

From CMC's Equity Committee:

Standards for Mathematical Practice: How They Inherently Promote Positive Student Mathematics Identity, Part 1

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The Common Core Standards for Mathematics require that we have high expectations and provide strong support for all our students. This involves deep conceptual understanding and knowledge of best practices on our part. We must always be committed to providing appropriate and rigorous support to meet our students' diverse needs. We must always look for multiple and varied opportunities to deliver instruction that are fun, challenging, meaningful, relevant, and motivating for our students. By doing so, we will give all of them access to the mathematics that they need to make them college and career ready (Canlas 2010).

The Common Core Standards for Mathematics have eight Standards for Mathematical Practice, which are built upon the Process Standards from the National Council of Teachers of Mathematics and *Adding it Up* from the National Research Council. These eight standards place an emphasis on student demonstrations of their learning.

Mathematical Practices
1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

This article specifically addresses the first four Standards for Mathematical Practice and

provides ideas about how the implementation with fidelity of these standards can promote positive student mathematics identity.

1. Make sense of problems and persevere in solving them.

Students make sense of their everyday world through their relevant interactions within it. As a result, mathematics instruction needs to incorporate everyday-life concepts—such as economics, employment, and consumer habits—of various ethnic groups to develop proficient problem-solvers. In order to teach to the different learning styles of students, activities should reflect a variety of sensory opportunities—visual, auditory, tactile (Gay 2000). These types of topics create the interest in the subject matter. Process and procedural instruction follow to aid student skill development in the cognitive/metacognitive tasks of explaining a problem to themselves, determining its meaning, and seeking possible entry points towards viable solutions. Students are encouraged to use multiple representations, estimation and prediction, inquiry, counterexamples, explanation, and justification of their work. They become empowered.

Many researchers believe that perseverance and persistence are the largest predictor of not only academic success but also of life success. Our experiences have taught us that there is certainly a continuum of students' levels of perseverance that is influenced by their social, emotional, and psychological development levels. While teaching perseverance is difficult, Canlas (2010) recommends some key strategies:

- ✓ Gradually increase students' level of interest in a task. It is like building their stamina as they read or complete a task.
- ✓ Provide genuine encouragement and posi-