C. Elements of Systemic Change

The promulgation of new mathematics content, teaching and assessment *standards* has coincided with the need to change the "system" at the state and school district levels. These systemic change efforts include:

- Establishing statewide curricular standards as a *matter of policy*;

- Reformulating student assessments in light of these new content standards;

- Aligning school and state administrative policies to support these standards;

- Arranging for intensive and extended whole-staff teacher professional development;

- Adopting standards-based curriculum.

The National Science Foundation has been the lead agency in supporting large-scale mathematics and science systemic reform. Since 1990 the NSF has launched various systemic programs: the *Statewide Systemic Initiative (SSIs)*, the *Rural Systemic Initiatives (RSIs)*, the *Urban Systemic Initiatives (USIs), and most recently the Local Systemic Initiatives (LSCs)* programs.

Many schools have realized they must re-train their mathematics faculty if these standards are to have any impact in the classroom. Teachers will need to learn new inquiry-based curricula and student-centered pedagogical techniques. They will need to infuse their classrooms with more statistics and probability, more algebraic and geometric problem solving, and more real-world applications. Such re-training requires facilitating a major paradigm shift in the habits of mind and behavior of traditionally schooled teachers. Even eager and willing teachers have difficulty making this transition. This is not an easy or quick task.