

Reflections...from page 1

it, "You teach with meaning - that's what it's about!" It reminded me of my own "enlightenment" during the early 70's when I was involved with the New Math movement and its focus on having students discover and understand the structure of mathematics. It turns out that the "teaching with meaning" roots stretch even further than the New Math movement. William Brownell a noted psychologist and influential mathematics educator in the '30's started a "meaningful arithmetic" movement which was, for the most part, a reaction to all the rote learning and memorization practices that were common during the '20's². So, is there anything unique about the Standards? Or is it just an attempt to revive ideas from the past? It's clear that the shapers of this document took into consideration what we have learned and know about the teaching of mathematics, the nature of children and how our educational system works. What's unique about the Standards is twofold. First, the work is an attempt by the mathematics community to carefully document what constitutes effective mathematics teaching and learning- a mathematics education manifesto, if you will. Second, it brings to the forefront the contributions of Piaget, and, in particular, the notion of constructivism which suggests that children are not "open receptacles" into which new information is poured. Rather, they are constantly making sense of new information in relation to what they already know. If this sounds familiar to you, that's because constructivism is at the heart of what we refer to as the Logo Environment. Apparently the mathematics community has finally come around to acknowledge that what we need in our classrooms is the Logo philosophy, though they don't call it that.

This merging of thought has made some prominent folks in

the Logo community stand up and take notice. One example, is Brian Silverman (VP - LCSJ) who recently shared at a Logo conference in New Jersey how much the Standards and the Logo philosophy have in common and that we ought to take advantage of this special moment in time to bring Logo more into the mainstream.

On the Restructuring of Schools

A popular activity today in education is to talk about the "restructuring" of schools. Even George Bush has climbed on board the bandwagon and is advocating the building of 535 model schools by the year 1996 that would reflect the latest thinking about how schools should be designed. But is there any reason to hope that these schools will be significantly different than the ones we already have? The only clues we have are that he is also lobbying for a national exam at various grade levels and that he supports traditional values. Sounds like business as usual to me. In a recent issue of the Wall Street Journal there was an article bemoaning the sad state of mathematics learning in this country based on the results of a recent math test. The caption for the article read "Study Shows Traditional Teaching is Most Helpful for Math Students". This conclusion is based on the fact that North Dakota, where "traditional values" are reinforced and where there are less social problems than in other states, had the highest mean score. But being number one does not necessarily mean they learned their lessons well. In fact, it's clear from the results that most students are operating below the level they should be at. What's missing from their experience are stimulating learning environments where they can get excited about what they're learning. The only way this can happen is if teachers "restructure" their way of teaching so that it resonates more with the spirit of the Standards. I doubt if there is much excitement in most math classes in North

See Reflections...page 13

*From page 3 of the "Professional Standards for Teaching Mathematics:" **

There are five major shifts in the environment of mathematics classrooms that are needed to move from current practice to mathematics teaching for the *empowerment* of students. We need to shift—

- toward classrooms as mathematical *communities*-away from classrooms as simply a collection of individuals.
- toward logic and mathematical evidence as verification-away from teacher as the sole authority for right answers;
- toward mathematical reasoning-away from merely memorizing procedures;
- toward conjecturing, inventing, and problem solving-away from emphasis on mechanistic answer finding;
- toward connecting mathematics, its ideas, and its applications-away from treating mathematics as a body of isolated concepts and procedures.