

# A Lesson Study on Data



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**Note:** A previous lesson study on data was published in the December TOMT. At the end of the article it was noted that “As the lesson study group brainstormed this lesson, we realized that we would not be able to introduce range. We wanted to make sure that we weren’t just teaching a process to be memorized, but rather providing a context that made sense to kids for using range.” This is an activity that we created (along with the help of a few other 2nd, 3rd, and 4th grade teachers) that explores the concept of range.

**Goal:** To have kids actively participate in mathematics.

**Question:** How can we come up with ways to show how data can be organized (grouped?)

**Grade level standards  
addressed by this activity:**

Determine the mode and range of a set of data.

Represent and interpret data using tally charts, pictographs, and bar graphs, including identifying the mode and range.

Draw conclusions and make predictions and inferences from tally charts, pictographs, or bar graphs.

**Materials Needed:** ♦Setting the Stage

Large sheets of butcher paper (1 per student)

Crayons or markers

♦Day 1

Rulers, meter sticks or centimeter measuring tapes

Measuring Bodies worksheets for each student

♦Day 2

Sticky Notes

Rulers, meter sticks or centimeter measuring tapes

♦Day 3

Chart paper to create Height Graph

Graphing Software

Writing paper for letters

## Setting the stage

Mr. Park’s 3/4 blend and my class are Buddy Classes this year. In the fall, he and I got together and matched our students up into groups of two or three. On a Buddy Day, I send half of my class down to his room to work with partners and he sends half of his kids to my room. Then, we have the mixed groups work together to complete a variety of projects, such as read together, do art projects, etc. This time we decided to do a math project. I wanted to try out the idea a group of teachers and I had brainstormed earlier in the fall as a follow-up to the Lesson Study on Data described in the December issue of TOMT. The objectives of this second lesson were to review concepts already presented and develop the concept and processes for determining the range of a set of data.

For a lead-in to this math lesson, we had the small groups or partners get together with large sheets of butcher paper. One child lay on the paper while the other traced around his or her buddy. Then they switched posi-

tions. After they were done tracing, they cut out their paper bodies and decorated them to look like themselves. Mr. Park gave the added assignment to his students that they should decorate their bodies with symbols that told more about the person. For example, if a student were on a soccer team, he or she could put a soccer ball on his or her shirt. The students worked on decorating their bodies over the next few days whenever they had free time.

## Introducing the Math Task

♦Day 1

The following week Mr. Park and I set another Buddy Time. We had the groups get together. They could choose a tape measure, ruler, or meter stick and use it to measure various lengths of their traced bodies. Then they recorded these various measures on the Measuring Bodies worksheet.

## ◆Day 2

Back with just my students in our classroom, I asked the students to write down their heights on sticky notes as recorded on the Measuring Bodies sheet and post them on the chalkboard. Next, I asked students to look at the data and tell me what they noticed.

One of my students immediately raised her hand and suggested rearranging the stickies so they were displayed in order from smallest number of centimeters to largest. I drew a line plot with chalk and then sorted them as suggested. Then I again asked the students to tell me what they noticed. A boy raised his hand and said that he thought something was wrong with our data set. He believed he was tallest in the class, but according to the arrangement of our data, there were several students taller. I asked the class what they thought we should do. A student suggested that the class should line up in order to check to see if the first boy was really tallest. When we had formed our line, students began to notice a lot of places where there were discrepancies. I asked the class why they thought this might have happened. One of them suggested that perhaps the measurements taken with their buddies were not accurate. She admitted they were having a lot of fun but might not have been really careful. Another student suggested that he and his buddy were having trouble deciding which side was centimeters and which was inches on the meter stick they had used. Another suggestion was that the tracing might not be the exact measurements a student really was. We decided we needed to re-measure for accuracy. I matched each student with a partner and they measured again. A student lay down on the carpet and the partner drew marks with chalk at the head and heel and then both students worked together to lay meter sticks from one chalk mark to the other. They recorded their revised heights on sticky notes of a different color than the color we had used to record heights previously. They brought up these new stickies to place on the line plot. We reviewed vocabulary terms such as data set, range, mode, and median.

## ◆Day 3

I gathered students around the video monitor we have mounted on the wall in our classroom. I loaded a spreadsheet program for display. As students called out their heights, I recorded them onto the spreadsheet and then used the Chart Making feature to create a bar graph. I showed students how to enter the smallest and the largest number in our range to set up the scale for the Y-axis. We discussed what was the same and dif-

ferent about this bar graph and the line plot that was still displayed on the chalkboard. Keeping the bar graph and line plot on display, I asked each student to write a letter to his or her buddy telling him or her what the student had learned about our class height data. Mr. Park decided to create a histogram on chart paper. On this histogram, each column represented a particular interval of heights. Then students had to determine in which interval their height belonged. Once this graphic representation was finished, he also followed up by having his students write notes to their buddies in my class. (See sample student letters on pages 16 and 17.)

## ◆Day 4

On the day we received the letters back from our buddies, we spent time sharing the contents of the letters. An interesting discussion ensued when we started comparing their data to ours. Kids noticed what a difference in range there was between our two classes and some conjectured why they thought Mr. Park's class was so much larger. At first my class thought it was because his class was older. Finally, one student noticed that her buddy stated that Mr. Park's range was much larger because of the two grade levels represented in the blend class. Although we came to an end of the activities described in the two lesson studies, I am sure students will need much more practice in other contexts to solidify the conceptual development begun here.

