

# Learning & Teaching

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What's in a Name?: Collecting, Organizing, and Representing Data

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## Mission Statement

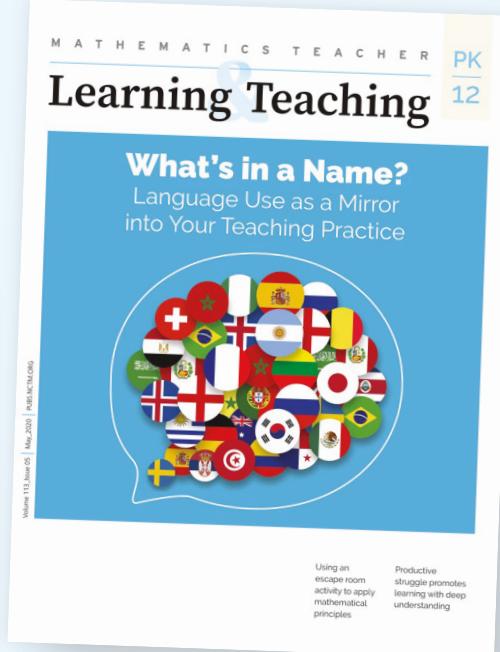
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# Construct It!

## What's in a Name? Collecting, Organizing, and Representing Data

Build a classroom community by building representations and visualizations of data related to students' names.

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Eva Thanheiser, Courtney Koestler, Amanda T. Sugimoto, and Mathew D. Felton-Koestler

**We started by reading** *The Name Jar* by Yangsook Choi, which tells the story of a child named Unhei who has moved from Korea to the US and is trying to decide which “English” name to use because her new classmates have difficulty pronouncing her name (Choi, 2001). Her classmates suggest various names connected to different meanings. In the end, Unhei decides to keep her Korean name. We used the book to discuss how names can be connected to identity. Some of the prompts we used included:

- What does identity mean (to you)?
- How is your name connected to you?
- Why do people sometimes decide to change their names?
- Why did Unhei decide to keep her name?

We closed the launch with a brainstorm on questions we could explore about our names and identities, and we decided to explore this question: How long are our first names?

### EXPLORING IDENTITY

#### Explore Part 1: Building Towers With Our Names

To collect data, we modeled how to write a name on a set of connecting cubes (Figure 1) and then had

students count the number of letters in their name and create their own name towers. In some cases, students questioned which name to use, especially if they had a nickname or used their middle name, or how to include hyphens or spaces. Deciding how to answer these questions is an important aspect of the data collection process, and it connects to the student’s identity (Social Justice Standards [SJS] 1 & 6; Learning for Justice, 2022). As a class, we decided that students should be able to have the power to determine which name to use and how to represent it, allowing for blank cubes (spaces) or hyphens as part of their name. This led to a discussion that towers could represent *letters* or *characters*. Some students were eager to be the shortest or longest name; others were excited about having the same length as their friends. Sometimes this resulted in students shifting which version of their name (and potentially their identity) they chose.

#### Explore Part 2: Collecting all Our Names

Students brought their name towers to the front of the class and lined them up in what we called a “skyline.” We also had them write their names on chart paper as a more permanent record (Figure 2). At this point, the names were purposefully unorganized. Each name was a data point, and each cube represented one letter/

character in a name. We asked the students, “What do you notice” and “What do you wonder?” Students pointed out that they had different lengths, some are spelled differently than they thought, and they identified the longest and shortest names. We examined how long the shortest and the longest names were and wondered about how many names there were for each length.

### Explore Part 3: Comparing Our Names

This part of the activity was carried out in small groups by providing each group with a set of towers for the whole class. To help students organize and interpret the

data, we asked them to record how many names there were for each length from 1 to 14 (or to the longest name). While it is possible to do this without organizing the data (see Figure 5), most groups organized the data by grouping towers of the same length together so that they were easier to count and keep track of. When rebuilding the skyline, they often built it from least (shortest) to greatest (tallest) (see Figures 3, 4, and 6). It was important to us that students could organize the data in a way that allowed them to develop an understanding of the data set and highlight the need for organization.

Groups shared their strategies, and as a class we discussed the difficulty of counting unorganized data sets. This is an important experience for students, as it provides the need to organize data to analyze it. One of the advantages of having the physical towers is that they can be physically moved to be organized and counted. Following this discussion, we created a more organized skyline (right side of Figure 7). Then, we discussed how it was easier to analyze the data in this new representation. For instance, it was easier to find how many names there are of each length, the most common length, the longest, and the shortest.

