

# Interactive Sheltering of Mathematics with the “Fuente Informativa”

by Lisa Valdez—Cien Aguas International School, Albuquerque, New Mexico

Promising practices...

As a teacher and student of how children learn mathematics, I became very interested in the compendium, one component of the *Achievement Inspired Mathematics for Scaffolding Student Success* model, first presented at La Cosecha 2010. The compendium is a chart that creates a body of knowledge that students use as a reference to access and build on key concepts throughout a unit of study, helping to connect new information to prior knowledge. It includes three elements: the inquiry process, student-friendly standards, and a concept frame. I was intrigued by the way the compendium served as a visual reference, a linguistic and conceptual scaffold for my dual language students, and a “container” for keeping all our thinking and exploring for a unit together in one place.

I have spent many years as a K-8 mathematics educator working from a constructivist paradigm and implementing the *Investigations* elementary mathematics program in dual language settings. I believe that children need to construct their own mathematical understanding within a structure carefully designed and facilitated by me, the teacher. From this compendium, I began my own study of what I call the *Fuente Informativa*. My idea was to have a documented “fountain” flowing with smaller chunks of information and learning developed by the students and visually represented as they go on their journeys based on *Investigations*. There is an emphasis on interaction to develop a deeper understanding of

concepts. Learning is guided by the teacher, yet developed by the students. The *Fuente* guides students to focus on anchor concepts to help them with their learning and strengthen key mathematical ideas.

The pedagogical intent behind the *Investigations* mathematical curriculum is that students learn that they can be mathematical thinkers. Teachers foster and guide students to emphasize reasoning about their mathematical ideas and those of other students. As with all mathematics curricula, students need to learn new concepts as they rethink past experiences and ideas, then connect new information to the previous information. This is done by asking questions, exploring new models

and concepts, assessing what is known and how this goes with new learning. As a teacher, I need to continually assess how children are learning. Students must constantly question themselves, question their learning, reflect on their experiences, listen to new strategies, and develop the ability to integrate new information.

To this end, the *Fuente Informativa* is a tool that I use to provide students with a visual reference, rich with mathematical vocabulary, that they have

developed using the state standards as their benchmarks in order to problem-solve, inquire, test ideas, draw conclusions and inferences, and convey their knowledge in a collaborative learning environment. Students are active participants in their own learning process, learning how to articulate ideas about their mathematical strategies in order to collaborate and exchange ideas and thoughts. I have found that the *Fuente Informativa* is a valuable tool that guides children in their learning. It reflects the continual change in student thinking and learning—it’s alive!

## HOW DO I GET STARTED?

At the front of every teacher’s guide, *Investigations* provides the teacher all the standards and benchmarks that will be developed in each particular unit. I use these as the subtitles of each section of the *Fuente Informativa*. For example, in a recent third grade multiplication and division unit, there are five key mathematical emphasis points for me to focus on. I make a section on the *Fuente* for each piece: multiplication is combining equal groups; factors and multiples; using arrays to model multiplication; strategies for computational fluency; and



Students use the Fuente as a visual reference to clarify, question, and problem solve.



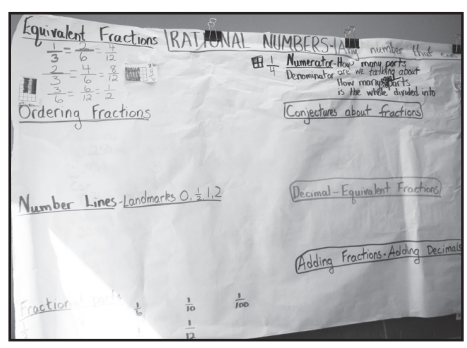
Students share ownership of the Fuente.

—continued on page 11—

Soleado—Spring 2012



—continued from page 10—  
 strategies for division using the inverse relationship. I try to keep the wording mathematical and challenging, yet simple so that when students see the *Fuente* on the first day of the unit, they can apply their existing knowledge, draw on their real world experiences, and begin to hypothesize. This *Fuente* helps us to test our theories daily, have a visual, and start to develop conclusions as we go through our daily lessons.



A *Fuente* early in a unit of study.

**OWNERSHIP**

Because the students record their strategies and thoughts on the *Fuente*, they have an ownership of each one. We use the *Fuente* as a reference to check our thinking, use expected mathematical vocabulary, build on a strategy introduced one day, and then the next day we might expand or evaluate the strategy. Students use it as they work independently or in groups to prove a point, monitor their thinking, or follow a pattern.

I use this *Fuente* as I plan my daily lessons. I know what I need to get on the *Fuente* and I use it as a focal point for my teaching. This reminds me daily of my standards and benchmarks. As a teacher, I have always “known” my standards, recorded them in my lesson plan book, had them up on the classroom wall, *but now...* I can review and discuss them with the students regularly. They know what they need to be learning and monitor their learning daily. As a class, we can check and question, with the *Fuente* as our tool, “Are we learning what we need to be learning in this unit?” This makes me certain that I am doing my job or reminds me that I better focus more on a specific concept as it does not seem to be developing as I thought it would!

The *Fuente* offers a unique check-in for my ELL (or SLL) students. They have the visual scaffolds of models and drawings for reference and self-monitoring. They can also use the *Fuente* to help discuss their thinking. They have the vocabulary visible to practice and restate their ideas. Our learning is recorded and documented; it’s never lost by erasing a board or tossing out a paper. The *Fuente* also includes sentence stems for academic mathematical language, depending on the target language. It offers a concrete scaffold for all language learners in my class.

Not all of my students react in the same way to a *Fuente*. Depending on each and every learner, some units need more thought and seem more meaningful than others. This has been seen in Geometry units, possibly due to the

fact that students do not always use this information/ vocabulary in their daily lives. I notice that more students check in often with the *Fuente* during these types of lessons.

As I reflect, I see both the *Fuente Informativa* and unit differently with each one that I do. Despite a consistent structure or framework, each one evolves differently with each group of students; but one idea is constant. It is an important part of my teaching and an important part of my students’ understanding of their thinking and learning. It guides each and every one of us to test our mathematical theories and then to ultimately draw conclusions about our mathematical ideas. My goal is that my students and I continue to question and to apply our natural curiosities of our world through mathematics.

If you would like more information about the author’s work, she welcomes comments and questions at [lvaldez@cienaguas.org](mailto:lvaldez@cienaguas.org).

For more information about *Achievement Inspired Mathematics for Scaffolding Student Success*, see Soleado, Winter 2011 ([soleado.dlenm.org](http://soleado.dlenm.org)) or contact Lisa Meyer-Jacks at [lisa@dlenm.org](mailto:lisa@dlenm.org) or Erin Mayer at [erin@dlenm.org](mailto:erin@dlenm.org).

