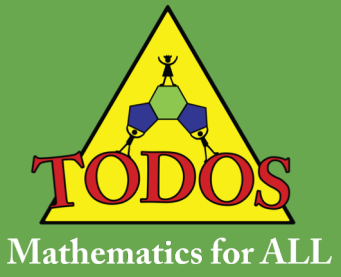
Indigenous Perspectives on Rehumanizing Mathematics Teaching and Learning



Welcome and Introduction

Florence Glanfield, President, TODOS: Mathematics for ALL

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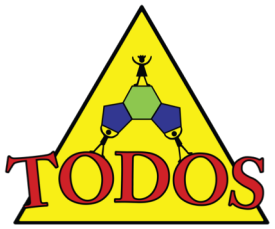
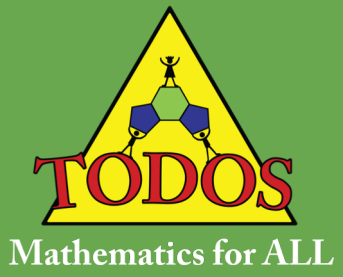


https://www.todos-math.org/



Gratitude

I acknowledge that I am visiting, and we are meeting on, the ancestral lands of the Nacotchtank (or Anacostans).

The District of Columbia shares borders with Maryland and Virginia, and connects with lands along the Anacostia and Potomac Rivers. These river systems and current national parks are where the Piscataway, Pamunkey, the Nentego (Nanichoke), Mattaponi, Chickahominy, Monacan, and the Powhatan cultures thrived. According to the National Park Service, the region “was rich in natural resources and supported the local native people.” Forty years after the arrival of the Europeans, only a quarter of the original occupants remained. (adapted from the Association of Research Libraries).

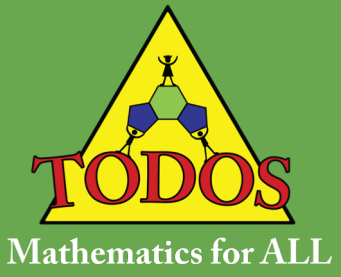
Invitation.....to express gratitude

- To consider, ancestors, human and non human, who've taught you....I invite you to share your gratitude with a neighbour.

TODOS

Mathematics for ALL

Indigenous Perspectives on Rehumanizing Mathematics Teaching and Learning



Beginning with a Story…

Mathematics as a cultural product (Bishop 1988)

Counting. The use of a systematic way to compare and order discrete phenomena. It may involve tallying, or using objects or string to record, or special number words or names.

Locating. Exploring one's spatial environment and conceptualising and symbolising that environment, with models, diagrams, drawings, words or other means.

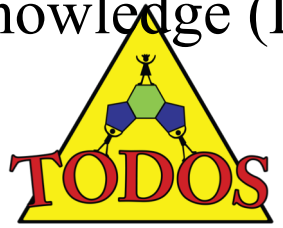
Measuring. Quantifying qualities for the purposes of comparison and ordering, using objects or tokens as measuring devices with associated units or 'measure-words'.

Designing. Creating a shape or design for an object or for any part of one's spatial environment.

Playing. Devising, and engaging in, games and pastimes, with more or less formalised rules that all players must abide by.

Explaining. Finding ways to account for the existence of phenomena, be they religious, animistic or scientific.

Ethnomathematics is rooted in anthropological traditions as the study of cultures and the practices within cultures. More recent explorations in this field attempt to establish a more inclusive field of interaction between types of knowledge. This involves considerations of practice, values and worldviews that have of the broadest possible field of interaction between different types of knowledge (D'Ambrosio, 2000).



Exploring Mathematical Ideas Within Cultures & Communities

- Many wonderful examples can be found for exploration of mathematical ideas within Indigenous peoples / cultures:
  - Claudette Englom-Bradley's work with beadwork & article Seeing Mathematics with Indian Eyes

Exploring Mathematical Ideas Within Cultures

- Ron Eglash's work (Culturally Situated Design Tools, http://csdt.rpi.edu/) and links to the work of others (e.g. Jim Barta's work)
- Ruth Beatty's (Ontario) work, First Nations & Métis Voices

Lipka et al.,

- Working for approximately 30 years with Yupik in Alaska
- Created a series of mathematics lessons (curricula) for use in schools “Mathematics in a Cultural Context”
- Square Making
- Circle to Square
- The curricula has been created with elders and representatives of the Yupik community
- Continue to learn together.

Lunney et al.

- Working in with the Mi’kmaw in Nova Scotia Canada for over 20 years
- Show Me Your Math
- Grade 4 Drum
- Counting
- Ongoing work with the community – teachers, Elders, children, & other community members

Nicol et. al.

- Cynthia Nicol's et. al. work with community of Haida Gwaii
- Nicol, C. & Jovanovich, J. (2011). *Tluuwaay 'Waadluxan Mathematical Adventures for Gina 'Waadluxan Tluu: The Everything Canoe.*
- Bringing together mathematics, culture, and place; connected to stories told by Elders.

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Indigenous Knowledges

- Emic modes of thought predominate (from within the group)
- Experiential interpretation of behaviour gives the subjective meaning of reality.
- In this sacred worldview, The Great Spirit, Our Creator, created land as living beings that are viewed as gifts.
- People are viewed as part of the land; their relationships with the land create a renewal of spirituality through exchanges.

From: Spirit Gifting (Ghostkeeper, 2007. p. 82)

- People live *with* the land for today and this moment.
- Spirituality, sharing, giving, and receiving are the essence.
- The subsistence pattern is supported through ceremony, ritual, and sacrifice.
- A gift is a concrete value of spiritual exchange.
- Holistic is making a living *with* the land.
- Ownership is collective stewardship.

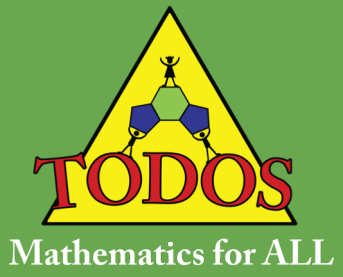
What messages do our students learn about what mathematics is from the way we teach mathematics?

TODOS
Mathematics for ALL

Indigenous Mathematicians

- This website seeks to put together all the known information about Indigenous Mathematicians. **We recognize that Native People have been doing mathematics (and hence have *been* mathematicians) for millennia.** However here, we use “mathematician” to mean someone formally trained in mathematics in the Western academic system and/or someone who practices mathematics in their profession. Thus we may potentially include those with non-terminal mathematics degrees.
- https://indigenousmathematicians.org

https://www.todos-math.org/



It was an Honour...

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