

## **Math as a Cultural Product, Practice, and Perspective**

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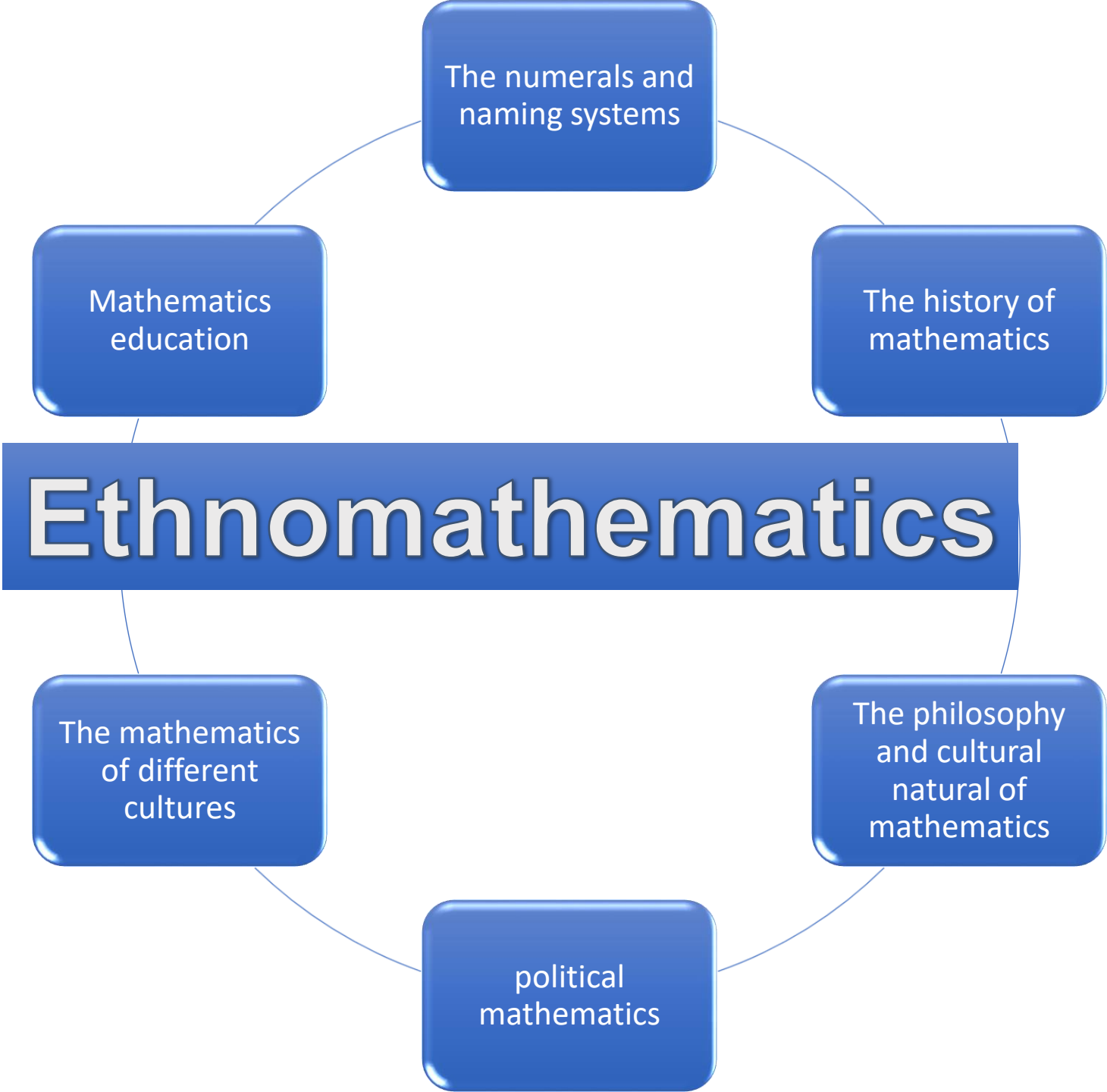
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**Math and Culture**

**US vs. China –  
Mathematical Practices**

**Implications**



## Journal of Mathematics and Culture



**International Service-Learning for Preservice Teachers:  
Strengthening Mathematical Literacy in West Africa**

**Relationships Between the Hopi Calendar and Measurement Concepts**

**The *Quinceañera* Event: Pre-service Teachers Implementing a Culturally Relevant Math  
Activity in a Hispanic Community**

