwacis, largely ignoring the rich and vibrant Cree culture that threads the four Nations together. In Maskwacis, Cree history, culture, and language are featured prominently in traditional community ceremonies and cultural events that regularly take place. Community Elders view their culture and language as a means to combat the social and public health problems that face Maskwacis community members as a result of the destructive impact of colonization, residential schools, and forced assimilation. Research evidence supports this perspective, demonstrating that a positive cultural identity can be a protective factor against substance abuse and violence for Indigenous children and youth (French, Kim, & Pillado, 2006; Gazis, Connor, & Ho, 2009; Kulis, Napoli, & Marsiglia, 2002).

Project Initiation

The current project stemmed from a previous pilot project led by a partnership between university researchers and Alexis Nakota Sioux Nation members (Baydala, Fletcher, Worrell, Kajner, Letendre, & Rasmussen, 2014). Alexis community members sought to address the root causes of fetal alcohol spectrum disorder, and invited university researchers to partner with them in working toward substance abuse prevention. This pilot project involved the cultural adaptation, delivery, and evaluation of a substance abuse and violence prevention program in the Alexis community. The Botvin Life Skills Training (LST) program (Botvin, Baker, Renick, Filazzola, & Botvin, 1984; Botvin & Griffin, 2014) was chosen for the project, based on the results of a literature review that identified the program as having extensive, high-quality evidence to support its effectiveness, including multiple randomized control trials (National Registry of Evidence-based Programs and Practices, 2008). The three-year LST program has three levels, each including between 8 and 14 one-hour modules, and begins in either elementary or junior high school (see Table 1).

In 2010, a Maskwacis community member attended a presentation delivered by university researchers and Alexis community members. Following this presentation, Maskwacis community members invited university researchers to partner in introducing and adapting the LST program in their own community.

Table 1. Life Skills Training Levels

Level	Grade	Modules
Elementary School Program		
I	3	8
II	4	8 boosters
III	5	8 boosters
Junior High School Program		
I	6	8
II	7	8 boosters
III	8	8 boosters

Project Objectives

The partners identified three broad objectives for the current project: (1) culturally adapt the LST program to reflect the language, culture, and visual images of the Maskwacis community; (2) deliver the adapted program in Maskwacis schools; and (3) evaluate the impact of the adapted program. Given the established effectiveness of the LST program in reducing substance abuse and violence and increasing skills related to prevention, the aim of the current project was to deliver the culturally adapted program with fidelity to the original curriculum, and to document the impact of the adapted program.

Program Adaptations

Research has demonstrated the importance of programming for Indigenous children to reflect Indigenous worldviews and culture (Hare, 2011). Further, the cultural content of programming has been correlated with enhanced learning for Indigenous children (Tsethlikai & Rogoff, 2013). A recent policy report also declared that the representation of Indigenous cultures, languages, and traditions in school classrooms is essential for promoting the academic success of Canadian Indigenous children and youth (Toulouse, 2008). For minority populations in general, culturally adapted evidence-based programs have been shown to be more effective than standard programs (Kumpfer, Magalhaes, & Xie, 2012).

The LST program is a generic program proven highly effective with students from different geographic regions, socioeconomic circumstances, and racial-ethnic backgrounds (Botvin, Griffin, Diaz, & Ifill-Williams, 2001). However, because the LST program does not incorporate Cree values, language, culture, and identity, Maskwacis community members and Elders decided to culturally adapt the program. In keeping with the principles of knowledge to action research (Graham, Logan, Harrison, Straus, Tetroe, Caswell, & Robinson, 2006), adaptations to the LST program, and the corresponding creation of the Maskwacis Life Skills Training (MLST) program, began in the first year of the project.

During the first year, a six-member adaptation committee was formed consisting of Elders from each of the Maskwacis four Nations. This committee met weekly to complete adaptations to the first level of manuals. Adaptations to the second and third levels were completed by a rotating group of Elders. During adaptation meetings, over 30 different Elders from all four communities reviewed the original LST curriculum and provided recommendations for adaptations, consisting of Cree language and syllabics, Elders' teachings, and personal life stories. Following committee meetings, community and university partners worked together to adapt the manuals. Additionally, a community member created visual images for the manuals that reflected the Maskwacis culture and community. After adaptations were completed, Elders reviewed and provided approval for the adapted manuals.

