



ONTARIO PUBLIC
SCHOOL BOARDS'
ASSOCIATION

Leading Education's Advocates

EFFECTIVE PRACTICES IN INDIGENOUS EDUCATION

School Board: *Renfrew County District School Board*

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Name of Program/Initiative/Strategy: *The Mathematics of Algonquin Beading and Looming*

Hyperlinks to Documents or Website(s) Describing this Program/Initiative/Strategy

[2015-16 Algonquin Math Newsletter](#)

[Ruth Beatty Article Exploring Indigenous Culture Through Math](#)

[OAME 2017 Team Presentation \(Kingston Conference\)](#)

Description of Program/Initiative/Strategy

The focus is on practices that excite, engage and increase student confidence, achievement and well-being. In the brief description please provide answers to the following questions: Where the program/initiative/strategy is delivered (school/board locations)? Who is responsible for delivering and monitoring the program/initiative/strategy? Who is the target audience? Are there any community partnerships involved? Are there any staffing or budget implications? Are there any special resources required? What are your indicators of success, etc.?

This dynamic program is a team effort between the Algonquins of Pikwakanagan (Christina Ruddy), Lakehead University (Ruth Beatty), the Ministry of Education (Danielle Blair), and the Renfrew County District School Board (Eganville & District Public School, Champlain Discovery Public School). These partners work together to explore how Indigenous perspectives situate themselves within the mathematics classroom. In particular, students are investigating the rich mathematical concepts embedded in loom-beading (Gr 3&6), medallion-making (Gr 7), and hairbone pipe bracelets (Gr 1). Creating designs for the loom supports higher-level mathematical thinking including spatial reasoning, algebraic reasoning, and proportional reasoning. Teachers monitor and assess the learning as they would with any other series of mathematical investigations by using a wide variety of assessment tools. Indicators of success included focus groups with students, where themes from the conversations are documented (increased engagement, pride, changes in perceptions, increase in community involvement). Staff use this data as a barometer to gauge the progress in achieving school goals and vision. Our success stems from the strong impact on both Indigenous and non-Indigenous students as they develop a deep appreciation for many rich mathematical and cultural concepts .

Staffing for this work includes regular classroom teachers, with some coordination of visits by the Board's Indigenous Education Teacher Lead. In addition, the schools have access to an Elder, who is on contract with the Board to support the cultural teachings. This work would not be possible without the support of Pikwakanagan Artist Christina Ruddy and other local Community Members, who honour and lead this work, and who continue to guide us on this journey of reconciliation.

What has been the impact on Student Learning?

This work continues to impact both student learning, and by extension staff learning. Understanding and acknowledging subtle values around knowledge (e.g., whose knowledge is of most worth?) within the educational system, along with our own personal beliefs and biases, allows for an open-to-learning stance. Teachers collaborate with Algonquin partners to create educational opportunities for students that are mathematically rigorous and culturally appropriate. Students are motivated to learn, persevere through the challenges inherent in many of the tasks, and are proud of their success. Assessment data indicates improvement in spatial reasoning, proportional thinking, and algebraic reasoning as they progress through the learning activities. Focus group data reveals that our Indigenous students feel a sense of pride in their identity as they create beadwork for their regalia. Non-Indigenous students have a newfound respect for their Indigenous peers as they realize how mathematically rich these tasks are, and how connected math and culture can become. All students appreciate the cultural teachings that accompany the lessons; an important goal for our school is to support the First Nation as they revitalize their language and culture, and this work achieves these goals.

This year, the work has been spreading in the board. Teachers from Champlain Discovery PS have begun to bead, and we feel so happy that they are beginning this learning journey of their own!