

**Indigenous**

## How beading is helping these students learn about mathematical concepts — and Indigenous culture

Ashley-Rose Machendagoos is an Ojibway artist and expert beader. Now, thanks to a new program in Ottawa, she's using Indigenous traditions to help kids learn more effectively

By **Haley Lewis**

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Ojibway artist Ashley-Rose Machendagoos leads a beading workshop at Queen Mary Street Public School, in Ottawa. (Haley Lewis)

OTTAWA — Excited cries of “Can we start now?” fill Kim Esselaar’s classroom on this Wednesday morning. The children — in grades 5 and 6 at Ottawa’s Queen Mary Street Public School — sit in a circle and welcome back Ashley-Rose Machendagoos.

Twice a week, the class plays host to Machendagoos, an Ojibway artist originally from Thunder Bay who teaches beading to students learning math. She’s just finished showing them how to use a loom. They’ve been working on bracelets for several weeks: the repeated rows and columns, the number of beads needed to create a pattern, help illustrate the concepts of area and perimeter.

Machendagoos, who works at a local Indigenous art shop and runs **Zhawenim Designs**, began partnering with the Ottawa Carleton District School Board (OCDSB) in February. “When I was initially approached about the partnership, I thought I would be going in for one workshop,” she says. “But it’s turned into this amazing much

longer and much bigger project.”

As Machendagoos leads the workshop, Esselaar circulates and talks to individual students. “So you see this repeated pattern?” she’ll ask, pushing the children to connect craft to curriculum. The students respond well. Fifth-grader Melissa Conners is already on her third bracelet. “It really helps me visualize the math I’m doing,” she says. “I love it — it makes math fun and easier to understand.”

Plus, she has a gift to give her dad.

The program’s aim is to highlight connections between math and a student’s daily life. “Just getting all these reluctant math learners to speak about math and then to realize how much math they’re doing is amazing,” says Esselaar.

David Wagner, a professor in the faculty of education at the University of New Brunswick, helped develop a program with Indigenous knowledge-keepers from across the Maritimes called **Show Me Your Math**. It encourages Indigenous students to explore the mathematics inherent in their communities and in cultural practices such as beadwork and drum- and paddle-making. He says programs like the OCDSB’s bring together knowledge-holders from different traditions. “What they’re doing here is cross-fertilizing each other’s traditions,” says Wagner. “Which is helpful for both mathematical and Indigenous knowledge: by doing beadwork with math, they’re raising each other’s knowledges up.”

Esselaar says beading can make mathematical concepts easier for students to understand and communicate. This is especially useful for the students in her class whose first language isn’t English. “Before, they were reluctant to speak or explain math terms,” says Esselaar. “But now, it’s like, ‘I made this. This is what I did, and now I can tell you about it.’”

Esselaar believes that having Machendagoos in the classroom is about more than just helping her students learn math: they’re also able to immerse themselves in Indigenous culture outside of history class. And Esselaar says the project has helped her, too. “It’s taken me, as an educator to another level when it comes to not just math, and not just learning about Indigenous culture, but learning about myself,” she says. “This entire project has made me a better teacher.”

This sort of curriculum is part of a broader educational objective: integrating Indigenous education into public schools has been a priority ever since the release of the Truth and Reconciliation Commission’s **94 Calls to Action**. “Children have the most open minds,” says Machendagoos. “We can expose them and saturate them with this idea of being multicultural.”

Three years ago, the OCDSB hired Nancy Henry as the Indigenous-education instructional coach. She works on a variety of projects — including this one — which incorporate Indigenous practices into such subjects as art and English.

“We encourage teachers to infuse Indigenous perspectives in English via studying Indigenous-authored texts,” Henry says. “Books, films, picture books, websites, social-media campaigns, podcasts, and media texts.”

The OCDSB program was inspired by a multi-year study called “**First Nations & Métis Voices**.” Led by Ruth Beatty and Danielle Blair, the study was completed in collaboration with various schools and Indigenous communities across Ontario (much of the work was done with Pikwakanagan First Nation).

Machendagoos welcomes the inclusion of more Indigenous learning in the classroom. She says that, when she was younger, she wasn’t taught anything about her culture in school. “I think that any sort of exposure to Indigenous culture is a good thing in any setting,” she adds. “It should be a constant thing in their lives: This is the history of the land that you’re on. This is the history of the country that you’re in. And that should be well-known.”

Beading is “medicine,” Machendagoos says — and, for her, it’s been “life-changing.” She learned to bead as a child from her mother and is proud to share the knowledge with future generations. “All the kids are just so curious — they want to know everything and want to know how to do it perfectly,” says Machendagoos. “I hear my name, like, 50 times every 10 minutes, and I love that part. I love solving problems, and I love working with them.”

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