Throughout the adaptation process, Elders were instrumental in ensuring that the adapted program accurately reflected the Cree culture. For example, one of the modules in the original LST curriculum focused on the harmful effects of tobacco use. However, Elders shared the importance of distinguishing between "poison tobacco" and "sacred tobacco" (i.e., kistemaw). In Maskwacis, kistemaw has important spiritual, cultural, and ceremonial purposes, such as being offered to communicate gratitude in advance of a request. Accordingly, the original LST module on smoking was adapted to focus on both the detrimental effects of poison tobacco as well as the healthy traditional use of kistemaw. Additionally, in order to reinforce program adaptations, MLST staff created digital stories to accompany each program module; these were guided and narrated by community Elders.

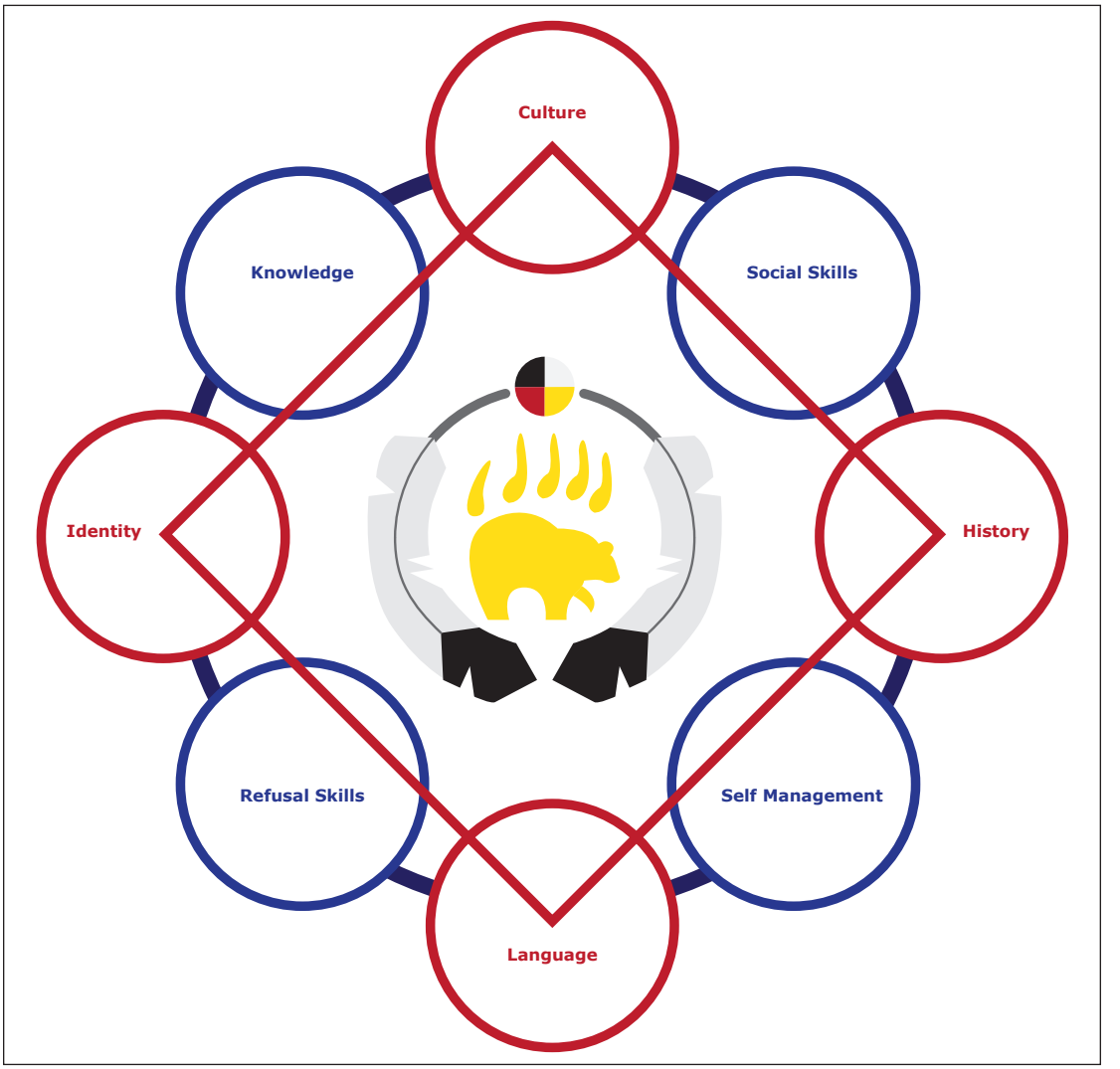
As Figure 1 shows, the adaptation process resulted in a program that incorporated both Western and Indigenous foundations of substance abuse and violence prevention. Rather than infusing Indigenous pillars of effective substance abuse prevention into an existing Western framework, the integrity of the lessons from each worldview was maintained.

