Standard I
Element B

Level 1 Practices

The Teacher:

1 ***Connects lessons to key concepts and themes within other disciplines and/or content areas***.

> An effective teacher utilizes her depth of content knowledge and an array of instructional strategies to lead students to connect what they are learning to other powerful ideas and concepts. This enhances students' understanding and provides additional relevance and context to what's being taught. Research shows that…students should consistently experience curricula rooted in the important ideas of a discipline that requires them to make meaning of information and think at high levels. (Tomlinson & McTighe, 2006, p. 84)

Key concepts are the essential learnings students must obtain in order to master the content being taught. These may include vocabulary terms, explanations of mathematical computation methods, causes of historical and scientific events, or elements of an artist's work. Without an understanding of the key concepts, it is difficult for students to move beyond the procedural or factual level of a content area to the more enduring conceptual understandings. Connecting these key concepts to other disciplines can provide students with an understanding of how learning is an interconnection of skills, events, and/or experiences that deepen their knowledge and conceptual understanding of the content.

The teacher who makes connections to other disciplines is able to communicate to students how concepts and skills they are learning in one content area are connected to concepts and skills in other content areas.

When making connections to other disciplines, the teacher should keep in mind the key concepts of the content being taught and how these concepts support student learning in other content areas. Any connections made should be for the purpose of enhancing student progress towards mastering the learning objective.

Examples of connections across disciplines:

- Art, Drama and Theatre Arts, and Social Studies/US History
  - Create a political cartoon of an issue in the era between the American Revolution and the Civil War.
  - Create murals to depict different geographical areas or to support an issue, such as environmental protection.
  - The teacher may provide guidance for characterization, and/or script development of historical figures or eras.
  - The teacher may guide research of costumes from certain historical eras.
- Dance, Physical Education and Science
  - As students learn about the importance of exercise and the impact of aerobic and anaerobic activities on the body, the teacher may discuss how a healthy heart impacts the health of the body. Students learn how inactivity and obesity impact heart disease.
  - The teacher may assist the students in understanding the application of energy and force as it relates to correct movement performance.
- Dance, Math and Science, Social Studies, and Physical Education
  - Students are presented with problems that include information related to what they are learning in other content areas, such as:
    - Distances between geographical locations

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        - Speed at which a car is traveling and how this impacts distance travelled in a given time period
        - Batting average for a baseball player
        - Perimeter of a football field or basketball court
    - Students create body shapes, group shapes and pathways that imitate geometric shapes.
- Dance, Literacy and Science and Social Studies
    - Read texts based on topics students are studying in other content areas. Highlight information learned about the topic, and discuss how it connects to the information students are learning in the content class.
    - Write expository or persuasive essays using topics students are studying in other content areas. Students may incorporate information learned from content classes in their essays.
    - Make connections between multiple meaning words, roots, and/or affixes and what they mean in different content areas or applications. Use these connections to help students determine meanings of unknown words.
    - The teacher may share/model connections between composing a dance sequence to composing a piece of text.
    - Read texts based on topics students are studying in other content areas. Highlight information learned about the topic, and discuss how it connects to the information students are learning in the content class.
    - Write expository or persuasive essays using topics students are studying in other content areas. Students may incorporate information learned from content classes in their essays.
    - Make connections between multiple meaning words, roots, and/or affixes and what they mean in different content areas or applications. Use these connections to help students determine meanings of unknown words.

2 ***Makes content-specific academic language accessible to students***

Content-area readings are the texts associated with a particular subject area and give students access to the content and language of that subject area. The reading associated with content areas other than language arts or reading courses reflects not only the concepts, ideas, and vocabulary important to these subjects, but also the features and structures used in the texts.

In their article, "Teaching Disciplinary Literacy to Adolescents: Rethinking Content," Timothy and Cynthia Shanahan provide the following definitions related to literacy skill development.

- Basic Literacy: Literacy skills such as decoding and knowledge of high-frequency words that are found in virtually all reading tasks.
- Intermediate Literacy: Literacy skills common to many tasks, including generic comprehension strategies, common word meanings, and basic fluency.
- Disciplinary Literacy: Literacy skills specialized to history, science, mathematics, literature, or other subject matter.

Disciplinary literacy is defined by the Colorado Academic Standards as "the intersection of content knowledge, experiences, and skills necessary to demonstrate understanding through the ability to read, write, communicate, and think critically using approaches unique to a specific discipline." (Hartman, 2013)

To become literate in the content areas, students also need to become effective oral communicators and develop the skills necessary to comprehend a variety of representations, including graphics and electronic media. As such, an important aspect of literacy instruction, especially in social studies, science, and math, is the ability to comprehend graphics, such as diagrams, graphs, timelines, maps, and tables. Teachers can make abstract

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activities, such as comparing and contrasting, concrete for students. Students also need to be able to create graphics to communicate their thinking.

