Exploring Cultural Games:
Mancala & Ethnomathematics
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What is ethnomathematics?

Ethnomathematics recognizes the relationship between education, culture, and politics. Ethnomathematics involves exposing students to diversity in mathematical thinking and alternative strategies to better understand and validate the multiple ways math is communicated across cultures. Bringing a multicultural perspective to the math classroom helps support children's identities and a connection to students' lived experiences (D'Ambrosio, 2001). Ethnomathematics lends itself to deep learning experiences across curricular areas.

The importance of ethnomathematics

- Allows students to pursue an enriched understanding of math and its applicability to the wider world
- Invites mathematics into cultural discourse
- Supports student identity, self-efficacy, and voice
- Strengthens creative problem-solving, and communicative thinking
- One element to a culturally responsive pedagogy (Zaslavsky, 1996, Brandt & Chernoff, 2014, D'Ambrosio, 2001).

Games and Math

One avenue to explore ethnomathematics is through the use of cultural games (Powell & Temple, 2001). This encourages deep learning through both cultural and mathematical lenses. Introducing cultural games is one method to approaching a multicultural math curriculum. This shift takes time to develop and requires risk and experimentation from the teacher.

The use of cultural games allows for multiple entry points making the learning more accessible. Using cultural games to teach math concepts exposes students to diverse practices and brings a new dimension to their learning. Games are used to extend and consolidate learning in authentic ways. The foundation of an ethnomathematic curriculum must be that math is made meaningful (Fouze & Amit, 2017). Games engage students while having them carry out complex mathematical thinking that they would typically not be motivated to do using traditional instructional methods (Zaslavsky, 1996)

Mancala

Mancala is an overarching term for a family of games that have been played in Africa and Asia for thousands of years and has a deep-rooted history. The game's rules, boards, and names differ slightly from region to region, but all follow similar strategy.

The dissemination of Mancala across Africa can be loosely attributed to the Bantu expansion. The spread of Islam and the transatlantic slave trade has seen variations pop up in Asia, India, Sri Lanka, Philippines, Malaysia, Indonesia, West Indies, and the Americas. (De la Cruz, Cage, & Lian, 2000).

Mancala Through Ethnomathematics

- Introduce game using its cultural context
- Allow students to identify math concepts through exploration; follow up with an explicit discussion of mathematical concepts
- Avoid essentializing BIPOC (Black Indigenous People of Colour) students as cultural gatekeepers
- Incorporate knowledge of current cultural contexts; challenge folkloric representations
- Use of cultural math games can be a departure for inquiry and cross-curricular integration of literacy and social studies

Mathematical Connections

The math being taught through Mancala is applicable across grades and levels with extensions from early years numeracy behaviours to advanced university level combinatorial game theory (de Voogt, et. al, 2018).

Subitizing
Skip counting
1-1 correspondence

Estimation
Problem-solving
Multiplication
Addition

Combinations
Permutations
Visualization

How to play

Mancala can be played with a variety of rules, set up, and therefore, strategies. This version is called *Oware (oh-war-ee)*, which is played by the Asante people of Ghana (Zaslavsky, 1996).

Goal: To be the player with the most beans in your pot

- 2 players; however audience plays an active role
- The game board consists of two 'pots' at the end and two rows of six holes, one row for each player There are four beans in each hole, to start. Play moves counter-clockwise
- P1 selects a hole on their side to pick up all of the beans from and sews one bean in each hole as they move around the board
- P2 does the same, starting on their side
- Beans are not dropped in the pots
- A player gets to "capture" beans when the last bean sewn in a hole on the opponent's side of the board makes a group of 2 or 3
- These are collected in their pot
- In addition, if any holes that were dropped in during the turn on the opponent's side have two or three beans, these may also be captured
- The game ends when there are only one or two beans left on the board, these go to the player whose side of the board they are in
- The player who has captured the most beans wins

Resources

Other Games:
- Little Goat Game (Sudan)
- 6 Men's Morris (England)
- Leopards and Tigers (Thailand)
- Kutepuchkunuputuk/Stick Guessing (Cree)

Literature:
- *Ethnomathematics:*
D'Ambrosio, U. (2001). What is ethnomathematics, and how can it help children in schools? Teaching Children Mathematics, 7(6)

- *Math & Cultural Games:*
Zaslavsky, C. (2003). More math games and activities from around the world. Chicago, IL: Chicago Review Press Incorporated.

- *Origins of Mancala:*
www.cambridge.org/core/journals/antiquity/article/mancala-at-the-pyramids-of-meroe

- *FNMI Connections:*
www.aboriginalperspectives.uregina.ca/games/