How can an equal-arm balance be used to weigh objects?

10/5/09

The ball is litre
then the cup
4 cubes and the ballist cubes
How can an equal arm balance be used to weigh objects?

10/6/09

A wooden block weighs 1 cube.

10/6/09

My data shows that the metal cube is heavier

Then the wooden block I now because the metal
cube weighed 24 cubes and the wooden block
weighed 3 cubes.
I think an object would sink quickly if there was a hole in it. I think this because I tested Lego things and the one with holes in the bottom sank. I think an object would sink slowly if it had a crack in it. I think this because I made a aluminum boat and it sank and I saw water creeping in from a crack.
I think the local soil has humus.

I think this because it was brown.

It had small rocks in it.

It reminds me of sand because it has small particles.
What evidence have we collected from our soil test that will help us identify what is in our soil?

I think the local soil has sand, clay, and humus. I think this because when we rolled a ball to cold do it that is why I think it has clay. I think it has humus because for the settling test it was cunkie like humus that is why I think it has humus. I think that there is sand because for the smoother test it was either then I thought that is why I think it has sand in it.
Second Grade, Sample A—Balancing and Weighing Unit: Jac

- Students have been weighing different objects to determine which ones are heavier and lighter. When students say or write that an object is heavier or lighter, they learn to provide the quantitative data about the two objects they are comparing.

- Jac understands this scientific thinking and the structure of the writing: “The ball is lighter than the cup because the cup weighs 4 cubes and the ball is 1 cube.”

Second Grade, Sample B—Balancing and Weighing Unit: Vincent

- Vincent uses a slightly more complex frame for supporting qualitative statements with quantitative data: “My data show __________. I know this because __________.” Note that having students say “I think” instead of “I know” underscores the idea that what we think we know in science continually changes, so think usually is the better verb.

Second Grade, Sample C—Balancing and Weighing Unit: Charlie

- Students explore a number of objects to determine which properties make objects sink. The frame the teacher gives for writing about the properties of sinkers is “I think an object would sink quickly if __________. I think this because __________. I think an object would sink slowly if __________. I think this because __________.” This is an effective frame because it provides scaffolding for thinking about objects that sink both fast and slowly.

- Charlie uses the frame in his writing, but note that he elaborates within the frame, first including what he tested and what happened (“. . . because I made a aluminum boat and it sank”), then adding more details (“and I saw water creeping in from a crack”). Modeling this thinking process during discussions will help students write more detailed, reflective entries like this.

Second Grade, Sample D—Soils Unit: Tal

- Tal uses a writing frame to explain which soil components are in a sample of local soil. To support his claim that humus is in the local soil, he includes two properties that are characteristic of humus. Then he mentions sand and includes a typical property of that soil component. “It reminds me of” prompts Tal to include this property of an additional soil component. Another effective way for Tal to add that information would be to write, “I also think the local soil has __________ because I observed __________.”
Second Grade, Sample E—Soils Unit: Elizabeth

To scaffold her students’ conclusions for the investigation described above, this teacher provided the following frame: “I think the local soil has _________. I think this because _________."

Elizabeth has provided evidence, in an organized way, for each of the soil components she thinks is in the local soil sample. She is writing in a kind of shorthand that is appropriate for the grade level. For example, she writes, “I think it has humus because for the settling test it was cunke [chunky] like humus . . .” She means “chunky like what we observed when we did the settling test on a humus sample.” After noting the strengths in Elizabeth’s entry, you might say, “A scientist might wonder what you mean by ‘lither [lighter] then I thoth [thought].’ What could you say about what you actually observed?”