Methods

Community-Based Participatory Research

This project used a community-based participatory research (CBPR) approach (Israel, Schulz, Parker, & Becker, 1998; Minkler & Wallerstein, 2003). With an emphasis on tangible benefits for

Figure 1. Model Incorporating Abuse and Violence Prevention Ideas from Both Western and Indigenous Traditions



communities, co-learning, equitable involvement, and respect for multiple forms of knowledge, CBPR can contribute to leveling power imbalances between community and university partners. Because Indigenous peoples are calling for research to be done with and for Indigenous communities rather than on Indigenous communities, CBPR has been recognized as particularly suitable for research involving Indigenous peoples (Castleden, Morgan, & Lamb, 2012; Koster, Baccar, & Lemelin, 2012; Smith,1999). The partners in this project applied the principles of CBPR in multiple ways. In particular, academic team members traveled to the community each week to engage in team meetings; meetings began with smudging and a prayer conducted in the local Cree language; a consensus-based decision-making model was followed with contributions from all team members; program evaluation was participatory, with input and guidance from all partners; and all reports and program materials were created collaboratively and approved by all partners. The project was approved by the research ethics board at the partner university and by the Maskwacis First Nations through a Band Council Resolution (the authority mechanism by which elected representatives in First Nation communities support and authorize an action).

Focus Groups

A total of 25 focus groups were held over the course of the three-year project with 42 school personnel, 102 students, 18 Elders, four parents, and 12 MLST facilitators. With the exception of student focus groups, which were held with classes of approximately 20 students, focus groups includ-

Table 2. Number of Students Who Completed Questionnaires

Year 1 Pre	Year 1 Post	Year 2 Pre	Year 2 Post	Year 3 Pre	Year 3 Post
216	189	103	96	79	67

ed between six and eight participants to enable effective information sharing (Kreuger & Casey, 2015). Focus groups took place at the end of each of the three program years, and were held separately with school personnel from each school, students from each school, Elders, parents, and facilitators. The length of focus groups was between one and two hours.

Using purposive sampling, university partners recruited MLST facilitators, school personnel, and students to participate in focus groups, while community partners recruited Elders and parents. Community and university partners worked together to gather consent for participation. Although university partners facilitated all focus groups, community partners were present during Elder focus groups to translate from Cree to English where necessary. University research team members who conducted focus groups had graduate-level training in research methods and focus group facilitation as well as specific experience working with Indigenous communities.

Different focus group guides were developed for school personnel, students, Elders, parents, and MLST facilitators. Questions focused on participants' experiences with the program adaptation and delivery, program impact on students, schools, and the community, unanticipated successes and challenges, and suggestions for improvement. Focus groups were conducted using a conversational style whereby participants were invited to speak to one another rather than directly to the facilitator, disagreements were encouraged, and participants were guided to express their thoughts in their own words and on their own terms (Kitzinger, 2005).