Tips for integrating literacy connections:

- Balance fiction with non-fiction reading materials. Early childhood and elementary teachers may use informational text or historical fiction for read-aloud lessons.
    - Books for teaching elementary math skills: http://www.the-best-childrens-books.org/math-for-kids.html
- Use learning logs or reflection journals in content area subjects.
- Provide opportunities for students to write informational texts, such as reports, procedures (instructions), arguments (persuasion) and explanations, and/or respond to questions in writing by providing text-based evidence.
- Incorporate vocabulary activities that support students in communicating like a mathematician, historian, scientist, musician, artist, etc. This includes having vocabulary displays or visuals available for students to reference.
- Use organizers that support students in identifying main ideas, making inferences, comparing/contrasting, or summarizing what they read.
- Concept mapping helps readers gain a greater understanding of the content by helping them formulate mental plans of comprehending and composing as they read and write. By teaching students to understand text organization plans, content-area teachers enable students to cover meaningful content topics in greater depth and to connect new knowledge with prior knowledge (Sinatra, 2000).

The teacher demonstrates this understanding by modeling how to apply literacy skills to the content being taught. While there are numerous examples of how literacy skills apply to learning content, below are a few ways this may look in all grade levels and content areas.

- Vocabulary: Modeling use of morphology to define unknown words.
- Structure: Modeling how to use text features in an information text, such as graphics, headings, bold words, etc., to help the reader learn information and comprehend the text.
- Comprehension—Cause and Effect: Modeling how to identify events that cause other events. This may be applied to historical events, scientific events, events that impact a musician's or artist's work, etc.
- Previewing text: Modeling how to preview a text based on the cover, graphics, chapter titles or headings, etc., in order to make connections to the text and gain an understanding of the content.

Refer to this external resource for additional information:

- Article: "Teaching Science Literacy" by Maria Grant and Diane Lapp
  http://www.ascd.org/publications/educational-leadership/mar11/vol68/num06/Teaching-Science-Literacy.aspx
  Article describes ways to promote literacy in the science classroom.
- Article: "Integrating Writing and Mathematics" by Brad Wilcox and Eula Ewing Monroe
  http://www.readingrockets.org/article/52243
  Article provides strategies for the integration of writing and mathematics.
- Website: readwritethink maintained by the International Reading Association and National Council of Teachers of English
  http://www.readwritethink.org/
  Website provides instructional resources specific to many aspects of literacy development and instruction, including a variety of suggestions for integrating writing across the curriculum.
- Video: Reading Like a Historian
  https://www.teachingchannel.org/videos/reading-like-a-historian-curriculum
  Video explains how reading like a historian can support students in developing critical thinking skills while engaging in historical inquiry.

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Many students fail to make the connections between learning math and their everyday lives. Some may even develop “math anxiety” because they do not think they are “good” at math or fail to see the usefulness of knowing math content and skills. Therefore, it is critical for teachers at all grade levels and in all content areas to recognize opportunities to emphasize the importance of learning math.

Mathematics enhances students' problem solving skills by providing the tools they need to think logically: define the problem, think of ways to solve it, implement a solution, and evaluate the results. Without math skills, students may find it hard to read maps, calculate taxes and percentages while shopping, create a budget, learn musical notes, or keep score in sporting events. In addition, many professions rely heavily on math skills: architects, contractors, landscape architects, engineers, and carpet and paint sales personnel. By communicating these uses and connecting them to the content being taught, the teacher can emphasize why students need to learn math content and skills.

Examples of math connections across content areas:

- Dance
  - Floor patterns and diagrams
  - Spatial relationships and shapes
  - Differentiate between beat and rhythm
- Drama and Theatre Arts
  - Spatial explorations and relationships
  - Tempo and pacing
  - Mathematical aspects of set building and technical theatre
- Science
  - Measurement
  - Data analysis
  - Graphs
  - Mathematical modeling
- Social studies
  - Measurement (timelines, map scales)
  - Reading numbers such as dates, populations, and percentages
  - Statistics and graphs
- Art
  - Spatial relationships (e.g., point of view/perspective)
  - Logical reasoning, patterns/form, when creating an artwork
  - Sequencing in process-based art making
- Physical education
  - Measurement
  - Computation skills
  - Ratios
  - Percentages
- Music
  - Differentiation between beat and rhythm
  - Subdivision, patterns/form
  - Time signatures; simple vs. compound meters
  - Temporal/spatial experiences and integrating body and mind
  - Crossing the midline (reaching across the body when playing instruments; moving to rhythm)
  - Analysis/performance of marching band drill formations
  - Rhythmic analysis of multiple parts of a performance piece

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See also Level 2 ***and*** Level 3 ***Practices on implementing instructional strategies that include literacy, mathematical practices, and language development and strategically integrating literacy skills and mathematical practice.***

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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