**Public Good or Private Commodity?**

**Mathematics Education in Japan and Implications for the U.S.**

## My Focus Today



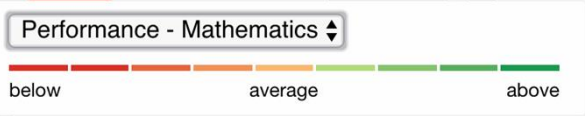
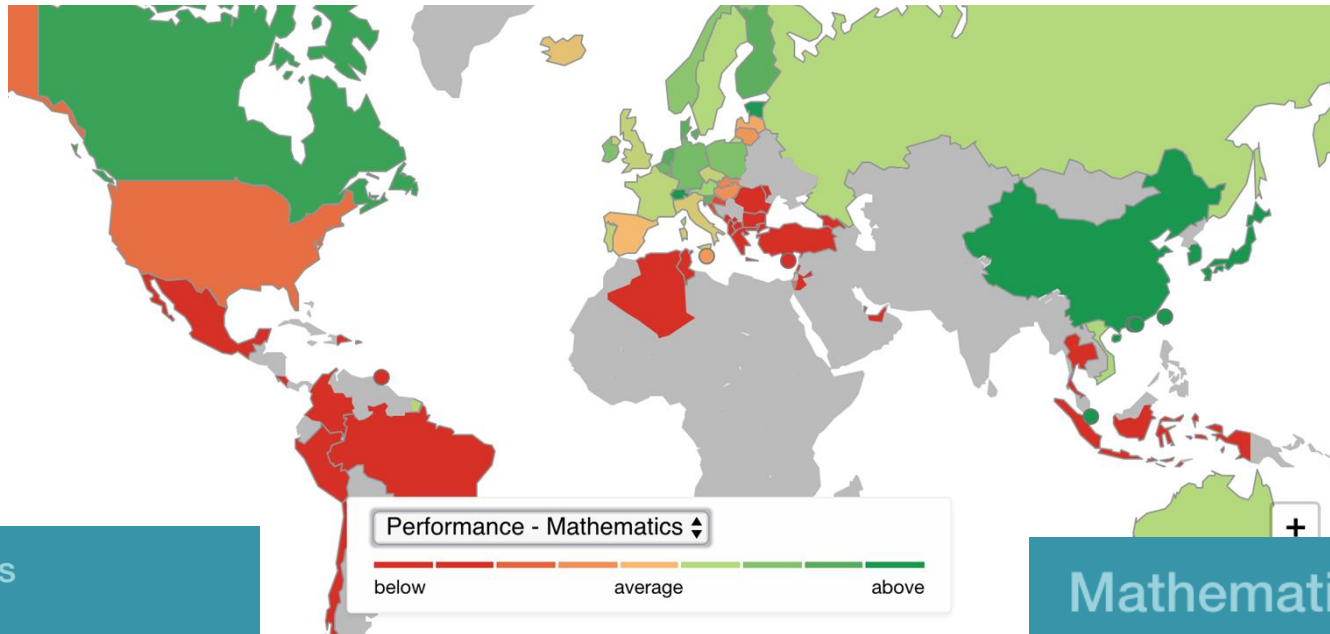
# Key Questions:

How is math taught and learned in the Chinese education system? What are the perceived strengths and weaknesses?

How is math taught and learned in the US education system? What are the perceived strengths and weaknesses?

How can US and China learn from each other?





**Mathematics**

MIN ———— ● + ———— MAX

Not as good as OECD average - stable since 2006

**Mathematics**

MIN ———— + ———— ● ———— MAX

viewed as “passive transmission” and “rote drilling” (Gu, Huang & Marton, 2004).



do not see repetition and understanding as separate as interlocking processes, complementary to but rather each other (Waktins & Biggs, 2001)

## MYTHS VS FACTS

construct a conceptual understanding of mathematical symbols and rules before they practice the rules (Li, 2006).



understand rather than to memorize. (Purdie, Hattie & Douglas, 1996)





# Strengths

## Standardization

- Curriculum and other instructional materials, including lesson plans
- Assessments
- Instructional procedure

## Mastery

- Teacher preparation – mastery of content
- Single subject devotion
- Students' proficiency in basic knowledge and skills

## Cultural factors

- Teacher's authority and social status
- Parents and teachers' beliefs and expectations
- Teacher evaluation, peer observation, lesson study



