



Colorado's Use of the Essential Concepts

Joanie Funderburk, president of the Colorado Council of Teachers of Mathematics, a National Council of Teachers of Mathematics (NCTM) Affiliate, talks about Colorado's work on reviewing state standards and how the Essential Concepts in *Catalyzing Change in High School Mathematics: Initiating Critical Conversations* helped identify the most critical content and differentiate the standards in order to better meet the needs of students in Colorado.

About Catalyzing Change

In April 2018, NCTM published *Catalyzing Change in High School Mathematics: Initiating Critical Conversations*. Developed by high school teachers, district leaders, university faculty, and mathematicians, *Catalyzing Change* identifies the vexing issues that have long plagued high school mathematics education. The focus on high school mathematics education stems from the flat high school mathematics achievement over the last 30 years as compared to the progress made at the elementary and middle school levels. The mathematical learning opportunities students have—the content, the learning experiences and the support they receive—need to be examined and changed.

NCTM Makes Key Recommendations in *Catalyzing Change*:

Eliminate student and teacher tracking

Teach all Essential Concepts in mathematics*

Provide engaging and empowering mathematics instruction for every student

Offer high school students continuous and meaningful four-year mathematics instruction

*Colorado is implementing this recommendation.

Challenge

Like many states, Colorado reviews and revises its education standards; in Colorado, the review process is done every six years. In 2010 Colorado adopted the Common Core State Standards (CCSS) in English and mathematics. This was the first time the state had updated its standards since the 1990s.

In 2017, committees were formed to review standards in 11 subjects, including math. Funderburk led the committee that undertook the math standards.

Opportunity

Colorado has 181 school districts that serve a wide range of students. The committee charged with reviewing the math standards had an opportunity to address the struggles and challenges faced by both educators and students, particularly in high school math.

Colorado wanted to ensure that the review process was open and included the community. It engaged the community by fielding a perception survey. The number of responses for math was significant, with close to 1,000 comments from 75 educators and hundreds of parents and community members. The math-related comments included concerns about Colorado's approach, such as which content was covered and how much math high school students should be required to take.

With the adoption of the CCSS, Colorado's math education was ready to "set a rigorous definition of college and career readiness, not by piling topic upon topic but by demanding that students develop a depth of understanding and ability to apply mathematics to novel situations, as college students and employees regularly do," as the CCSS describes its math initiative. However, concerns were raised about the math content, and specifically high school math.

Colorado's Use of the Essential Concepts

The committee charged with reviewing and revising the math content utilized the Essential Concepts recommended by NCTM in *Catalyzing Change*.

The Essential Concepts helped the committee identify the most critical content in the state high school standards and allowed the committee to provide guidance to teachers, schools, and districts in prioritizing the mathematics that all students need to be able to pursue postsecondary options. The committee determined that all mathematics content is not created equal, and with focus and relevancy in the forefront, high school students can more broadly experience the beauty of high school mathematics.

Results

In July 2018 Colorado released the new Colorado Academic Standards. With input from the community and NCTM as a trusted, credible source, the committee determined that a stronger alignment of learning expectations was needed within and across grades. The Essential Concepts helped clarify and justify the changes made to the standards, including additions, deletions, revisions, and reorganization of the math standards.

For more information about *Catalyzing Change*, visit www.nctm.org/change or contact David Barnes at dbarnes@nctm.org.

