Rubric for Creating Culturally Relevant Cognitively Demanding Mathematics Tasks
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Requires considerable cognitive effort in mathematics

- Task is mathematically rich and cognitively demanding. It requires considerable effort using multiple representations and strategies to develop deep understanding of mathematics. Solution strategy is non-obvious.
- Task content draws from connections to other relevant subjects, disciplines and concepts.

Emerging

Requires considerable cognitive effort and embedded in Cultural Inquiry

- The task is centered in real-world situations requiring students to inquire deeply about themselves, their communities, and the world about them.
- Requires student to draw from, use, and embrace community and cultural knowledge directly in developing strategy and solution process.
- Task content seeks to add to this knowledge through mathematical activity.

Developing

Requires considerable cognitive effort embedded in cultural inquiry and activity and targets Empowerment and Social Justice

- The task requires student to examine structure and assumptions of self, community, the world and its relations in consideration of solutions and strategy limits.
- Task requires students to examine conditions of opportunity, justice, suffering and inequity that arise in their communities, school and the world around them.
- Task utilizes mathematical sense-making and the solution processes to help students to develop informed, perspectives and take action on real-world issues.

Exemplary

The original version was first published in Matthews, L., Jones, S., & Parker, Y.A. (2013). Advancing a framework for culturally relevant, cognitively demanding mathematics tasks. In J. Leonard & D. Martin (Eds.), The brilliance of Black children in mathematics: Beyond the numbers and toward a new discourse.
Using the Rubric for Creating Culturally Relevant Mathematics Tasks Version 2

The new 2018 rubric is based on five years of feedback and reflective experience with the first version of the CRCD rubric first published in Matthews, Jones & Parker (2013). In the first version, the authors essentially ‘grafted’ a definition of CRCD based on the notion of higher-level cognitively demanding tasks and the underpinnings or Culturally Relevant Pedagogy (Ladson-Billings, 1994). In essence educators committed to culturally responsive teaching in mathematics tasks will create, encourage and use tasks that require considerable cognitive effort in mathematics, are embedded in meaningful cultural, self, and community inquiry; and deliberately target cultural, self, and community empowerment and social justice. For this, we have attempted to give greater clarity if having creators assess the richness of the mathematics as well as the depth of cultural and community knowledge students are required to access directly through the task. The new rubric also asks creators to assess the possible impact will expect completion of the task to have on students’ lives directly. Lastly, the new rubric asks creators to align the purposes of the task to social justice and empowerment. As we have seen in practice, a critical consciousness remains challenging for educators. That is, educators remain reluctant to critique the aims of mathematics and repurpose these aims for pursuits of justice. The rubric poses a progression that teachers move less critical (left) to more critical (right) orientations.

We use emerging to define to products of educators who believe that the basis on responsiveness lay in crafting tasks that challenge all students and that all students are capable of doing and succeeding in mathematics. These tasks reflect high quality features of problem solving and cognitive demand.

We use developing to define tasks, products and activities where educators use broadened definitions of mathematics as cultural activity and design task prompts, features and interactions that require students to also do cultural, community and self exploration and affirmation. While these tasks represent some progress in design, they are not yet culturally responsive because they do not “problematize” the status quo, nor offer critical inquiry into race, culture, inequality and social justice.

We use exemplary to define tasks, products and activities where educators used broadened definitions of mathematics, cultural inquiry and social justice for personal and community pursuits. These tasks feature student action, critical investigation, community affirmation and empowerment notions central to a culturally relevant/responsive pedagogy.

An assumption that one begins with the accepted notion of cognitively demanding math tasks and works to challenge, stretch and re-engineer these kinds of tasks so that they can aid not hinder culturally responsive teaching. It can also be seen as a starting point for remaking nonchallenging problems. The rubric suggests that the builder start with the question What is a “good” mathematics problem, a commonly asked question amongst practitioners. From there, the builder should be challenged to consider both the nature of cultural and community inquiry and activity as well as the critical purposes for which mathematics might be defined and used.