With participants' permission, focus groups were audio recorded and transcribed verbatim. Data were managed with ATLAS.ti software, and analyses were completed using content analysis. Data were grouped according to common content, and a preliminary coding scheme was developed. The coding scheme was refined during discussions among partners, and themes were subsequently identified. Transcripts and preliminary data analyses were presented to participants as a means of member checking.

Questionnaires

To evaluate learning of program content, questionnaires were distributed to students before and after each year of program delivery. The LST questionnaire (National Health Promotion Associates, 2011a; 2011b) and Piers-Harris Self-Concept Scale, Second Edition (Piers & Herzberg, 2002) were distributed to students. The wording of LST questionnaires was adjusted to accommodate students' reading levels. The elementary school version of the LST questionnaire included items regarding knowledge and attitudes toward smoking and drinking, as well as social and personal self-management skills. The junior high version of the LST questionnaire included similar content with an added focus on drug refusal skills. Additionally, LST questionnaires were adapted to include a cultural knowledge scale consisting of items created by community members and Elders. From the initial stages of the project, community partners emphasized the importance of using a strengths-based approach. Accordingly, questionnaire items that directly questioned frequency of substance use were eliminated. Instead, questionnaire items focused on constructs that are highly related to decreased substance use (i.e., knowledge, attitudes, self-management, refusal, and social skills).

Children who provided verbal assent and whose parents provided written consent for participation completed questionnaires before and after each year of program delivery (see Table 2). Where assent and/ or consent was not provided, children still received the MLST program but did not complete questionnaires.

A sequential longitudinal cohort design was used, and a linear mixed model was used to analyze the questionnaire data. The linear mixed model has advantages over repeated measures ANOVA for working with repeated measures data (Kreuger & Tian, 2004). Primarily, a linear mixed model gives structure to the error term by adding additional random-effect terms. This is important to properly account for error that can arise due to correlations between data points within the same subject (intra-subject correlation). Also, the linear mixed effects model can accommodate missing data points, and is less likely to lead to spurious results (both Type I and Type II error) with categorical data.

Results

Focus Groups

Focus group findings were grouped into three overarching themes, consisting of (i) program impact; (ii) factors that contributed to the program's success; and (iii) suggestions for improvement.

Program impact. Focus group participants described the impact of the MLST program in a number of areas. School impact was a particular area of focus. Participants described how the program allowed for traditional Elders' teachings to be brought in to the schools; that the program facilitated both student and teacher learning about Cree culture and the Maskwacis community; and how the program had resulted in positive classroom changes. As one teacher commented, "there's a more positive environment in the classroom... we're all communicating and we're talking and there's no yelling."

Student impact was also described. Participants not only discussed how students had demonstrated learning of program content; they also described how the program had contributed to elevating students' self-esteem, respectful attitudes, and listening skills. According to one student, "I learned to like myself for who I am." Similarly, as a school staff member stated, "I noticed their self-esteem was brought up...I noticed with their attitudes, they've been more respectful...to the class teacher and they've learned to respect themselves and their fellow peers..." Additionally, focus group participants reported that the MLST program had contributed to students' enhanced sense of pride in their identity. One teacher described how the program had "opened up a lot of doors for them to try and realize that being who they are is okay." Similarly, Elders reported an increase in youth attendance at cultural events in the community.

Focus group participants also described Elder impact. Elders recounted how the program had facilitated their own learning by reminding them about ancestral teachings shared by other Elders. Elders also felt that their participation in the program allowed them to contribute to their community in meaningful ways, resulting in positive } personal impact. As one Elder described, "it warmed my heart to make me feel wanted."

Similarly, facilitator impact was described. Facilitators felt that they had benefited from being immersed in cultural teachings, and described bringing traditional teachings into their own homes for their children and grandchildren to learn: "I had pride in what I was teaching. And for my personal life...I'm raising my grandson, and he gets to have a bulk of what I teach." Additionally, facilitators were impacted by the opportunity to build strong relationships with Elders, and also described feeling proud to make a difference in their community.

