

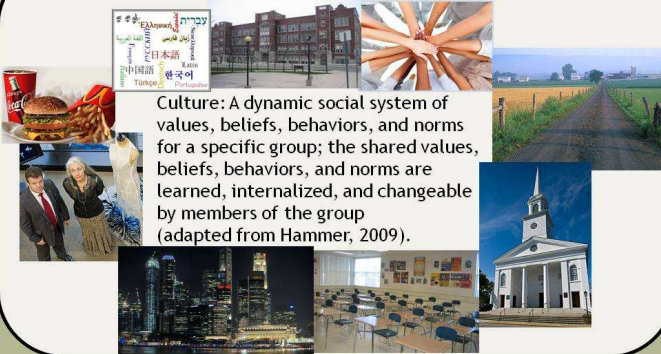
Definition of Effective Math Teaching

We believe effective math teaching involves teachers:

1. Establishing and maintaining a supportive classroom culture for all students to engage with and make sense of mathematics
2. Establishing appropriate and well-defined learning goals that capture the big ideas of mathematics and the ways of thinking about and doing mathematics
3. Monitoring via formative and summative assessments the progress students are making towards the learning goals
4. Designing and implementing instruction that supports the desired classroom culture, aligns with the learning goals, and is responsive to student thinking and learning

Effective math teaching results in appropriate growth of mathematical learning for all students.

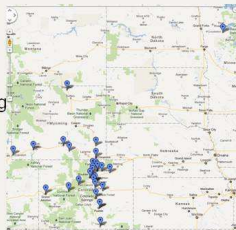
Definition of Culture



Culture: A dynamic social system of values, beliefs, behaviors, and norms for a specific group; the shared values, beliefs, behaviors, and norms are learned, internalized, and changeable by members of the group (adapted from Hammer, 2009).

About

The Math TLC is an integrated mathematics partnership between the University of Northern Colorado and the University of Wyoming and school districts in northern Colorado and Wyoming. Our goal is to maximize K-12 student understanding of mathematics by developing mathematics teachers and teacher leaders in Colorado and Wyoming with deep mathematics content knowledge that is culturally relevant and pedagogically effective.



The Math TLC consists of a Master's Program for secondary mathematics teachers, a Teacher Leadership Program for 4th-12th grade mathematics teachers, and a research program that focuses on studying the impacts of these programs on teachers and students. For more information visit www.mathtllc.org or contact Jodie Novak at jodie.novak@unco.edu.

Bibliography

- Hammer, M. R. (2009). Solving problems and resolving conflict using the intercultural conflict style model and inventory. In M. A. Moolan (Ed.), *Contemporary Leadership and Intercultural Competence* (pp. 219-232). Thousand Oaks, CA: Sage.
- Jackson, D. B. (2003). A special section on the achievement gap: Education reform as if student agency mattered: Academic microcultures and student identity. *Phi Delta Kappan*, 84(8), 579-586.

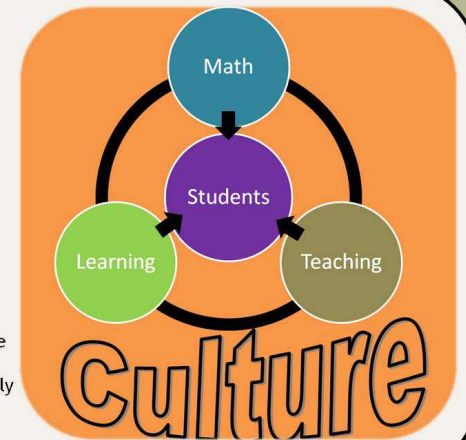
Effective Math Teaching

We used to think...

We used to think we could improve teachers' effectiveness by supporting our teachers to develop as culturally responsive teachers, to deepen their understanding of the content they teach and to increase their pedagogical content knowledge.

Now we think...

Now we think that understanding how culture interacts with mathematics, teaching and learning drives teachers' ability to use the deepened content knowledge and increased pedagogical content knowledge effectively with students.



Math

Mathematical
Content
Knowledge

PCK

Pedagogical
Content
Knowledge

CRT

Culturally
Responsive
Teaching

Encouraging Effective Math Teaching

Teacher Leadership Program

Exploring Teacher Leadership

- Build collaborative relationships
- Negotiate and manage conflict and change
- Design math learning goals, assessments, and rubrics

Working with Teachers

- Develop math coaching skills
- Design effective mathematics professional development

Examining the Role of Culture

- Explore the role of identity and agency in students' choices
- Understand student motivation learn mathematics

Deepening Mathematical Knowledge for Teaching

- Support development of PCK
- Explore teaching mathematics for understanding



Master's Program

Math

- Engage teachers in disciplinary ways of knowing and doing mathematics while explicitly connecting content to what they teach

Culture

- Examine:
- Students' lack of mathematical success
 - Tasks to determine if math is culture free
 - The role of culture in students' motivation

Action Research

- Adjust teaching based on student motivation surveys
- Study student understanding in focused problem solving situations

Pedagogy

- Study the impacts of a single lesson on student thinking
- Apply teaching and learning frameworks to teacher practice

