

Standard I **Element B**

LEVEL 4 AND LEVEL 5 PRACTICES

The impact of successful implementation of the professional practices referenced in Element B will be students who are able to apply literacy and math skills across disciplines and accelerate their learning by elaborating on the current lesson within the content area and making real world connections to other content areas.

STUDENTS:

9 *Apply literacy skills and concepts.*

Early Childhood Education

“Authentic learning occurs when activities or projects offer students an opportunity to directly apply their knowledge or skills to real-world situations.”

<https://www.nwea.org/blog/2013/authentic-learning-classroom-literacy-ideas-early-childhood/>

Elementary Education

“Synthesize information – This higher order skill should be included in all reading assignments and discussions. Students need to read, make sense of what they read, compile and categorize information for a particular purpose and then apply what they read. This synthesis process is important to not only strengthen reading skills but also to gain a better understanding of new information so that it can be stored in long-term memory and easily accessed throughout a student’s learning journey.”

<http://inservice.ascd.org/3-literacy-concepts-for-developing-students-skills-in-reading-writing-and-thinking/>

10 *Apply mathematical practices.*

“Instructional objectives for this lesson should include something about students explaining their reasoning (not just, “Students will solve problems using two-digit multiplication and addition”). You might give students learning targets like, “I can explain what I did and why I did it” or “I used mathematics language.””

<http://www.ascd.org/publications/educational-leadership/dec13/vol71/num04/Mathematical-Practices-for-Deep-Understanding.aspx>

<https://www.nwea.org/blog/2017/resources-bringing-mathematical-practices-classroom/>

<https://www.scholastic.com/teachers/blog-posts/meghan-everette/guide-8-mathematical-practice-standards/>

Students accelerate their learning by:

11 *Elaborating on current lesson within content area.*

“As you become more skilled in this strategy, you will see remarkable changes in your students’ abilities to process and understand new content because they are able to identify which content is critical and understand how learned content scaffolds in complexity.”

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https://www.learningsciences.com/media/catalog/product/i/c/icc_lookinside.pdf

“Guide Student practice: Successful teachers spend more time guiding students’ practice of new material.” Page 16, Number 5

<https://www.aft.org/sites/default/files/periodicals/Rosenshine.pdf>

12 ***Drawing real-world connections to other content area(s).***

“Chapter 3. Making a Real-World Connection (third paragraph)

A real-world connection means that students see a reason to do this project, other than the fact that you assigned it and they will get a grade on it. There are so many ways to connect to the real world that even beginners to the multimedia approach can design a project that students will find worthwhile.”

http://www.ascd.org/publications/books/102112/chapters/Making_a_Real-World_Connection.aspx

“Introduce the skill and look for a connection to students’ lives”

<https://www.responsiveclassroom.org/making-learning-meaningful-its-all-about-the-why/>

Classroom Examples

Elementary physical education: Students are learning how to play kickball while working on Colorado Academic Standard 1: Movement Competence and Understanding in Physical Education, Grade Level Expectation 2—Provide and receive feedback to and from peers using the major characteristics of mature locomotor and manipulative skills.

The 4th-grade teacher begins the lesson by leading a discussion about how knowing the rules keeps the game of kickball safe and fun. He displays a chart with the directions and safety rules. He labels the chart as an example of a “How-to Text or Procedural Text.” (*Makes interdisciplinary connections explicit to students.*) Photographs of each direction and rule are included as a support for students who are second-language speakers or on lower reading levels. The teacher makes sure to teach the vocabulary associated with kickball and relates it to the game of baseball to help students make connections. (*Implements instructional strategies that include literacy, mathematical practices, and language development across content areas. Makes content-specific language and reading accessible to students.*) Before students play the game, he has them share with a partner the directions and rules and reminds them to use the vocabulary associated with kickball in their conversations. (*Strategically integrates literacy skills (reading, writing, listening, speaking) across content areas.*) The lesson concludes with students labeling a picture of a kickball field; the teacher also has allotted time to answer students’ questions.