Factors contributing to program success. Among the multiple contributors to the MLST program's success, participants described the focus on cultural teachings as paramount. According to participants, it was critical for facilitators and Elders to teach students about the importance of respect, honoring the Creator, speaking Cree, learning Maskwacis history, and developing cultural pride. These teachings were fundamental to student engagement and overall program acceptability. One teacher described how,

> This content would not have worked had it not been presented culturally… we prayed before every class, we burned sweet grass…and the Elder led them in prayer and that just locked them in, they knew they were home once they did that.

In order to enrich the program's cultural content, Elder involvement was also critical. Facilitators felt that Elders' guidance and knowledge made program adaptations successful, while students, facilitators, and school personnel appreciated Elders' presence in the classroom. As one facilitator described, "it seems like the more we bring the Elders in, the more the children benefit."

Table 3. Mean Pre and Post Scores on LST Questionnaire Expressed as Percentages

Elementary Students			
Variable	Baseline	Year 3 Post	*p* value
Overall knowledge	52.9	67.4	<0.001
Anti-smoking knowledge	43.4	63.6	<0.001
Life skills knowledge	34.8	41.3	<0.001
Cultural knowledge	66.5	84.3	<0.001
Attitude	61.8	76.4	<0.001
Anti-smoking attitudes	60.2	75.6	<0.001
Anti-drinking attitudes	63.4	76.9	0.0024
Life skills	46.2	63.4	<0.001

Table 4. Mean Pre and Post Scores on LST Expressed as Percentages

Junior High Students			
Variable	Baseline	Year 3 Post	*p* value
Overall knowledge	55	65	<0.001
Anti-drinking knowledge	50	57	0.0226
Life skills knowledge	54	62	<0.001
Cultural knowledge	76	93	<0.001
Attitude	75	88	<0.001
Anti-smoking attitudes	76	90	<0.001
Anti-drinking attitudes	74	86	0.0301
Life skills	47	77	<0.001
Drug refusal skills	38	79	<0.001
Assertiveness skills	63	74	0.0153
Relaxation skills	63	73	0.0989
Self-control skills	50	67	0.0015

Additionally, focus group participants commended the program's community relevance. Because the program was adapted specifically for the Maskwacis community by Maskwacis Elders and community members, the program incorporated community relevant language and visual images as well as local knowledge. Additionally, because MLST facilitators were community members, they were familiar to many students; even where facilitators and students did not have pre-existing relationships, focus group participants reported that students could easily identify with facilitators from their own community.

Facilitator skills were also important for the program's success. Equipping facilitators with the necessary skills was a challenge in the first year of the program, with school personnel noting steady improvements in the second year of implementation, and providing exclusively positive feedback in the third year. The most important facilitator skills described by focus group participants were sincerity, confidence, the ability to engage students, the flexibility to accommodate students' learning and reading levels, and classroom management competence. One teacher noted that, "it was really great that [the facilitator] was so enthusiastic about the program…it got the kids engaged, and they could sense that she really cared."

Although it was important for facilitators to possess skills in leading students through program teachings and activities, teacher involvement was also described as essential. Facilitators noted that when teachers supported and contributed to MLST classes, students demonstrated increased engagement. It was helpful for teachers to assist with classroom management, to provide feedback to facilitators, and to supplement facilitators' teachings with their own knowledge and experience. By the third year of implementation, all facilitators and school personnel reported strong relationships.

Finally, it was important for the MLST program to demonstrate compatibility with the school's core curriculum. According to school personnel, the MLST program complemented students' regular social studies curriculum, and was a suitable replacement for regularly scheduled health classes. This simplified the task of fitting MLST classes into busy classroom schedules. Even when classroom schedules were hectic, however, teachers were willing to prioritize the program: "They're life skills, they're things that are literally going to get them into their adulthood, so maybe math can wait a little while."

