

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 21st century.

Element D

Teachers demonstrate knowledge of the content, central concepts, tools of inquiry, appropriate evidence-based instructional practices and specialized character of the disciplines being taught.

A teacher must believe in the value and interest of his subject as a doctor believes in health.

—Gilbert Higher

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 the content they teach, they must break down concepts into manageable parts and provide explanations that are accurate, clear, concise, and comprehensible for students. This is done by using instructional materials that are accurate and appropriate for the learning objective along with a variety of strategies, explanations, and representations of the content to address student needs and to allow students to explore new ideas and theories.



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PROFICIENT RATING LEVEL

PROFESSIONAL PRACTICES: THE TEACHER:

Engages students in:

- ***A variety of explanations and multiple representations of concepts and ideas.***

Using a variety of explanations and multiple representations recognizes that students learn in different ways and need opportunities to make connections across concepts and ideas. While it is important for the teacher to present content through a variety of explanations and representations, students also need opportunities to engage with the content and demonstrate their learning in a variety of ways. If a student can represent a concept in a variety of ways, the teacher knows she truly understands it.

Multiple representations may include:

- Written explanations
- Symbols
- Visuals, such as maps, graphic organizers, and illustrations
- Real-world examples
- Manipulatives

Teachers can build on students' prior experiences and knowledge of representations to further advance their thinking from concrete to abstract. When selecting representations to use, teachers should consider how they support students in developing both procedural skills and conceptual understanding. These levels of understanding are critical for students to meet the demands of the Colorado Academic Standards.

Mathematics teachers can refer to the Common Core Standards for Mathematical Practice for more information related to the expectations related to multiple representations or to this external resource for Standards for Mathematical Practice and lesson plan examples: <http://www.insidemathematics.org/index.php/mathematical-practice-standards>

Refer to this internal resource for additional information:

- Engaging Students in the Use of Multiple Representations
Document provides ideas for how students may represent their learning in different content areas using multiple representations.
- ***A variety of inquiry methods to explore new ideas and theories.***

It would seem that **inquiry-based instruction** might have powerful effects where students have the cognitive capacity to think critically but have not previously been encouraged to think in this way. Overall, inquiry-based instruction was shown to produce transferable critical thinking skills as well as significant domain benefits, improved achievement, and improved attitude towards the subject. (Hattie, 2009, p. 209)



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Students engage in inquiry learning experiences by developing questions and investigating in order to find solutions. Teachers facilitate learning as students engage in active problem solving, the construction of meaning, and the communication of new understandings.

The teacher can guide student learning by selecting, designing, and planning learning tasks that are open-ended; asking probing questions; observing students at work to identify misconceptions; and planning follow-up experiences. Well-constructed inquiry methods allow students' entry to the problem from different points and encourage divergent thinking. Students are able to engage in thinking like an expert (e.g., mathematician, scientist, and historian).

Refer to these external resources for additional information:

- Article: "Inquiry-Based Instruction Explores, Then Explains" by Jeff Marshall
<http://www.ascd.org/ascd-express/vol9/909-marshall.aspx>
Article describes the inquiry method as the explore-then-explain method and provides an example for a science lesson.
- Website: Concept to Classroom Workshop: Inquiry-based Learning Educational Broadcasting Company
<http://www.thirteen.org/edonline/concept2class/inquiry/index.html>
Website defines inquiry-based learning, describes its benefit, and provides ideas for implementation.
- Video: Jeffrey Wilhelm on Inquiry-based Learning
<http://www.youtube.com/watch?v=3x-pTBZw8mg>
Video describes an inquiry-based lesson on Romeo and Juliet that includes differentiation based on language and culture.
- Video: Inquiry-based Learning
<http://www.youtube.com/watch?v=sLQPXd8BiIA>
Video outlines steps for creating inquiry-based learning activities.



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