

## Teacher Quality Standard I

**Teachers demonstrate mastery of and pedagogical expertise in the content they teach. The elementary teacher is an expert in literacy and mathematics and is knowledgeable in all other content that he or she teaches (e.g., science, social studies, arts, physical education, or world languages). The secondary teacher has knowledge of literacy and mathematics and is an expert in his or her content endorsement area(s).**

*The key to distinguishing the knowledge base of teaching rests at the intersection of content and pedagogy.*

—L. S. Shulman

To teach all students according to today's standards, teachers need to understand subject matter deeply and flexibly so they can help students create useful cognitive maps, relate one idea to another, and address misconceptions. Teachers need to see how ideas connect across fields and to everyday life. This kind of understanding provides a foundation for pedagogical content knowledge that enables teachers to make ideas accessible to others. (Shulman, 1987)

Although Shulman's work dates back to the late 1980s, the importance of teacher content knowledge and pedagogical expertise has never been more important than it is now as teachers ensure students are college and career ready for the demands of the 21<sup>st</sup> century.

### Element C: All Teachers

**Teachers demonstrate knowledge of mathematics and understand how to promote student development in numbers and operations, algebra, geometry and measurement, and data analysis and probability.**

This section describes professional practices that should be demonstrated by ALL TEACHERS, regardless of grade level or subject.

*The great book of nature can be read only by those who know the language in which it was written ... and that language is mathematics.*

—Galileo

Professional practices referenced under each element of the Rubric for Evaluating Colorado Teachers are cumulative. Therefore, for teachers to be proficient in demonstrating knowledge of mathematics and how to promote student development of mathematical concepts and skills, they must encourage students to make explicit math connections to the content being taught. These connections can be emphasized by stressing the need to learn math skills and by using instructional strategies that require students to apply these skills. Students are supported in this work when the teacher emphasizes interdisciplinary connections and mathematical thinking.



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## PROFICIENT RATING LEVEL

### PROFESSIONAL PRACTICES: THE TEACHER:

- ***Emphasizes interdisciplinary connections to math.***

The Proficient teacher builds on the professional practices of encouraging students to make math connections across content and the use of instructional strategies that require students to transfer mathematical knowledge by emphasizing these connections in his demonstrations and models. When students have opportunities to witness the content “expert,” or teacher, apply math to other content areas, the importance of these connections becomes stronger and more clear. Students are also more likely to independently make these connections, which can support them in understanding how mathematical information is relevant to their learning.

- Website: Content Connections Samples (Kindergarten through 5th Grade)

<http://www.cde.state.co.us/ContentAreas/ContentConnections/index.asp>

Website provides examples of cross-content (multi-disciplinary) connections within the Colorado

Academic Standards at grades kindergarten through 5.



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