Table 5. Total Pre and Post Scores on Piers-Harris Children's Self-Concept Scale-2 Expressed as Mean T Scores

Elementary Students			
Variable	Baseline	Year 3 Post	*p* value
Total score – elementary	47	50	0.5125
Total score – junior high	46	46	1.0000

Suggestions for improvement. Focus group participants made a number of suggestions for program improvement related to program delivery. In the first year of implementation, it was strongly suggested that facilitators take part in additional training to enhance their teaching and classroom management skills. This was addressed during the second and third years of implementation. In addition, focus group participants communicated that the program should be delivered for the full school year rather than for only four months of the year. One teacher felt that, "In order to really get the full benefit of the program, it needs to be reinforced all year long…so they are always reminded and supported."

Suggestions for improvement were also made related to program content. During the first year of implementation, a recommendation was made to increase the involvement of Elders in program delivery, to incorporate more cultural teachings, and to improve the readability of manuals. Each of these suggestions were addressed by setting a goal to bring Elders into each MLST class, and by adapting manuals to include stronger cultural elements and lower reading levels. Suggestions were also made to add modules related to grieving and gender roles, as well as to implement a parent component. Finally, focus group participants strongly suggested that the program include more hands-on activities: "When we would do activities, it was amazing, it was the most interaction I would get out of my kids all year."

Questionnaires

Questionnaire results are summarized below, with scores at baseline and at the final data collection point (i.e., year 3 post) depicted. Tables 3 and 4 show LST questionnaire scores for elementary and junior high students respectively. Analyses demonstrated statistically significant increases in scores for elementary students on all LST questionnaire scales. For elementary students, the Overall Knowledge scale included items relevant to anti-smoking knowledge (i.e., the harmful effects of smoking) and life skills knowledge (i.e., communication, decision-making, advertising, self-esteem, dealing with stress, and assertiveness). Items relevant to cultural content (e.g., Cree words

and cultural protocol) were included in the Cultural Knowledge scale. The Attitude scale included items relevant to anti-smoking and anti-drinking attitudes. Finally, the Life Skills scale included the same content as the life skills knowledge items, but inquired about behaviors related to these content areas rather than inquiring about knowledge.

Statistically significant differences between baseline and the end of year 3 were also demonstrated for junior high students on all LST questionnaire scales with the exception of relaxation skills. For junior high students, Overall Knowledge included anti-drinking knowledge and life skills knowledge. The Cultural Knowledge scale included items with the same content as that of the elementary questionnaire. Also similar to elementary students, the Attitude scale included anti-smoking and anti-drinking attitude content. Finally, the Life Skills scale included items relevant to drug refusal skills, assertiveness skills, relaxation skills, and self-control skills.

Table 5 depicts elementary and junior high students' scores for the Piers-Harris Children's Self-Concept Scale-2. There were no statistically significant differences between baseline and the end of year 3 for elementary or junior high students on the Piers-Harris-2.

Discussion

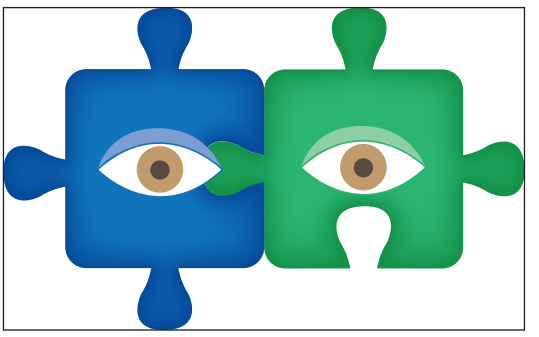
The current project demonstrates the meaningful impact that can be achieved by culturally adapting and delivering an evidence-based prevention program in a First Nations community. Quantitative results obtained from pre and post LST questionnaires showed significant positive increases in knowledge, skills, and attitudes between baseline and the end of year three. Findings reflect that students not only retained the knowledge communicated to them through the MLST program, but that students learned progressively more from the program each year. Further, because students' scores increased related to both original program content and additional cultural content, these results demonstrate that students improved their knowledge, skills, and attitudes related to substance abuse from both Euro-Western and Indigenous perspectives.