# Areas for Improvement

## Teaching Practice

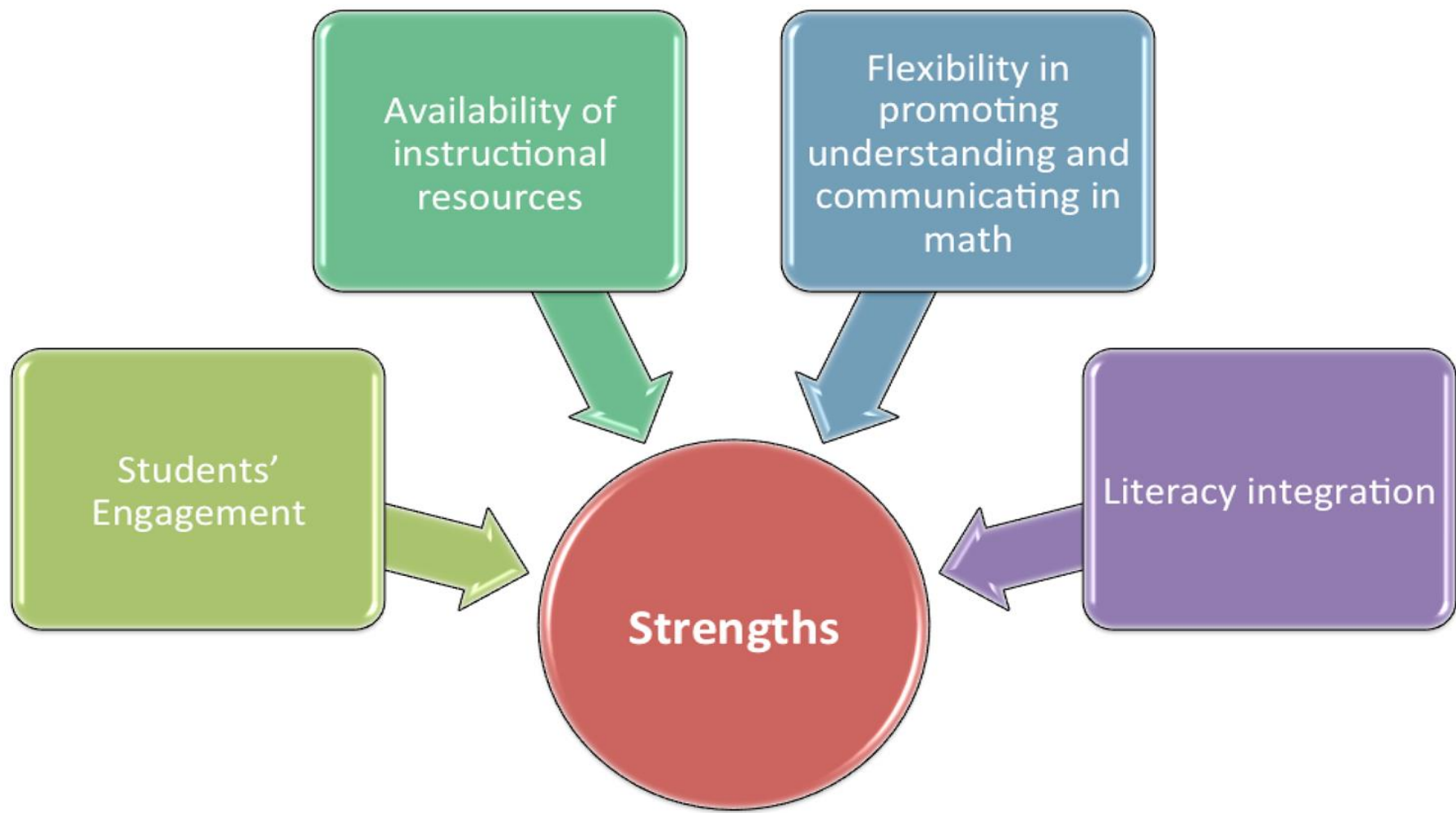
- Teacher-centered. Lack of students' active participation
- Lack of differentiated instruction
- Lack of effective use of manipulatives

