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Key Connections to Science in the K-5 ELA Common Core Standards

The Standards set requirements not only for English language arts (ELA) but also for literacy in history/social studies, science, and technical subjects. Just as students must learn to read, write, speak, listen, and use language effectively in a variety of content areas, so too must the Standards specify the literacy skills and understandings required for college and career readiness in multiple disciplines.

Common Core Standards for English Language Arts & Literacy in History/Social Studies, Science, and Technical Subjects

The increased emphasis on content literacy in the language arts standards provides great opportunities for the K-5 classroom teacher to accomplish multiple curriculum goals with coordinated units related to science. The largest change is the shift from an estimated current national practice of focusing only 7 to 12% of reading on informational texts in the elementary classroom to a balance of 50% informational text and 50% literary texts. The ELA Common Core Standards also point at a shift in the distribution of writing purpose to 30% to Persuade, 35% to Explain, and 35% to Convey Experience by the end of elementary school. These changes will give the elementary teacher much needed support for integrating non-fiction reading and writing that can support the hands-on experiences critical to science learning.

Changes in the Next Generation Science Standards, scheduled for California adoption in Summer 2013, will also be reinforcing the actual skills used in science and engineering. There will be an increased emphasis in hands-on investigation and student-led experimentation with all the embedded reading, research and writing necessary to practice science. Multi-disciplinary teachers will be able to design units that address multiple standards by integrating hands-on investigation with science journals, research projects, informational texts that extend direct experiences, and science debates and presentations.

There have always been implicit connections between language arts and science practices due to the critical importance of language skills to convey scientific procedures, record results, reason based on evidence, discuss observations, present conclusions, and review science literature. While many of the ELA skills can be applied in science, certain ELA Common Core standards point to explicit connections.

Reading Standards for Informational Text *[Now 50% of Reading Distribution]*

- In Key Ideas and Details the standards refer to:
    - analysis of relationships or interactions between "scientific ideas", "steps in technical procedures", individuals or events in "a historical, scientific, or technical text.
- In Craft and Structure, science-related goals include:
    - determining the meaning of general academic and domain-specific words and phrases in a text relevant to the grade level topics or subject areas.

- comparing and contrasting the overall structure (e.g. chronology, comparison, cause/effect, problem/solution) of events, ideas, concepts or information in two or more texts.

- In Integration of Knowledge and Ideas, science –related goals include:
  - interpreting and using information presented in diverse media and format: "Interpret information presented visually, orally, or quantitatively (e.g. in charts, graphs, diagrams, time lines, animations or interactive elements on Web pages) and by 5th grade demonstrating the ability to use diverse sources to "locate an answer to a question or solve a problem efficiently".
  - "explain how an author uses reasons and evidence to support particular points in a text, identifying which reasons and evidence support which points". *(Reading Standard 8)*

- In Range of Reading and Level of Text Complexity, science –related goals include:
  - At the high end of the grade level complexity band, students can "read and comprehend information texts, including history/social studies, science and technical texts".

Writing Standards

- In Text Types and Purposes, science-related goals include:
  - writing "opinion pieces on topics or texts, supporting a point of view with reasons and information." Pieces should include clearly stated introductions, logically ordered reasons supported by facts and details, links between opinion and reasons, and a concluding statement. A following section cites use of "precise language and domain-specific vocabulary".

- In Production and Distribution of Writing, the standards refer to:
  - producing coherent writing in which "the development and organization are appropriate to task, purpose and audience".

- In Research to build and Present Knowledge, the standards refer to:
  - participating in shared and independent short research projects that use several sources, citing "record science observations" as a specific example at 3rd grade.
  - Drawing evidence from literary or informational texts to support analysis, reflection, and research. *This standard (Writing Standard 9) also refers back to Reading Standard 8.*

- In Range of Writing, the standards refer to
  - Routine writing assignments for a range of discipline-specific tasks, purposes and audiences. The Anchor Standards for College and Career Readiness that underlie the California CCS refer to using numerous writing assignments to teach student to "adapt" their writing for a "range of tasks, purposes and audiences".

Speaking and Listening Standards

While not explicitly mentioning science, the Speaking and Listening Standards refer to a range of skills relevant to good science practices including: collaborative discussions in a variety of formats, following discussion rules, drawing conclusions from the knowledge gained in discussion, providing visual aids to convey information, and oral reporting on grade-level appropriate topics and texts.