Engaging in CULTURALLY RELEVANT MATH TASKS

Engaging in

FOSTERING HOPE in the ELEMENTARY CLASSROOM

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CORWIN Mathematics

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RESPONDING WITH HOPE

The Hope Wheel was created by Dr. Lou Edward Matthews in 2019, with the intention of supporting educators and leaders with new ways of crafting lesson learning sessions to respond to racial and social injustice, as well as social crises. The Hope Wheel (Figure 4.5) is composed of six social response verbs: *Love*, *Protest*, *Restore*, *Invest*, *Inspire*, and *Create*. The verbs were drawn from themes based on the notion of "strong Black community," which includes ways to draw from and build on community wealth, community health and safety, community wisdom, community love, collective power, and justice (see Matthews, 2018).

In the same way that Bloom's taxonomy has provided verbs that teachers can use in their tasks to prompt students to think at various levels, the Hope Wheel provides teachers with verbs that can be used to plan for CRMTask experiences for their students.

The Hope Wheel helps us create what we see as "hope" standards—goals and objectives reimagined for justice and cultural inquiry. With these verb categories, we want teachers to extend the process of unpacking standards and using them to design task goals. Using this information, teachers can select, adapt, and modify standards and intentions as part of the creation process.
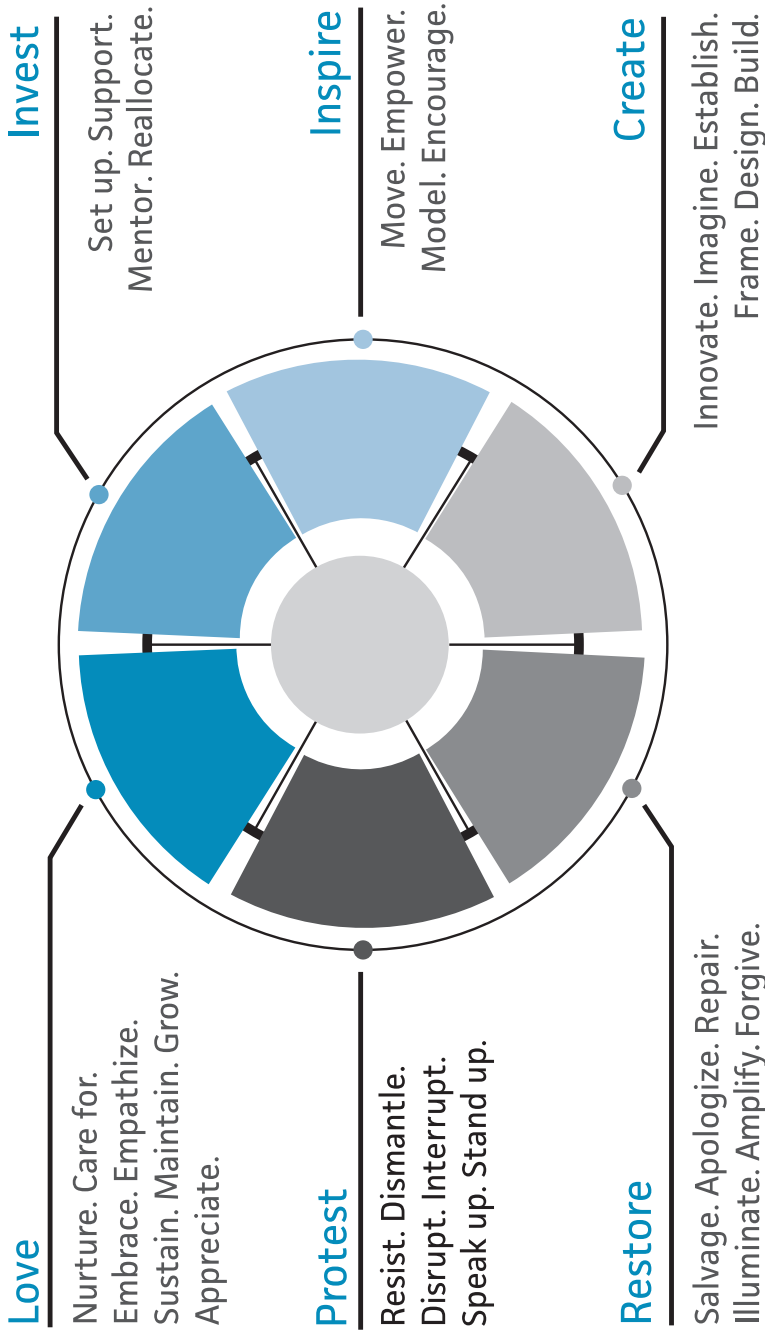
ADAPTING CONTENT STANDARDS WITH HOPE VERBS

