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Urban Aboriginal Knowledge Network | Réseau de connaissances des Autochtones en milieu urbain
Prairie Research Centre

The Impact of Indigenous Knowledge in Science Education on Urban Aboriginal Students' Engagement and Attitudes toward Science: A Pilot Study

KEY FINDINGS

- Collaboration of teachers, Elders/Knowledge Keepers is an important element in increasing Urban Aboriginal student engagement in science education.
- Most Gr. 4/5 students shared very positive feelings about learning science and Indigenous knowledge, with some acknowledging the importance they placed on learning the knowledge of their ancestors;
- Feedback from teachers, elders, and knowledge keepers was overwhelmingly positive; and
- Other comments derived from these conversations included; experienced teachers taking a mentorship role in this work, especially when elders are knowledge keepers are scarce; exploring the use of multi-disciplinary units (rather than science-only) to reflect the holism of Indigenous knowledge; and the need for ongoing professional development opportunities.

INTRODUCTION

The goal of this research was to generate knowledge regarding process and designed to include Indigenous knowledge in science education and collect evidence on how respectfully including Indigenous knowledge in science education impacts urban Indigenous students' engagement and attitudes toward science. This study examined the impact of Indigenous knowledge (IK) in science education on urban Indigenous students' engagement with and attitudes toward science. This study focused on examining the needs of Indigenous learners to assist in pursuits of science careers and create capacity in economic development. This study was conducted in partnership with the University of Saskatchewan, Saskatoon Public Schools, Whitecap Dakota First Nation, and the Central Urban Métis Federation Inc. It involved two classes of mostly First Nations and Métis students (Grades 4/5 and 9) whose teachers were paired an elder or knowledge keeper to collaboratively develop and deliver a unit including IK. Evidence was also collected on the

effectiveness of collaborative work between teachers, elders, and knowledge keepers. Results include a notable increase in students' ability to connect science with Indigenous knowledge and recognition that learning IK is a new and valuable experience for many students that is worthy of further investigation. Lessons learned through this pilot have informed the design of a larger study including ten classes and teachers over a full year, providing professional development, and collecting data on achievement and identity.

PARTNERSHIPS

This study was conducted in partnership with the University of Saskatchewan, Saskatoon Public Schools, Whitecap Dakota First Nation, and the Central Urban Métis Federation Inc.

METHODOLOGY

This research honored Indigenous principles of relationality and holism and protocols were followed where appropriate (e.g., tobacco and gifts for Elders and knowledge keepers, food and smudging at community events). Relationship building between the teachers and Elders/knowledge keepers preceded unit development, and community partners provided guidance via an advisory committee.

<u>The research was conducted through the following phases below:</u>

1. Participant recruitment and unit topic selection;
2. Connecting Elders/knowledge keepers with teachers;
3. Unit development;
4. Obtaining consent and student pre-survey;
5. Teaching the unit, case study conversations, student observations, and student post-survey; and
6. Survey and case study analysis and debrief conversations.

Ethics approval was obtained from Saskatoon Public Schools and the University of Saskatchewan's Behavioral Research Ethics Board, and the research followed institutional and Indigenous protocols regarding anonymity, confidentiality, and intellectual property rights.

MAIN FINDINGS

Our research was successful in providing an opportunity to test the process of having teachers and Elders/knowledge keepers work collaboratively to include IK in a science unit and to test a number of data collection methods. While few significant findings were apparent from this small study, that was not its intent. The experience of conducting this pilot research will significantly inform the design of the larger follow up study. Further information can be found under the key findings section. A community gathering was held on June 23rd to share preliminary results from the research with teachers, students, parents, members of partner organizations, and other community members. A traditional meal was served to those in attendance and some student work was also showcased.

Preliminary results were also shared at the Canadian Association of Studies in Indigenous Education portion of the Canadian Social Sciences and Education annual conference in Calgary, AB, and the Canadian Indigenous and Native Studies Association's annual meeting in Regina, SK. Copies of this report will be distributed to partner organizations, and an academic publication on this work will also be published and shared with our partners.

CONCLUSION

This work will also significantly shape the design of a larger follow-up study that will include ten teachers and classes, involve four full days of professional development, and include impacts on student achievement and identity. With the assistance of a further grant from the Prairie Research Centre of the Urban Aboriginal Knowledge Network, we will be launching the next Phase of this research in September 2016. Through this research and conversations experienced teachers recognized the importance of taking a mentorship role in this work, especially when elders are knowledge keepers are scarce; exploring the use of multi-disciplinary units (rather than science-only) to reflect the holism of Indigenous knowledge; and the need for ongoing professional development opportunities.

For more information on this project visit:
http://uakn.org/research-project/the-impact-of-indigenous-knowledge-in-science-education/

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The Urban Aboriginal Knowledge Network, the UAKN, is a community driven research network focused on the Urban Aboriginal population in Canada. The UAKN establishes a national, interdisciplinary network involving universities, community, and government partners for research, scholarship and knowledge mobilization. For more information visit: www.uakn.org

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