Middle school social studies: Students are working on Colorado Academic Standard 2: Geography, Grade Level Expectation 1—Use geographic tools to analyze patterns in human and physical systems.

Eighth-grade students are learning about Westward Expansion as a means of exploring two essential questions: How is human activity limited by the environment? How has the environment influenced human activity? The teacher begins the lesson by posing the essential questions to students and facilitating a Socratic Seminar. (*Implements instructional strategies that include literacy, mathematical practices, and language development across content areas.*) She guides the discussion by asking students to think of examples, both within and outside of social studies, where human activity has been limited by the environment and where the environment has influenced human activity. (*Makes interdisciplinary connections explicit to students.*) She connects this idea to climate and weather and the human impact on the environment. She asks students to recall the literary texts *Call of the Wild* and *To Build a Fire* by Jack London and information from a video presented in language arts. (*Connects*

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lessons to key concepts and themes within other disciplines and/or content areas.) She encourages students to build on each other’s ideas and ask clarifying and probing questions.

After the Socratic Seminar, students read a selection of primary documents on Westward Expansion that express the passionate belief that America is headed toward a prosperous future. To support reading comprehension, the teacher asks students to apply the school-wide literacy strategy “Claim, Evidence, So what?” to each document, identifying the claim in the document, providing evidence that supports the claim, and giving a short analysis about why the claim matters within the context of the text. *(Supports literacy and mathematical practices in content area. Implements instructional strategies that include literacy, mathematical practices, and language development across content areas. Makes content-specific language and reading accessible to students.)* As an exit ticket, students respond, individually, to the two essential questions from the beginning of class, drawing upon evidence from the discussion and the texts.

High school history: Students are working on Colorado Academic Standard 1: History, Grade Level Expectation 3 The significance of ideas as powerful forces throughout history.

Students are learning about immigration in the 1860s using primary sources from the period, along with current news articles about immigrants and refugees. Student tasks include researching the impact of immigration on their community and communicating their findings through graphs and tables. *(Supports literacy and mathematical practices in content area.)* Students also select someone they know who has immigrated to the United States to interview. Using information from the news articles, research, and interviews, students make comparisons between immigrants of the 1860s and those of today (e.g., reasons for immigrating, countries of origin, experiences). *(Strategically integrates literacy skills (reading, writing, listening, speaking) across content areas.)*

Elementary science: Students are working on Colorado Academic Standard 2: Life Science, Grade Level Expectation 1—Organisms have unique and diverse life cycles.

Third-grade students are learning about plants and the factors that impact their growth. They ask questions about plants and animals growth and then learn about them by answering their own questions. They plant seeds and modify the environments by placing some plants in direct sunlight, others under a lamp, and still others under a dark cover. Students consistently water the plants on designated days. The teacher has explained to students that as scientists, they will collect data daily and draw what they observe. She reviews how to accurately measure objects so students can correctly track the growth of each plant. The teacher concludes the unit by showing students how to illustrate the data by creating bar graphs and analyze it for the purpose of drawing scientific conclusions. *(Makes interdisciplinary connections explicit to students. Strategically integrates mathematical practices across content areas.)* She shows students examples of scientific journals to emphasize the need to be detailed and specific in their language. The unit concludes with students working in groups of three to create graphs and a book of their drawings that demonstrate the impact of each environment on the plants. They collaborate to write what they learned about plant growth based on their findings. *(Implements instructional strategies that include literacy, mathematical practices, and language development across content areas.)*

Middle school reading, writing, and communicating: Students are working on Colorado Academic Standard 3: Writing and Composition, Grade Level Expectation 2—Ideas and supporting details in informational and persuasive texts are organized for a variety of audiences and purposes and evaluated for quality.

