Counting What's in a Mystery Box

This teacher has posted five completed pages for Mystery Box C (*Student Activity Book* page 5, or Resource Masters S1), which has 23 magnetic letters in it. Three students counted 23, one counted 22, and one counted 21.

Teacher: Let's see what we notice. Edgar counted 22 and Paul counted 21. Emilia counted 23, and so did Libby and Tamika. How can this be possible? Can this box sometimes have 21, sometimes 22, and sometimes 23? How can this be?

Teo: Maybe kids counted the same letter twice.

Teacher: Which kids do you think did this, the kids who have more or fewer letters?

Teo: People who have higher letters.

Teacher: So kids who have more, maybe they counted twice. Does anyone else have an idea? Libby, should there be the same number or not?

Libby: The same. Unless someone put in more or took some out.

Teacher: Then why are the numbers not the same?

Libby: Because maybe some people miss them and other people don't miss them.

Seth: I think kids are skipping numbers.

Paul: I think some kids . . . maybe some fell out on the floor and some don't.

Danielle: What you should have is the whole alphabet in that bag. It would be easier for kids if they know they have all the letters.

Teacher: You have lots of ideas about how someone could make a mistake when they are counting. You might skip a number, or count one of the letters twice. Or maybe some letters fell on the floor. Who has a good system for counting so that there are no mistakes? What did you and your partner do to make sure that you counted accurately?

Leah: At first Danielle and I got different numbers. Then we decided we better try again. We counted slower and that helped.

Teacher: Double-checking is always a good idea. Can you show us how you counted?

Leah counts the contents of Box C by emptying it and counting each letter as she puts it back into the box. She counts 23.

Teacher: Your system is to take all of the letters out and then put each one back in as you count it. Who has a different system?

Jacinta: Count as you take them out.

Jacinta counts each letter aloud as she takes it out of the box. Her friend points out, "You said 14 twice." Jacinta starts again, this time counting in Spanish. She also gets 23.

Teacher: Jacinta did sort of the opposite of Leah—she counted them as she took them out of the box. Who noticed what Jacinta did when she got confused with what number came next? That's right, she started again. That's a great strategy. Does anyone have another way to count and keep track?

Felipe pours out the letters and moves each from one pile to another as he counts aloud in English. He skips 15.

Paula: He got mixed up.

Leah: He missed a number.

Felipe: Yeah, I missed 15. [He counts again, agreeing with the other counters that there are 23.]

This class seems to understand that Box C should always have the same number of items in it (unless some were added or lost). Students have many ideas about why different people found different numbers, which serves as a good opportunity to discuss and demonstrate strategies for counting accurately together as a class.