

A Growing Need for Asian (American) Perspectives in Math Education

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Undergraduate mathematics features a significant presence of Asian¹ students, whether international or American (NCES). These students naturally bring their views on learning mathematics from their cultural experiences. However, researchers often adopt theories of learning and teaching that may not fully incorporate the students' viewpoints when developing instructional materials and analyzing student reasoning. This proposal aims to foreground Asian scholarship by reviewing existing literature in this regard and intends to open a venue for discussing ways the RUME community could begin addressing this issue.

Keywords: Asian perspectives, Cultural differences, Dispositions, Equity

Despite the prominence of Asian (American) students in STEM classrooms, and Leung's (2001) declaration that an awareness of Asian scholarship "should contribute in a more meaningful way to a sharing of best practices with other cultural traditions," studies rarely reflect the nuanced views they bring when learning mathematics. To address this issue, we focus on two aspects: 1) dispositions - exploring instances where Asian (American) students may uniquely experience mathematics, and 2) the Asian Classroom Paradox - examining the perspectives of math education researchers that render their common frameworks inadequate.

Dispositions.

We explore instances that may be interpreted differently among students. When teaching undergraduate students in the US classroom, we often encounter concerns expressed by those who struggle in mathematics, such as 'math is not my thing.' (Nisbett, 2003; Whang, 1994) The researchers observed that Asian students facing challenges in mathematics tend to perceive it as requiring additional effort, while others may view it as a lack of inherent mathematical ability. Such differences also extend to classroom behavior. (Ing & Victorino, 2016; Kim, 2002) We found literature that may help locate the roots of these dispositions among Asian (American) students, emphasizing memorization, practice, and a perception of education rooted in Confucian dialectics instead of Socratic dialectics. (Fan et al., 2021; Kitayama et al., 2003; Marton et. al, 2005; Wang & Cai, 2007)

Asian Classroom Paradox.

Next, we draw particular attention to studies concerning student-teacher dynamics in Asian mathematics classrooms. This paradox involves a disconnect between assumptions regarding Asian classroom environments and their associated mathematical performance. Western researchers have viewed the Asian classroom as less autonomous than the US classroom pointing out the prevalence of directive lectures from teachers as the primary mode of learning. However, recent studies (Zhou et al., 2012) claim that such a finding is only paradoxical because cultural differences are not accounted for. These studies found that a Confucian framework describes such lectures as student-centered and better discerns the relationship that Asian students have with authority figures like teachers. (Jiang et al., 2021; Li, 2016; Chan et al., 2017)

¹ Asian students include students from Southeast Asia (Philippines, Singapore, Malaysia etc...), South Asia (India, Pakistan, Nepal, etc...), and East Asia (Korea, Japan, China etc...). Due to the positionality of the authors, this proposal is mainly focused on East Asian scholarship.

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The Need for Asian Perspectives in RUME

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Introduction

"There exists an East Asian identity in mathematics education, and an awareness of that identity should contribute in a more meaningful way to a sharing of best practices with other cultural traditions" -Leung (2001)

Examples

These papers are examples of those which touch on their given construct, yet lack solid epistemological foundations by Western standards.

- Mimicry/Imitation (Zhou, J., Guo, W. (2016). Imitation in Undergraduate Teaching and Learning. *Journal of Effective Teaching*, 16(3), 5-27.)
- Practice (Wang, T., Cai, J. (2007). Chinese (Mainland) teachers' views of effective mathematics teaching and learning. *ZDM*, 39, 287-300.)
- Memorization (Marton, F., Wen, Q., Wong, K. C. (2005). 'Read a hundred times and the meaning will appear...'Changes in Chinese University students' views of the temporal structure of learning. *Higher Education*, 49, 291-318.)

Conclusion

The RUME community should incorporate more non-Western philosophy to enrich our learning theories.

Math education research from the West touches upon constructs or phenomena that is not well represented in the literature. Ideas from Asia can help fill in such theoretical gaps. Please join our working group if you are interested in such work.



Full Paper



Survey



Working Group

Additional Readings

- Ausman, M. C., Zhu, Q. (2023). Illuminating the APIDA Experience in Engineering Education: A Scoping Review. 2023 Collaborative Network for Computing and Engineering Diversity (CoNECD).
- Okura, K. (2021). There are no Asians in China: the racialization of Chinese international students in the United States. *Identities*, 28(2), 147-165.

Additional Information

Take our survey

- What are some things in math education that you feel are important but underrepresented in how math education research is done in the West?
- Briefly describe American cultural practices or attitudes regarding teaching and learning that initially surprised you.

Working Group Goals

- Host a Working Group at the next RUME.
- Get a talk submitted to PMENA and RUME.
- Draft at least two papers integrating the constructs on the left into existing, popular epistemological frameworks.