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Curriculum Connections

As students plan, plant, and otherwise engage with schoolyard gardens and habitats, they can use journals for different purposes: to document actions, describe changes over time, capture and reflect on details of observations, record experimental data, ponder intriguing questions, and creatively express thoughts and emotions. And *that's* just for starters.

How you use garden journals will depend, in part, on your teaching and learning goals, unique outdoor context, and students' abilities. You might establish up front how you want the class to use them or involve students in the decision making.

Student journal entries can be inspired by your deliberate questions or challenges (e.g., *How are people like plants? Compare and contrast different leaf types.*) or by their own schoolyard "wonderings," observations, and experiences. Specific activities, topics or themes, such as making compost, exploring multicultural gardening, or learning about flowers and pollinators, can also become springboards for journaling. Consider the following suggestions.



Photo: Allie O'Donnel, age 14

Cultivate Keen Observers

Scientists and artists use their senses to truly "see" the world around them. When students have time and opportunities to carefully observe, muse, and draw or describe something as they see it rather than as they think it should look, curiosity, questions, and discoveries bloom. Journal images of cute, round-petaled flowers soon give way to drawings revealing a stunning level of detail. Here are some thoughts on using journals to hone youngsters' observation skills.

- **Set up double-entry journals.** Have students divide each page down the center. They'll use the left side for observations, drawings, and descriptive notes. The righthand column should be reserved for questions and reflections inspired by the observations.

- **Try shifting perspectives.** First have students take a "macro" view of some aspect of the schoolyard or garden that intrigues them. Give them a set amount of time to write about, paint, and/or draw what they see. Next, have them move closer or otherwise shift focus so they have a closeup view of a small area. Ask, *How do you "see" differently when you shift your*

Assessing Entries

Ask yourself the following questions about observation-related journal entries:

What is the quality and quantity of details represented in words and images? Do the words and drawings detail similarities and differences and show accurate sequences? Do they depict actual representations rather than preconceived or stereotypic ideas about what something looks like? Do they portray accurate positions and relationships between objects?

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Teachers' Choice

perspective? What new questions or "ahas" does it inspire?

- **Think by analogy.** Invite each student to choose a small detail in your garden — a leaf, sunflower head, handful of compost — and get to know it inside and out. Have them describe it in their journals in enough detail (texture, shape, color, designs, and so on) that someone else could draw it. Next, have them think by analogy by asking, *What else does it remind you of?* Give them time to ponder and write about what purpose the different attributes might serve. (For instance, *a leaf is flat so it can absorb lots of the sun's energy.*)
- **Make routine observations.** Set a regular time (e.g., every Friday afternoon) for students to make journal entries in the schoolyard. They might focus on changes that signal shifting seasons (e.g., signs of spring), unfolding life cycles, or a garden's progression. You might also set up long-term observations of relationships, such as those between pollinators and flowers.

Capturing the Gardening Season

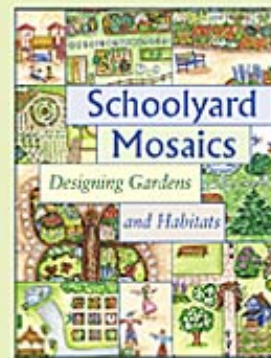
Students can use individual garden journals, or one created by the entire class, to document the planning, planting, and unfolding of events in their garden or habitat. As they do so, they'll gain insight into the science and art of gardening and how living systems function. Here are examples of entries to include: maps of garden areas or beds; drawings or photos of garden changes; planting and garden maintenance records (e.g., when fertilizer was added); descriptions, measurements, and graphs of plant growth; garden events, and discoveries; plant responses to certain treatments (e.g., compost tea); and things to remember or try for next year's garden.



Thematic Project Journals

A long-term study of trees, pollinators, multicultural gardens, or other themes can be the focal point of an entire journal. Such as booklet might feature what students already know about a topic or concept and questions they have, related observations and art, procedures, notes from interviews and other forms of research, and responses to (or creation of) related fiction. Students can also use the booklets to summarize ideas and concepts and express opinions on issues that have been explored.

Creative Writing Connections



Teachers are raving about this book filled with actual school garden plans, stories of how students participated in the design process, how-to information, and resources.

You'll find details in our [Gardening with Kids Store](#).

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Gardens and other natural areas easily capture imaginations and inspire creative writing. Consider having students use journals for assignments such as these:

- Respond to fiction and nonfiction readings in their journals.
- Write poetry or short stories using elements or phenomena in the schoolyard as a central theme.
- Write from a specific perspective (other than their own), such as that of a worm tunneling under their green oasis.
- Find a favorite spot in the schoolyard or garden, sit quietly for 5 minutes. Use their senses to absorb the scene and then record observations, ideas, and feelings

Science Inquiry Journals

Teachers often have students use science journals to describe investigations and experimental procedures, record observations and data, and report conclusions. But that approach can limit reflection and inquiry. Here's another means that effectively supports critical thinking and helps students construct understanding based on evidence.

