

Learning from the outdoor math project.

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Introducing the Presenters

- Tim – Nipissing – Math education, graduate studies, Editor OAME Gazette
- Alan – Lambton – Math & Physics Department Coordinator, Math educator

Presentation Organization

- We will explain a project that is oriented toward thinking about the nature of curricula.
- This will be done without attention to colleges, schools, or any other institutions.
- Then we will consider the implications of this for institutional curricula.

A map of the James Bay region in Ontario, Canada, showing various communities and geographical features. The map includes labels for several locations: Attawapiskat, Akimiski Island, Kashechewan, Fort Albany, Eastmain, Eastmain, Fort-Rupert, Nemiscau, Nemiscau, Onakawana, Ralston, Smoky Falls, Abitibi Canyon, Hearst, Opasatika, La Grande-1, Radisson, Sakami, Matagami, Waswanipi, and Desmaraisville. The map also shows the St. Lawrence River and the James Bay coastline. A search bar is visible in the top left corner, and the Google logo is in the bottom center.

Project Motivation

- Remote northern communities defy common math thinking.
- Fort Albany only has one gas station.
- There is one building with three stories.
- The winter road requires math thinking! Or does it?



↑	Route Transtaïga	270	
↑	Radisson	351	
	Camp Nemiscau	116	→
	Nemaska	118	→
	Camp Eastmain	183	→
	Chibougamau	424	→
	Camp Rupert	171	→

Matagami to Radisson is 625km. Can you get there with a tank of gas in a minivan?

In terms of remote areas.

- Basing math on human endeavors may be problematic in remote areas where there may be little development. Example may seem contrived or built on an agenda from elsewhere.
- So we need to find the math that is inherently there and perhaps we will also begin to realize the biases that are built into the curriculum.

One approach

- Many, but not all, northern communities are predominantly indigenous
- This suggests looking for, and developing, indigenous math that fits with the curriculum
- This is happening and examples exist, but, are there other options that may provide insight?
- Does math transcend culture? So, while there is a benefit to adopting culturally relevant examples does that solve the curricula problem?

Another Approach

- Take a team of people knowledgeable about math education to a remote area
- Have them identify opportunities that connect with teaching math – but in a broad sense (Not necessarily the existing curriculum.)
- Look at what emerges and see what the implications are.

Important

- Check presumptions and pedagogical baggage at the door.
- The question is what might be possible, you do not have to have a complete answer — just the inspiration.
- Pretend you are not allowed to use anything built by humans!

Take a moment

- Discuss the notion so far.
- Can you come up with an example math question that is strictly based on the natural environment?
- Can you come up with an example that is close?
- What challenges does this create?

Challenges We Had

- Getting out of our norms
- Requires inductive thinking
 - What can be done rather than what is done.
- It was slow
- Different environments induce different responses

Slides Omitted

- A series of slides were shown with photos from the endeavor. Please contact the presenters if there is something specific you would like.

Curriculum Implications?

- Curriculum as it emerges from nature is not the same as curriculum as it emerges in urban environments
- This implies that curriculum is dependent on the context for prior learning — but not just the prior curriculum, also context when learning.
- Research approach should not be over interpreted — considers a completely nature-based upraising.

Curriculum Implication

- Developing connection to context early will support transition between high school curriculum and skill based curriculum.

College Implications?

- Students need a curriculum that they connect with.
- But, they are headed into skill-oriented careers.
- Need transition from high school curriculum to the skills orientation in a manner that they connect with.