### Explore Part 4: Comparing Across Graphs

The first three parts of the activity focused on constructing and reading unorganized and organized skylines. We then introduced a new representation of the same data, as we discussed with students that data can

**Figure 1** “Eva” Written on Connecting Cubes




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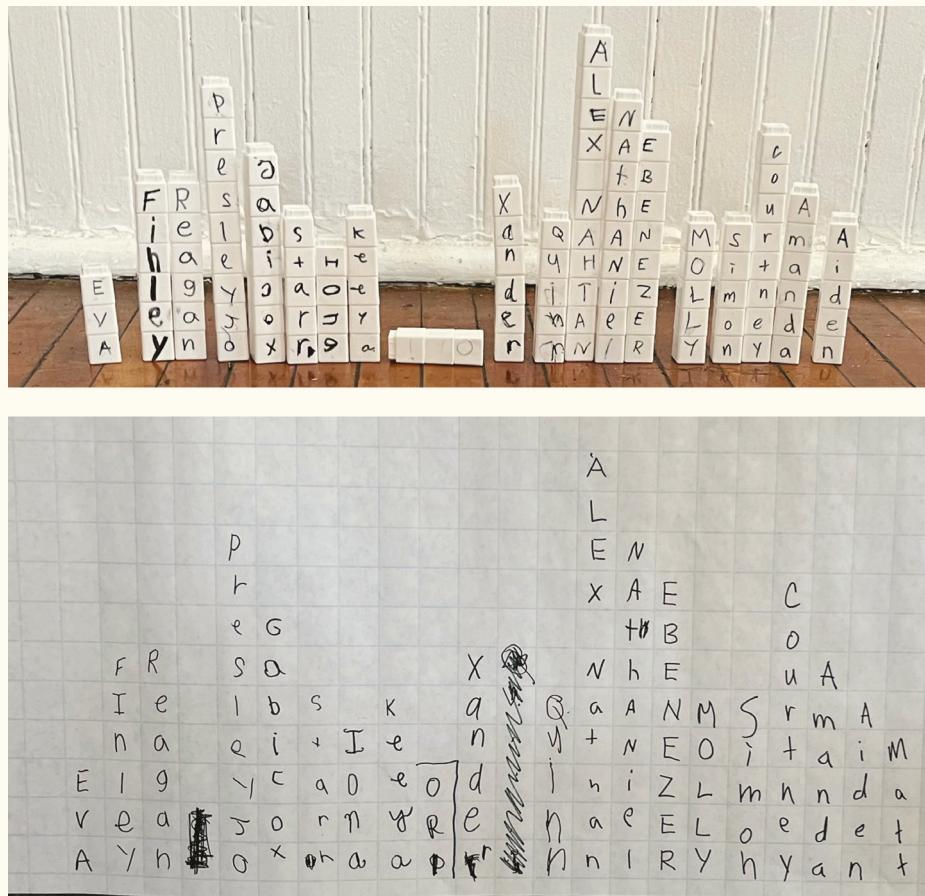
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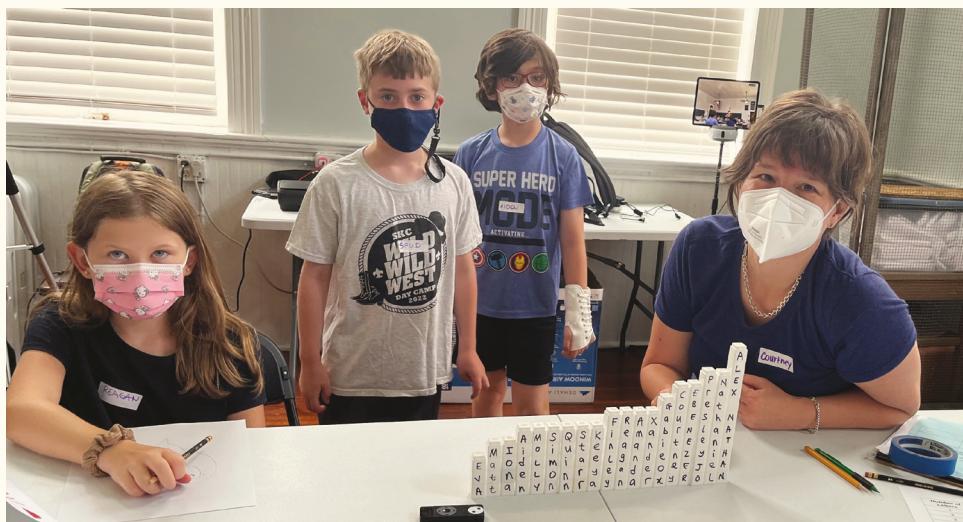
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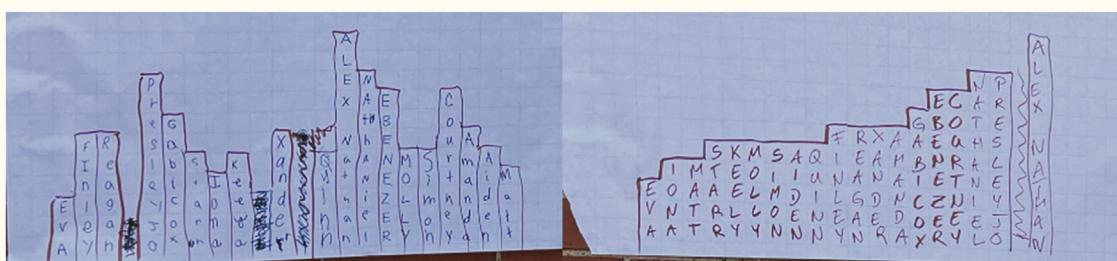