Before an investigation, have students draw or write what they already know about the topic or concept, and list questions and predictions they have. They should also explain the purpose of their investigation.

During an investigation, in addition to including observations, diagrams, and data charts and tables, your young scientists should record questions and thoughts inspired by the observations and data. Next, have them write about how what they are seeing relates to their predictions.

After an investigation, students should review their entries, organize data, and look for patterns. From this evidence, they should try to explain their results or findings and answer the following: *How does it fit with my original ideas? What have I learned and how have my ideas changed? How does this tie into the real world? What new questions do I have? How did collaborating with classmates enrich the process?*

As you talk with students about entries during the investigation, you will gain insight into their thinking and possible misconceptions. Use this to determine next steps in instruction and to inform your assessment.



Bookmaking Through History

From early clay tablets to electronic publications of our day, people have been making and using books for millennia. Consider engaging your students in delving into this binding tale. They might even devote a homemade journal to the study. Lay the groundwork by asking, *What do you know about books? When and where do you think they were first made and what were they made of? What do you think was the first handwritten book? Printed book? What would you like to know about the history of books?* Student responses will, no doubt, inspire some fruitful discussions.

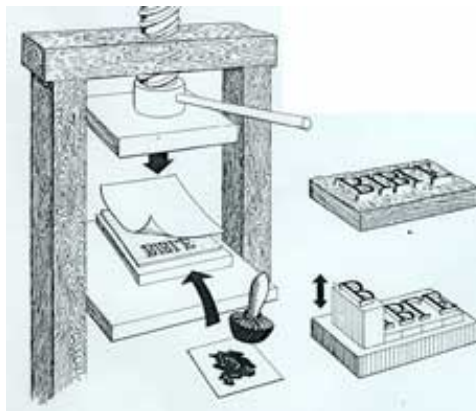
Next, have your young sleuths conduct research via books, interviews (with an antique bookstore owner, for instance), or the Internet. They could cover general history or focus on

specific topics, from paper and binding techniques to the impact of the printing press on society. Consider starting with the delightful site, [An Animated History of Books](#). Share a few of the following highlights to grease the wheels:

- The first "books" were in the form of clay tablets (3,800 BC). Imagine carrying a bookbag with those volumes! These were followed by scrolls made from papyrus. The plant stems were stripped, laid side by side and crosswise, and then soaked in the Nile. Once they were dried, they were hammered into sheets and polished with ivory.
- Books today are taller than they are wide because the pages were once made of parchment (prepared from the skin of a sheep or goat) and it was more efficient to cut the sheets horizontally.
- The word *manuscript* means "written by hand." Monks and other scribes once carefully hand copied books on prepared animal skins, leaving space for illustrators to add pictures and fancy capital letters. These early books were so expensive to produce that they were often chained to bookshelves!

Curriculum Connections

- In the 10th century, it took Feng Tao 21 years to print Confucian texts by carving woodblocks (one of the first kinds of moveable type)!
- Spectacles (eyeglasses) were invented in 14th century, enabling more people to read. Sometimes bookmakers carved a place to put glasses right in covers of books!
- Although Johann Gutenberg of Germany wasn't the *first* to use moveable type, he combined it with a few technologies — a wine press, oil-based ink, and paper — to invent the printing press. His first book? The Bible.
- As the printing press made books widely available in Europe, learning, literacy, and the spread of new ideas flourished. In the 1800s, a new book form — the novel — emerged.



Assessment Prompts

"I try to take time to conference with students about journal entries and periodically review each one on its own," says Diane Gore from Durham, NC. "In doing so, I learn so much about students' thinking, and can readily see where they need support." Many teachers concur that one of the best assessment-related uses for journals is to monitor students' progress and thinking, identify misconceptions, and then use that information to guide instruction.

In addition to reviewing and discussing regular journal entries (or the science journal questions described above), consider using occasional prompts, such as the following, to help reveal students' thinking and understanding:

- *Tell me what you know about ____ concept. (How do you know what you know?)*
- *What is your opinion about ____?*
- *How do you think X topic relates to Y topic?*
- *How would you explain ____?*
- *Write 3 questions, 2 new "ahas," and 1 suggestion for digging deeper with this investigation.*
- *How would you persuade ____ that it's important to ____ (e.g. compost)?*
- *Summarize what you've learned this week about ____.*
- *Draw a concept map to illustrate your understanding/thinking about ____.*
- *Discover one new thing about your garden/habitat ecosystem and write about it.*

Dialogue Journals

This journaling strategy, in which a teacher engages in private, written conversations with students over time, is a wonderful tool for assessing and guiding learning. If you haven't used it before, take a look at this Web page: [Using Dialogue Journals in Support of Science Instruction.](#)

You can also engage students in assessing their *own* thinking by using the following types of questions as a lens: *Do I understand? What do I understand about ____? How do I know? What evidence do I have? How would I explain ____? What do I not understand?* Younger students might use a simple organizer with these headers: *What I did, What I learned, My questions, My thoughts/responses.*



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