

# ENGAGING IN A CULTURALLY RELEVANT MATHEMATICS PEDAGOGY: THE JOURNEY OF A PRE-SERVICE TEACHER

Phillip Vandevalk 1<sup>a</sup>, Dr Kwesi Yaro 2<sup>b</sup>

Contact Author: Phillip Vandevalk ([vandeval@ualberta.ca](mailto:vandeval@ualberta.ca))

Department of Secondary Education, University of Alberta, Alberta, Edmonton T6G 2G5, Canada

## THEME:

Engaging students in STEM Education

## BACKGROUND AND AIMS

Students are often uninterested in how math is presented to them in a typical traditional classroom setting. With the first author being a beginning teacher in their first practicum, they wanted to make mathematics more relevant to their students. One avenue we responded to this was through the first author, researching and implementing a Culturally Relevant Mathematics Task (CRT). Drawn largely on Ladson-Billings', (1995) Culturally Relevant Pedagogy (CRP) with the key tenets of students developing academic success, cultural competence, and critical consciousness.

The first author's practicum took place in a Junior High School, and the CRT was implemented in a culturally diverse Grade Eight Math class. The task was designed around a student-led fundraising effort of selling home-made soap, which was connected to the mathematical concept of linear equations. After implementing the task, student work was collected, analyzed, and reflected upon. Narrative inquiry is employed as a methodology to share the first author's experiences of implementing the CRT math task in the classroom. Narrative Inquiry positions "humans as storytelling organisms who, individually and socially, lead storied lives" (Connelly & Clandinin, 1990, p. 2). We draw on the storytelling tradition of narrative inquiry to illuminate the lived experiences of a beginning teacher in implementing CRT math tasks and the journey through learning about CRP during a five-week teaching practicum.

## RESULTS AND CONCLUSIONS

Results indicate that students became more engaged not only in the mathematical concept of linear equations but also on critical social economic issues such as homelessness and providing for the less fortunate. This implies that student's funds of knowledge could potentially be used as precursors in igniting engagement with both mathematical and social/critical concepts. Hence, this narrative pushes for teachers to pay more attention to students' lived experiences and utilize students' prior experiences as funds of knowledge for creating contextualized and meaningful mathematics problems that connect to students' "real world" (Matthew, Jones & Parker, 2013, p.148).

The implementation of the CRT math task offered both challenges and opportunities; 1) the struggle to create a task that equally emphasized academic and cultural relevance. 2) time constraint to allow students to engage in-depth discussion of the math concepts and the relevant social connections. However, the experience of trying a new pedagogy (CRT) in a classroom afforded the first author the opportunity to envision how they may continually engage with the concepts of CRT in future practice.

## REFERENCES

- Connelly, F. M., & Clandinin, D. J. (1990). Stories of experience and narrative inquiry. *Educational Researcher*, 19(5), 2-14.
- Ladson-Billings, G. (1995). But that's just good teaching! The case for culturally relevant pedagogy. *Theory Into Practice*, 34(3), 159–165. <http://www.jstor.org/stable/1476635>
- Leonard, J., Martin, D. B., Matthews, L. E., Jones, S. M., & Parker, Y. A. (2013). Advancing a framework for culturally relevant cognitively demanding mathematics tasks. In *The brilliance of Black children in mathematics: Beyond the numbers and toward new discourse* (pp.123–150). Information Age Publishing, Inc.



STEM  
2022  
7th International STEM in Education Conference

## Engaging in a Culturally Relevant Mathematics Pedagogy; The Journey of a Pre-Service Teacher

Phillip Vandevalk 1<sup>a</sup>, Dr. Kwesi Yaro 2<sup>b</sup>, Department of Secondary Education, University of Alberta



UNIVERSITY OF  
ALBERTA

### Introduction

- Students are often disinterested in learning mathematics in the way it is traditionally taught.
- Positive students' engagement is a precursor to future academic success
- Drawing on students' community knowledge and everyday practices offer the potential for meaningful mathematics engagement. (Finne & Zimmer, 2012, pp.97-131)

### Methodology and The Task

- Narrative inquiry is employed as a methodology to share the first author's experiences of implementing the CRT math task in the classroom. Narrative Inquiry positions "humans as storytelling organisms who, individually and socially, lead storied lives" (Connelly & Clandinin, 1990, p. 2)
- The implemented task used questions that drew on both student's mathematical and cultural knowledge.

### Conclusion

- Using a task with a Culturally Relevant Pedagogy showed how students can simultaneously learn about mathematics while discussing critical social issues such as homelessness.
- Experience helped me envision how I might implement similar tasks in my future classes.

### Theoretical Framework

- Drawing on Ladson-Billings' (1995) culturally relevant pedagogy and its three key tenets; I designed a mathematics task that incorporated students initiated fundraising projects as a vehicle for students to learn and engage with the concepts of linear equations.

### Reflections and Takeaways

- Results indicate that this task had students engaged with not only the mathematical concepts of linear equations, but also with critical social issues such as: giving to homelessness shelters, donating to food banks, putting money into the lunch plans and buying school supplies for those less privileged.
- This process also offered challenges of implementing culturally relevant tasks such as: equally emphasizing academic and cultural relevance, and class schedules not allowing students to fully engage with the math concepts and the relevant social connections.

### References

- Connelly, F. M., & Clandinin, D. J. (1990). Stories of experience and narrative inquiry. *Educational researcher*, 19(5), 2-14.
- Finn, J. D., & Zimmer, K. S. (2012). Student engagement: What is it? Why does it matter? In *Handbook of Research on Student Engagement* (pp. 97–131). Springer US.
- Ladson-Billings, G. (1995). But That's Just Good Teaching! The Case for Culturally Relevant Pedagogy. *Theory Into Practice*, 34(3), 159–165. <http://www.jstor.org/stable/1476635>