Communications via Email about Invented Methods

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Some of our students had trouble seeing the ambiguity in their proposed methods for their invented methods of precision. They knew what they meant and did not appear to understand that others might not. To illustrate the importance of clarity, our classes exchanged methods of precision and then asked questions about parts of invented methods they found ambiguous. In one class, students had not come up with an IQR method, so one of us was able to introduce it to them using an invention from another class. This invented method, listed below, had the seeds of the IQR in its focus on determining the boundaries of the central clump in a set of measurement data.

- Step 1: Get the data and numbers and order them from least to greatest.
- Step 2: Divide 4 into all the numbers you have in your data set.
- Step 3: With the answer that you got, count the x's from left to right.
- Step 4: The middle is the clump.
- Step 5: In the clump find the least number. Then the greatest number.
- Step 6: Subtract the numbers you got. The lower the number, the more precise.

Students immediately recognized that the directions weren't clear. They read the directions, found ambiguities, and created a couple of very succinct questions to remedy their confusion. Here is an email exchange with the questions the class had about the method and the responses from its inventors:

Questions from Mrs. Gilmore's class:

Step 2: What does "Divide 4 into all the numbers you have in your data set" mean? Does it mean divide all the data into 4 groups or 4 into each number in the data set?

- Step 3: What does "count the x's from left to right" mean? Did these x's stand for numbers in your data set?
- Step 4: What do you mean by "clump" is it the middle 2 sections of the 4 you separated the data into in Step 2 or the median of the clump from the original data set?

Responses from the inventors of the method in Ms. Sample's class:

Step 2: I mean to divide 4 into 30 students without going over and seven was the closest.

- Step 3 There are 3 sections, the one on the left and right don't count and the middle is the clump. And going back to the seven count 7 numbers or x's left to right. This should leave 12 numbers from the data set are left in the middle clump.
- Step 4 The clump is the middle 54-66 and only one clump. The beside it are NOT the clump.

Follow-up questions from Mrs. Gilmore's class:

- 1. Why did you divide your data into 4 and then say 3 groups?
- 2. In step 5: you say "the lower the number" the more precise. What do you mean by the lower the number?

Responses from Ms. Sample's class:

- 1. Because since there were 30 students we tried to times a number closest to 30 without going over so 4*7=28 and 25% 50% 25%.
- 2. See, if we had the answer 50 it could be right but it might really be 49, or 48, or 47, and so on. But 12 (the answer we got) means our data is closer and more clumped.
- These exchanges set the stage for further conversation about how to find quartiles of any data set.