

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 E

Teachers develop lessons that reflect the interconnectedness of content areas/disciplines.

Professional practices referenced under each element of the Rubric for Evaluating Colorado Teachers are cumulative. Therefore, for teachers to be Proficient in developing lessons that reflect the interconnectedness of content areas/disciplines, they must be able to emphasize the key concepts of their content area and connect these to other powerful ideas within the content as well as across disciplines. To be successful in any content area, students need to be able to read and communicate their thinking orally and through writing; literacy must be an integral part of the instruction in all content areas.

PARTIALLY PROFICIENT RATING LEVEL

PROFESSIONAL PRACTICES: THE TEACHER:

Implements instructional strategies to ensure that instruction:

- *Articulates content and interdisciplinary connections.*



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The teacher who articulates **interdisciplinary** connections provides clear and concise explanations for how concepts and skills in one discipline impact those in another. Strategies may include summarizing in social studies and science or applying measurement skills in art. In language arts, students may learn how to use maps and graphs when reading informational text and then apply writing skills to describe the meaning and importance of the concepts presented by these visuals. By implementing these strategies, the teacher can help students connect what they are learning across disciplines.

Interdisciplinary connections help students explore overarching themes or concepts. In real life, we are not able to isolate math, writing, science, or history into 45 minutes of our day. Instead, we use all of our knowledge to help us solve everyday problems in the workplace and at home.

Early childhood students spend the majority of their time exploring and trying to make sense of their world. They engage in sorting, describing, building, and experimenting with objects. These activities are preparing them for more formal mathematics and science activities in school. The teacher of early childhood students should guide these activities so that writing, speaking, and listening skills, along with concept development, grow and expand beyond incidental or isolated learning.

The majority of middle and high school students learn content taught by different teachers in isolated settings. Therefore, the importance of articulating interdisciplinary connections for secondary students is critical. This requires teachers to be aware of topics being taught in multiple content areas for which they may not be the primary teacher. There must be opportunities for team collaboration during which time teachers can support one another in making connections to their content area.

Refer to these external resources for additional information:

- Article: “The Art and Craft of Science” by Robert Root-Bernstein and Michele Root-Bernstein
<http://www.ascd.org/publications/educational-leadership/feb13/vol70/num05/The-Art-and-Craft-of-Science.aspx>
Article explains the importance of enhancing the teaching of science through teaching of the arts.
 - Article: “The Art of Science Teaching” by Pam Galus
<http://www.ascd.org/publications/classroom-leadership/oct2001/The-Art-of-Science-Teaching.aspx>
Article provides strategies for the integration of art and science.
 - Website: teachinghistory.org
<http://teachinghistory.org/>
Website provides strategies and resources for K–12 teachers to teach US history through interdisciplinary connections.
- ***Integrates literacy skills across content areas.***



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Authentic literacy is integral to both what and how we teach. It is the “spine” that “holds everything together” in all subject areas (Phillips & Wong, 2010).

Content is what we teach, but there is also the how, and this is where literacy instruction comes in. There are an endless number of engaging, effective strategies to get students to think about, write about, read about, and talk about the content you teach. The ultimate goal of literacy instruction is to build a student's comprehension, writing skills, and overall skills in communication. (Alber, 2010, para. 8)

Examples of strategies that integrate literacy across content areas:

- *Vocabulary development:* Explicitly teaching the vocabulary associated with a content area builds students' reading and communication skills. The use of concept maps (such as the Frayer model—<http://www.readingeducator.com/strategies/frayer.htm>), creating illustration of the words, using new vocabulary in oral and written communication, and making connections to words they already know can all support students in vocabulary development.
- *Annotating text:* The skill of annotating a text supports students in comprehending a text in order to gain content information. Purposes for annotating a text:
 - Locate evidence to support a claim.
 - Identify main idea and supporting details.
 - Analyze the validity of an argument or counter-argument.
 - Determine author's purpose.
 - Identify character traits/motivations.
 - Summarize and synthesize.
 - Define key vocabulary.
 - Identify patterns and repetitions.
- *KWL charts:* Students record what they currently know about a topic, what they want to know, and what they learn. This activity can support students in developing questions that guide their learning and reading of texts. As they read, students are engaged in actively asking questions and looking for answers to their questions, which supports their comprehension and engagement with a text.
- *Writing:* Students write for a variety of purposes. An essential skill for 21st century learning is the ability to communicate one's ideas. In all content areas, students need opportunities to communicate their thinking through writing, which can include the following:
 - Brochures
 - Editorials
 - Diary entries
 - Timelines
 - Research or expository writing
 - Constructed responses to text dependent questions
 - Advertisements

See also Standard I, Element B ALL TEACHERS.



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