One approach is to select an existing content standard and then use the Hope Wheel to sharpen the focus and build out a context for relevance and agency (remember, standards are often vague in this regard). Below is an example of this approach in action, using a fourth-grade state standard.

> *TEKS Grade 4.13:*
>
> *The student solves problems by collecting, organizing, displaying, and interpreting sets of data. The student is expected to interpret bar graphs.*

The standard above requires students to solve problems using the statistical thinking process. So much of the statistical thinking process involves using data to make decisions about resources. When we think of CRT, we envision how students in community can be empowered to use mathematics as they stand up for the rights of people. Using the Hope Wheel we can choose the *stand up* verb to sharpen this focus even further. Below is a "hope" standard we created by adapting the original:

FIGURE 4.5 ● The Hope Wheel

Love

Nurture. Care for. Embrace. Empathize. Sustain. Maintain. Grow. Appreciate.

Invest

Set up. Support. Mentor. Reallocate.

Inspire

Move. Empower. Model. Encourage.

Create

Innovate. Imagine. Establish. Frame. Design. Build.

Protest

Resist. Dismantle. Disrupt. Interrupt. Speak up. Stand up.

Restore

Salvage. Apologize. Repair. Illuminate. Amplify. Forgive.

Source: Created by Lou Matthews, 2020.

online resources ⟋   To view and download a full-color version of the Hope Wheel©, please visit www.loumatthews.live/hopewheel

We will stand up *for improved voter booth distribution in a local neighborhood of the students' choice, create a bar graph from the city's latest report on voting booth distribution, and prepare a presentation. In their presentation, students will demonstrate an analysis of the graph's content.*

As you can see, this example shows how cognitively demanding mathematics tasks can be framed so that they ask students to interact with their community in a meaningful way and empower them to take action (Protest). Also note in the example how we reframe the conversation as "We will" to denote the solidarity of the teacher with the students.

Let's take a look at adapting another content standard.

CCSS.MATH.CONTENT.1.NBT.B.3.

Compare two 2-digit numbers based on meanings of the tens and ones digits, recording the results of comparisons with the symbols >, =, and <.

This is a very important concept for first-grade students to learn. Students might use a variety of strategies to compare the numbers including using a 100-chart, 10 frames, number lines, and base 10 blocks, to name a few. Using the hope verb *Restore*, we can adapt the standard to provide opportunity for students to learn another important skill: how to forgive and restore harm done to classmates when things are done that are unfair.

Over three days, students will keep a class tally of fair and unfair episodes that happen in school (in class, at lunch and during recess, and/or specials). Each day the class will count their tally marks and write a number sentence to compare the fair versus unfair episodes. After three days, students will discuss how to forgive students or teachers who may have been unfair, and they will write a list of actions to restore the harm done to classmates.

CREATING TASK GOALS FROM HOPE VERBS

Another effective way to use the Hope Wheel is to create or adapt tasks directly. That is, rather than starting with a content standard as the foundation, teachers can follow a process that starts with the Hope Wheel itself: (1) choose a hope verb to set the intention of the task, (2) create a context that illuminates that verb, and (3) choose mathematics content to embed within this context. Note that aligning with a content standard is not always possible and may not always be a priority. We have seen teachers use the Wheel in ways that envision mathematics classroom environments beyond content. We love this!