With regard to the Piers-Harris questionnaire, there were no statistically significant differences between scores at baseline and the end of year three. This may be due in part to students' scores being average at baseline (i.e., t scores approximated 50). It may not be realistic to expect mean self-concept scores to increase beyond an average range. Further, like other social-emotional measurement tools, the Piers-Harris-2 was validated using a U.S. sample of primarily Caucasian children (Piers & Herzberg, 2002), and its applicability to Indigenous children has not been established. Moving forward, it will be important to establish and utilize pre and post measurement tools that reflect the unique realities of Indigenous children.

In addition to pre and post questionnaires, focus groups were implemented to provide insight regarding program impact, factors contributing to program success, and suggestions for improvement. Conducting focus groups after each year of program delivery allowed for suggestions to be addressed continually, contributing to growing community support. Overall, focus group participants communicated strong support for and investment in the program as a promising means to address substance abuse and violence and to enhance traditional culture in Maskwacis. Focus groups provided information regarding the widespread impact of the program on schools, Elders, facilitators, and students.

Key to program impact was the utilization of a community-based participatory approach that incorporated Western and Indigenous pillars of knowledge. In this way, the MLST program honored the concept of "two-eyed seeing" (Figure 2), developed by Mi'kmaw Elders Albert and Mudena Marshall. "Two-eyed seeing" recognizes multiple diverse perspectives as valid without privileging one viewpoint over another. Enacting this principle also means acknowledging that multiple perspectives can lead to a richer understanding of health issues than one perspective alone. By acknowledging the value of Western and Indigenous substance abuse prevention models, our community-university partnership provided an example of how Indigenous and Western research paradigms can co-exist in a space that honors both worldviews. Focus groups revealed that this was critical to the success

Figure 2. "Two-Eyed Seeing" Perspectives



of the project. In particular, schools and community members identified the central importance of cultural adaptations to the program's acceptance by students, schools, and the wider community. Focus group participants also reported that adaptations elevated the program's potential to reach and engage students by presenting content in a way that was relevant to their community and cultural context. Similarly, adaptation of MLST questionnaires was important to honor community partners' perspectives regarding the importance of capturing the program's impact on students' cultural knowledge.

The current project also suggests that CBPR can act as a catalyst for community change. However, although pre and post questionnaires and focus groups provided the opportunity to obtain important community feedback on the MLST program, our research team identified a number of unanticipated and peripheral community impacts that were not accounted for by the use of our conventional evaluation methods. For example, community partners took on leadership roles in the program and formed a non-profit society to sustain the MLST program beyond the terms of our original research grant. In order to more fully understand these additional impacts, we supplemented the current evaluation methods with Outcome Mapping (Earl, Carden, & Smutylo, 2001; Tremblay, Baydala, Rabbit, Louis, & Ksay-yin, submitted for publication). Outcome Mapping is a tool that is sensitive to community change and development, and that emphasizes the significant process of culturally adapting and implementing programs in the context of a CBPR partnership.

Finally, a potential limitation of this study should be acknowledged; namely, the current study does not include a control group. In order to engage all four Nations in this project, it was necessary to deliver the MLST program in all Maskwacis schools. An intervention group and control group were initially defined; however, because these groups came from the same schools, it was not possible to maintain the integrity of the control group. In particular, students often switched back and forth between control group and intervention group classrooms, and teachers indicated that students were sharing MLST teachings with students in the control group. Consistent with our experience, recent literature indicates that treating complex community change initiatives as controlled experiments may be inappropriate, particularly in the context of CBPR (Kelly, 2010). In addition, we intentionally selected an evidence-based program with extensive research to support its effectiveness. As a result, it was not necessary to once again prove the effectiveness of the program; rather the aim of this project was to deliver the culturally adapted program with fidelity to the original curriculum, and to document the impact of the adapted program.

Conclusion

Maskwacis community members and Elders established a partnership with University of Alberta researchers to culturally adapt, implement, and evaluate an evidence-based substance abuse and violence prevention program. Students' overall knowledge increased significantly during the three years of program implementation, and strong support was documented from schools, Elders, students, and other community members. This project demonstrates the considerable impact that can be facilitated by culturally adapting and delivering a prevention program, and by forming and maintaining a strong community-university partnership.

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