

curriculum. Learning subject matter demands understanding and using its language to comprehend, clarify, and communicate concepts. The following two snapshots illustrate the integration of the ELA/Literacy strands with science and visual arts.

Snapshot 4.1 Integrated ELA and Science in Grade Two

Second graders engage in a science inquiry, hands-on activity in which they pour water on mounds of sand and dirt in order to understand erosion. They change the amount of water and the number of times they pour water on the same mound. They make observations of the effects on the sand and dirt, discuss their observations in small groups, and write notes and draw sketches with labels in their journals. Students check with a peer to determine if their entries make sense. The teacher circulates, supporting students as needed. Later they view Web pages on the topic of erosion, including some animations their teacher and the teacher librarian located, and they explore the images and text in books about erosion. They demonstrate their understandings of the content they've researched by engaging in a discussion with the teacher and peers. The teacher's observations of students' understandings is supplemented through a few teacher questions to generate statements about their findings. In small teams, and with guidance from the teacher and other adults, the children use digital cameras to take photographs of erosion on their school grounds. The photographs include images of small valleys created by rain run-off and a wearing down of the asphalt where there is high traffic. They insert the photos into a digital presentation using software such as PowerPoint or Keynote and add text to explain the images. A rubric for evaluating digital presentations by second graders had previously been shared and discussed. Children referred to it as they created their presentations and the teacher used to provide feedback on drafts. They share their final digital presentations with a neighboring class and decide they would like to post it on the class Web page.

CA CCSS for ELA/Literacy: RI.1.7; W.1.2,6; SL.1.2,5; L.1.1-3, 6

Related Next Generation Science Standard:

2-ESS1-1. Use information from several sources to provide evidence that Earth events can occur quickly or slowly. [Clarification Statement: Examples of events and timescales could include volcanic explosions and earthquakes, which happen quickly and erosion of rocks, which occurs slowly.]

Snapshot 4.2 Integrated ELA/ELD/Science/Visual Arts in Grade Two

Ms. Li's second-grade students eagerly, but cautiously, reach into their mystery bags. Without peeking, they gently touch the object inside the bag, noticing its texture and shape. They shake the bag and listen carefully for sounds the object makes. They open the bag just a bit and waft the air above the opening in their efforts to detect scents. Ms. Li asks the students to turn to a neighbor and share words that describe the as of yet unseen object (what it feels and smells and may look like) without divulging what they think the object is. Then she invites volunteers to share descriptive words with the whole group

and records them on a chart, using enough wait time to elicit many responses. Among the descriptions the students offer are that the object is *rough, not too heavy, stiff, and hard*. They note that it *has points and is round*. One student says he feels a *sticky* substance and *smells like a forest*.

Ms. Li then asks the students if anyone has an idea of the object's identity. She encourages them to whisper their thoughts to a neighbor and to explain their reasons for their guesses, using evidence from their observations and from the class-generated chart. She asks for volunteers to share their thoughts and their reasons with the entire group. Finally, the students are permitted to open their mystery bags and withdraw the object. It is a pine cone!

Ms. Li provides each student with a hand lens, and they busily examine their pine cones. She asks them what they see and records these additional observations on the chart. She also records questions that spontaneously erupt from the students: *How many different kinds of pine cones are there? How long do pine cones stay on trees? Are there girl and boy pine cones? How big do pine cones get?*

"Great questions!" Ms. Li says. "Let's see what we can learn!"

Having anticipated their curiosity, she offers the students a variety of print resources about pine cones and also makes available the classroom laptops so students can access the library's databases and e-books. The students dive into the materials and excitedly talk with each other about what they discover. After allowing them some time to explore the materials, the teacher pulls the group back together and asks them to share. As she facilitates the discussion, Ms. Li asks the children to build on the comments of a peer if they have related information or details, and sometimes she asks a student to point out or read aloud the specific language from the resource material that supports what was shared. She also directs the students' attention to the questions they generated earlier and inquires whether they found answers to any of the questions. And, she wonders aloud if there is anything else they want to know now that they have looked at the materials, adding their new questions to the chart. Ms. Li asks students to write the questions that were generated and their own observations in their lab notebooks. The chart with the descriptive words and questions and the other materials remain available to the students throughout the week. The students are encouraged to continue to pursue answers to their questions and add reflections to their notebooks.

Later that week, Ms. Li has the children once again closely examine the pine cones, which have been kept available in the science station along with the chart and text resources. This time they create detailed observational drawings of their pine cones, including as much detail as they can and labeling the drawings with descriptive words and phrases. As Ms. Li circulates around the classroom, she uses some of the vocabulary and phrases the class discussed throughout the week. Ms. Li posts the artwork on the "Gallery Wall" so that children can view one another's and their own work. When parents, the principal, or other visitors come to the class, a designated "docent" explains the drawings and the process the class engaged in to generate them.

The next week, Ms. Li has the students work in small teams to plan and construct an accordion book about pine cones. Each team makes decisions about what information to include and how to

organize their texts. Ms. Li reviews the specialized language and content knowledge they learned from their research and discussions, and she encourages the students to use this language and ideas in their writing. The students draft and revise and edit their texts, with support and feedback from Ms. Li. They glue into their books the observational drawings they made of their pine cones, as well as other illustrations. With support, the students bind the pages of their book together. Then each team formally shares their book with the rest of the class. The books are placed them in the class library for all to enjoy.

CA CCSS for ELA/Literacy: RI.2.2, RI.2.7, W.2.2, W.2.4, W.2.5, W.2.7, SL.2.1, L.2.1, L.2.2, L.2.6

CA ELD Standards: PI.1-3, 6, 10, 12b; PII 1

Related Next Generation Science Standards:

2-LS4-1. Make observations of plants and animals to compare the diversity of life in different habitats.

Related CA Visual and Performing Arts Content Standards:

Visual Arts 1.3 Identify the elements of art in objects in nature, the environment, and works of art, emphasizing line, color, shape/form, texture, and space.

Visual Arts 1.1 Perceive and describe repetition and balance in nature, in the environment, and in works of art.

Related CA Model School Library Standards:

2-3.3 Use information and technology creatively to answer a question, solve a problem, or enrich understanding.

Adapted from Yopp, Ruth H. 2006. "Enhancing Hands-on Science Experiences with Informational Text: Learning about Pine Cones." *Science Activities* 43 (3): 31-34.

English Language Development in Grade Two

In second grade, EL students learn English, learn content knowledge through English, and learn about how English works. English language development occurs throughout the day across the disciplines and also during a time specifically designated for developing English based on EL students' language learning needs. In integrated ELD, second grade teachers use the CA ELD Standards to augment the ELA/literacy or other content instruction they provide. For example, after a teacher has read a story several times and then asks students to discuss a text-dependent question with a partner, she might use the CA ELD Standards to provide differentiated support to her ELs at varying levels of English language proficiency. She might ask the class the question, "What do you think the main character learned in this story? How do you know?" She might support her ELs at the Emerging level of English language proficiency to respond meaningfully to the question with an open sentence frame (e.g., I