**Figure 2** Students' Name Towers as a Skyline on Chart Paper



**Figure 3** Group 1's Data



**Figure 4** Group 2's Data**Figure 5** Group 3's Data**Figure 6** Group 4's Data**Figure 7** Unorganized and Organized Name Graphs



be organized in different ways. We asked each person to write their name on a sticky note and put it on the bar graph according to how many letters/characters there were in their name (Figure 8). Next, we asked students to discuss the connections among the different representations (i.e., physical towers, skyline graph, organized skyline, and bar graph). We also talked about how each person's name showed the length with the towers, but the length was shown by the position of the sticky note in the bar graph. Some students noted that they were familiar with bar graphs and could easily read them, but they liked the skyline graphs because they could see the individual letters (or characters) in their names more clearly. We also discussed the range and shape of the data, and whether the results would be similar to those of other groups of children that they knew. Students also noticed that there would be no data with zero letters and wondered if there could be names with one letter, or if anyone knew people with really long names (such as those with 13 letters).

### LESSONS LEARNED

This lesson allowed students to discuss explicitly the importance of one's name and explore their identities

through names. In addition, this task called for students to represent real data about themselves in multiple ways and highlighted the need to organize data to answer questions about their names.

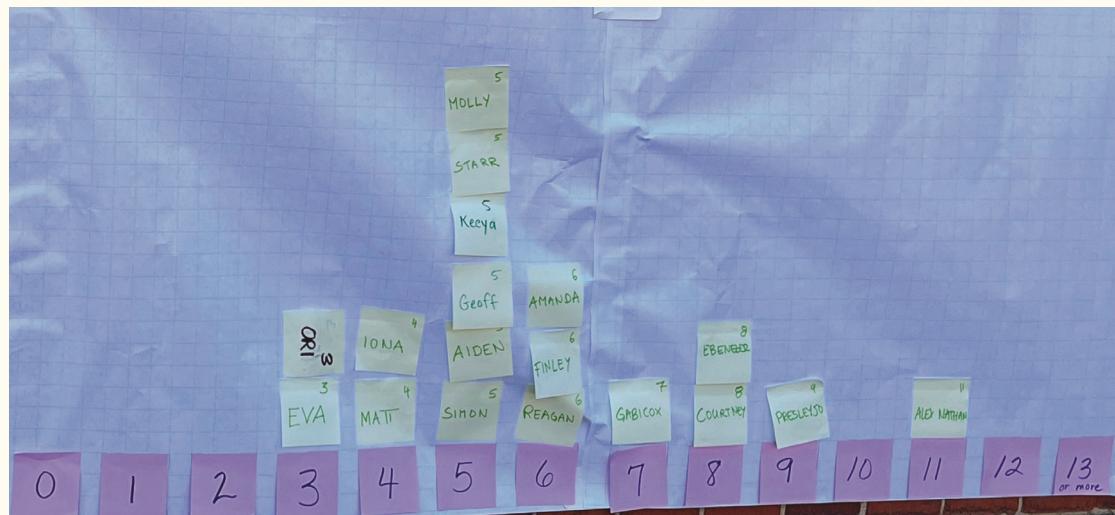
### ADAPTATIONS OF THIS TASK

We have adapted the task to have each group focus on data for their small group only, which has led to similar discussions. To engage students more deeply in the examination of names and their connection to identity, we plan to expand the task to analyze names from other countries, including Korea.

### SUMMARY

The goal of this task was to allow students to get to know each other's identities better by collecting and analyzing data about their names and exploring the connection between names and identities. As such, the tasks served as a "mirror" for students (Bishop, 1990) that allowed students to see themselves reflected in the math. The task also served as a "window" (Bishop, 1990) for students to learn about other cultures (such as Korean culture in this case) outside of their classroom. —

**Figure 8** Bar Graph of Name Length



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Name \_\_\_\_\_

## What's in a Name? Collecting, Organizing, and Representing Data

**Our Question of Interest:** What question are we answering?

**Collecting Data:** Use the white cubes to create a tower of your name (one letter = one cube). Look at everyone's name towers, write down one thing you notice and one thing you wonder about our name towers.

I notice...

I wonder...

**Organizing and Representing Data:** Create an organized representation of our class name data. This could be a table, graph, or anything that makes sense to you.

**Answering the Question:** Use your representation above to answer our question of interest below.