Eighth-grade students are writing an argument that includes comparisons to support their points of view. The teacher presents examples of argumentative writing that use graphs to show comparisons between different products, locations, businesses, etc., to help students understand the importance of using visuals to support their points of view. He shows students his writing and how he incorporates bar and line graphs to support his argument

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about the importance of reducing sugar in one's diet. *(Makes interdisciplinary connections explicit to students. Implements instructional strategies that include literacy, mathematical practices, and language development across content areas.)* As he continues to demonstrate his writing and thinking, he uses mathematical vocabulary associated with the creation of graphs and explains how he decides which type of graph to use for each point of view. He then connects his writing to each graph to explain how the visuals support his argument. *(Strategically integrates mathematical practices across content areas.)*

Integrated Example (Connecting Visual Arts and Mathematics): Students are working on an integrated lesson that includes Colorado Academic Standard 3 in Visual Arts: Invent and discover to create, Grade Level Expectation 2: Assess and produce art with various materials and methods.

This 10th-grade lesson focuses on proportional reasoning/scaling, which is an important element of architectural design. The teacher begins by pointing out proportions as an application of mathematics in art and, following Practices 5 and 6 of the Standards for Mathematical Practice, he also incorporates into the lesson the use of tools in determining and using scales. (Connects lessons to key concepts and themes within other disciplines and/or content areas. Supports literacy and mathematical practices in content area.) With the aim of helping students understand the importance of tools in improving the visual appearance of a final product, he leads a discussion about art tools and precision. Tools that students might use include diagrams, two-way tables, graphs, flowcharts, and formulas. The teacher explains that students will be creating architectural models that must be both pleasing to the eye and foundationally strong, and for this to be the case, they will first be using their mathematical knowledge, as is reflected in Practice 4 of the Standards for Mathematical Practice. Throughout the model-building process, students will use tools, analyze relationships mathematically, and draw conclusions. As they reflect on the situation and interpret the mathematical results in the context of the situation, they will return to the model to improve it. (Strategically integrates mathematical practices across content areas. Makes interdisciplinary connections explicit to students.)

Middle school music: Students are working on Colorado Academic Standards 3: Theory of Music, Grade Level Expectation 3--Identification of musical elements in a level 2 composition or performance.
Standard 4: Aesthetic Valuation of Music, Grade Level Expectations 1 and 2--Evaluation of musical performances and compositions using advanced criteria; Articulation of music's role and cultural tradition in American history and society.

Eighth-grade students are identifying different genres of music popular during the 1960s. This study connects to their unit on the Civil Rights Movement in social studies. *(Connects lessons to key concepts and themes within other disciplines and/or content areas. Supports literacy and mathematical practices in content area.)*

The music teacher has a strong sense of student strengths in the classroom and has identified two students as real history buffs whose knowledge of this time period surpasses that of their peers. The music teacher also knows that some students prefer to learn facts and details through movement activities. The grade-level team and specialist teachers have identified activities in each content area that can support a variety of learning strengths of all students and are committed to providing engaging choices for students. *(Implements instructional strategies that include literacy, mathematical practices, and language development across content areas.)* Using several ideas for students to demonstrate their understanding of the styles and genres of music popular in the 1960s, the music teacher offers choices for students, including these:

- Students interested in the historical era can present a more detailed historical presentation on the 1960s.
- Students interested in learning and presenting facts and details through movement can select a song they know that is representative of the 1960s and Civil Rights Movement and create dance movements that depict the overall message in the song.
- Students interested in analyzing the style and form of music in the 1960s can evaluate whether particular songs meet certain theory criteria to be placed in a specific genre of music.

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Planning/Coaching Questions

- What connections were made between the content being taught and other content areas?
- How did you make explicit and elaborate interdisciplinary connections?
- How did you emphasize literacy connections to other subject areas?
- How did you emphasize interdisciplinary connections to math?
- How will you provide opportunities for students to apply literacy skills? How will you integrate literacy skills into lessons?
- How did you require students to apply mathematical knowledge to the content I am teaching? Which mathematical practices will be incorporated into the lesson?
- Which literacy skill(s) will need to be integrated into the lesson for students to master the learning objective?
- What instructional strategies will I use to support students in applying mathematical knowledge to the content I am teaching?
- How did you support students with language development related to the content being taught?
- How did you provide instruction that is intensive and of sufficient duration to accelerate learning?
- How did you incorporate real-world examples connected to the learning objective?

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