Consider Vignette 8.

VIGNETTE 8

Mr. Shah asked students to take photos of mathematics in their homes and communities during the coronavirus pandemic. Students shared their photos, telling stories of their community artifact and how it connected to mathematics. Mr. Shah then created mathematics tasks using Hope Wheel verbs and connecting the story/artifact to Common Core Content Standards. The stories/artifacts allowed his students to learn about one another and the stories made them personally engaged in the tasks.

Taking the stories from his students, Mr. Shah used Hope Wheel verbs to create mathematics tasks. See the examples below:

Source: Tomwang112 /iStock.com

1. Aiden brought in a photo of his grandfather's vegetable garden. Mr. Shah chose the Hope Wheel verb *Love* because Aiden spoke with love when he told the class about how neat his grandfather kept the garden and how he liked helping his grandfather tend the garden. Mr. Shah created the following task:

   a. It is clear from the photo that there are five rows of tomato plants. Aiden says he counted about 30 tomato plants. How many tomato plants are in each row?

   b. How does a family garden contribute to the household?

c. In addition to growing tomatoes, Aiden's grandfather also has carrots in his garden. What favorite dish can Aiden and his grandfather cook with these vegetables?

d. The Common Core Content Standard Mr. Shah chose was 3.OA.A.4—Determine the unknown whole number in a multiplication or division equation relating three whole numbers.

2. Eva's photo of her fireplace at home made Mr. Shah think about the different shapes we see all around us. When Eva spoke about the mathematics of the fireplace, she said the bricks created a pattern. Mr. Shah thought about the *Create* verb to have his students use their own creativity to design a pattern of their choice.

The task: You are a designer and your neighbor asked you to create an interesting design for his new floor. If someone asked you to describe the design, what would you say are the attributes of your design?

Although Mr. Shah didn't readily find a Common Core Standard to "fit" this task, he knows that some students will undoubtedly choose geometric terms to describe the attributes of their design. He plans to use that vocabulary to jump-start a lesson on the following Common Core Standard on reasoning with shapes and their attributes.

CCSS.MATH.CONTENT.3.G.A.1.

Understand that shapes in different categories (e.g., rhombuses, rectangles, and others) may share attributes (e.g., having four sides), and that the shared attributes can define a larger category (e.g., quadrilaterals). Recognize rhombuses, rectangles, and squares as examples of quadrilaterals, and draw examples of quadrilaterals that do not belong to any of these subcategories.

Another example of using the Hope Wheel is to start with a common occurrence in school or the community, choose a verb from the Wheel, and create a mathematics task appropriate for your grade level. We started with the scenario of a student who never eats in the cafeteria because they don't serve food that she likes. We created the following task in response to Belén's problem using the verb *Protest*.

Belén is a student in Ms. Allen's class. The cafeteria at school doesn't serve any food she likes. She wants to find out what her classmates think, so she took a survey of their favorite foods in the cafeteria and tallied the following results shown in the table.

FOOD	TALLY	COUNT
Pizza	ⅢⅡ ⅢⅡ Ⅱ	
Spaghetti with sauce	Ⅱ	
Chicken nuggets	ⅢⅡ	
Hot dog	ⅢⅡ Ⅱ	
Pancakes with syrup	ⅢⅠ	
PB & J sandwich	Ⅱ	

a. Belén wants to use this survey to convince the school to switch one of the foods for her favorite food, a torta. A torta is a Mexican sandwich. Which food should the cafeteria switch for a torta? Explain why you would switch a torta with one food in the table.

b. Make a bar graph showing your new results. Use a title, labels, and a scale to count by ones.

No curriculum, standards, or wording will lead to the automatic creation of CRT without powerful new thinking about the nature of mathematics, who it is for, and what it can be used for. We believe that the Hope Wheel provides for such thinking. What should be taken from our use of the Hope Wheel and our deconstructing of content standards is that planning work for CRMTasks begins with careful and deliberate attention.

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