Presentation of Master's Project

"The Impact of 'Tipi Geometry', A Lesson Combining Elementary Geometry Concepts and Blackfeet Tipi Building, on Preservice K-8 Teachers"

By

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"Tipi Geometry" is a lesson combining elementary Geometry Concepts with Blackfeet Tipi Building. It was created in cooperation with Blackfeet elders with the intent for it to be used with students from all cultures, especially preservice (grades K- 8) teachers going into Montana schools.

Deloria and Wildcat (2001) stated, "The educational journey of the modern Indian people is one spanning two distinct value systems and worldviews." By incorporating the home culture of American Indian (and other minority) students into the school culture, all students are able to engage in the concepts (Brenner, 1998). The Indian Education for All (Juneau & Smoker Broaddus, 2006) component in Montana's curriculum encourages teachers to keep this in mind while planning, implementing and evaluating curricula.

This project examined the impact of "Tipi Geometry" as it fits into the area of culturally relevant mathematics. Culturally Relevant Teaching (CRT) acknowledges that students come to the classroom with unique backgrounds and enriches the curriculum with them. Pedagogy laid out by Gloria Ladson-Billings (1995) included three main aspects to teaching in a culturally relevant manner: (1) Academic Achievement; (2) Cultural Competency; and (3) Sociopolitical Knowledge. Frameworks laid out in Culturally Relevant Pedagogy (CRP) and the ideas of IEFA were used to create the lesson and evaluate its impact. It was guided by three research questions: (1) what is the impact of "Tipi Geometry" on preservice teachers' mathematical knowledge; (2) what is the impact of "Tipi Geometry" on preservice teachers' cultural knowledge; and (3) what is the impact of "Tipi Geometry" on preservice teachers' sociopolitical knowledge? Participants consisted of undergraduate, preservice K-8 teachers taking Mathematics for Elementary Teachers. Pre-Assessment and Post Assessment comparison showed improvement in students' mathematical knowledge, cultural knowledge, and sociopolitical knowledge.

Monday, May 12, 2014
1:10 pm in Math 108

Masters Committee
Dr. Ke Wu, Chair (Mathematical Sciences),
Dr. Jim Hirstein (Mathematical Sciences), Dr. Bharath Sriraman (Mathematical Sciences)