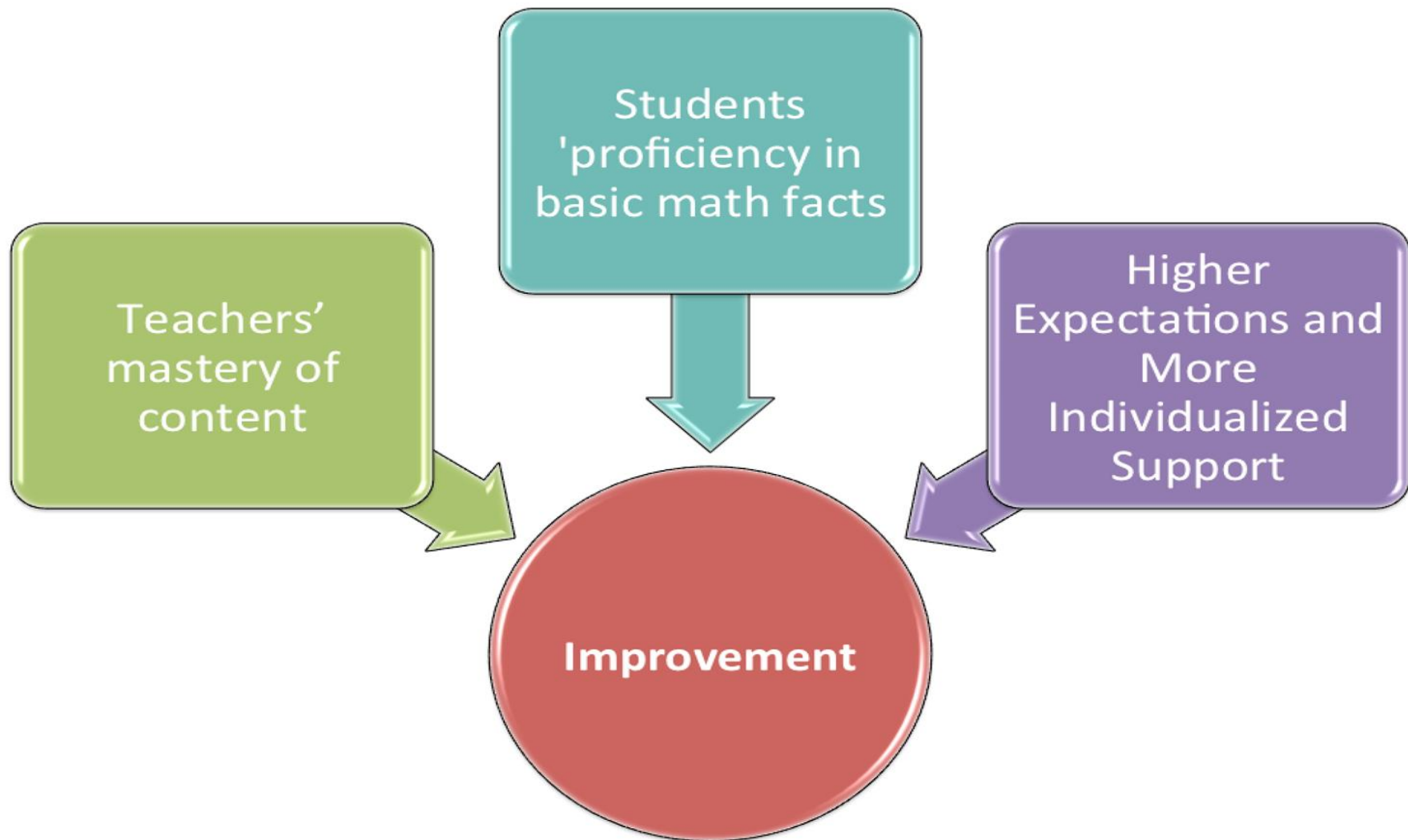
## Curriculum

- Lack of integration of literacy and math
- Emphasis on results rather than procedure

## Assessment

- Heavy emphasis on paper tests rather than application
- Lack of variety of assessment





**High  
expectation**

*Learning from  
Each Other!*

**Differentiation**

**Increase  
teachers'  
mastery  
of content**



**Procedure +  
results;  
Literacy  
integration**

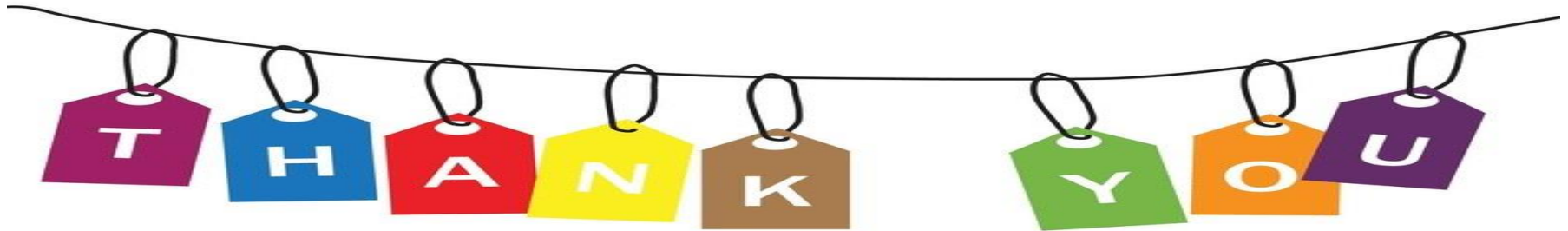
**De-privatize  
classroom;  
encourage peer  
observation**

**Varied  
assessments;  
more  
application**

## Con**clu**sion



- Math teaching and learning are strongly influenced by contextual and cultural factors.
- The Chinese and American approaches to math education are different, although there are similarities. Each has distinctive strengths and weaknesses.
- It is important to probe deeper into the perspectives and practices beneath the surface. Be open-minded to learn from each other.



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