



“A” is for

Assessment

A straightforward look
at simple assessment
strategies that inform both
learning and teaching

By Shannan McNair

With the talk of “accountability” and “progress” in schools across the country, it’s no wonder that assessment is on everyone’s minds. And, it should be. Well designed pre- and postassessments provide students with a clear idea of what they are expected to know after a set of learning experiences.

Effective assessments also help teachers hone their “craft,” encouraging them to think in advance about the content or skill standard and how to define what students should know and be able to do. Assessments help teachers identify students’ misconceptions or areas in which they may need to refocus their instruction efforts. A preassessment may even indicate that students already understand a concept and may be ready for the next step.

The assessment strategies described in this article, implemented systematically throughout the school year, are useful tools to help you determine ways to teach concepts and provide a valid and meaningful picture of learning. The strategies are simple and can be employed in various ways—from assessment measures *before* concepts are intro-

duced to culminating assessments of what students learned during the study and several instances in between.

Three Kinds of Assessments

It takes time to incorporate effective assessments throughout the daily teaching and learning process, but it is worth the effort.

Typically, *preassessments* are short, directly tied to learning objectives, and take place just prior to the learning experiences planned around a particular concept, skill, or set of concepts. Preassessments can easily be embedded in an introductory or awareness-building experience regarding the particular concept. Preassessments that are open-ended tasks or questions are more time-consuming to analyze but are preferable because they offer more useful information about the students' prior understanding.

Formative assessments, which check for understanding as students are learning new skills or gaining new knowledge, can be embedded into daily work. *Summative* assessments, or postassessments, (especially when paired with preassessments) are demonstrations of what students have gained as a result of the learning experiences provided. Postassessments that closely match preassessments are excellent "windows" into student learning.

Depending on the point in which it is incorporated into the study, any of the following items or experiences can be an effective pre-, formative, or summative assessment: drawings, labeling models or drawings, journal entries, individual interviews, verbal or written responses to a set of questions, constructions, or demonstrations of what is known or a set of skills. Each kind of assessment brings with it unique information about students' progress and the effectiveness of the teacher's instruction.

Drawings: Insight into Understanding

Illustrations reveal how children perceive an object and the degree to which they observe details and represent them. They also serve as a window to a child's concept knowledge. For example, evaluating a child's drawings done prior to a study of water can provide information regarding his or her theories about water, such as what its uses are or what it looks like in nature as a body of water. Similarly, reviewing students' drawings done as a preassessment prior to an Earth science investigation can reveal understandings and misconceptions about the layers of the Earth.

When assigning a drawing task as an assessment—whether it is to be used as a pre-, formative, or postassessment—it's best to provide simple yet specific directions. For example, an appropriate preassessment at the start of a pond life study would include instructions such as, "Draw a picture of a pond that shows what lives in and around ponds." The specific nature of the instruction gives structure to the assignment.

Student drawings are particularly useful as an assessment tool if the student has not yet learned to read or write or if he or she finds representing ideas through drawing particularly appealing. They are also useful assessments for English Language Learners, who may prefer to express what they know through drawing and other forms of representation, including dramatic representations, construction models, and painting experiences. Depending on the age and ability of the student, an adult may need to ask the student how to describe and/or label their picture and write what is dictated to glean the most information from the assessment.

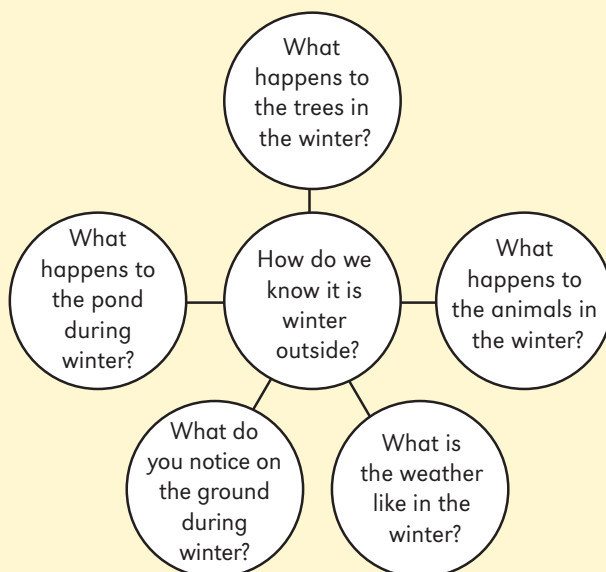
Journals: Reflections on Learning

Journal entries often include a narrative about a particular question or set of questions as well as accompanying drawings. If, throughout a unit, students are regularly asked to enter information or answer questions in journal format, the journal entries can easily be used as pre- and postassessment tools. The journal is also an ideal strategy for a *retrospective assessment* in which students reflect on what they gained from a learning experience.

For example, the teacher of a class studying the life cycle of cicadas asks students to keep a daily journal. The first entry is considered the preassessment: "Write what you know about cicadas—what they are, where they live, how they live, what they look like, and describe the life cycle." Subsequent daily journal entries are embedded assessments as students practice recording their research findings, observations, and conclusions as they investigate particular

Figure 1.

A teacher's web for a study of winter.



topics. Typical teacher-posed questions for a journal entry would be, “Discuss your research findings and pose some questions that you still have,” or “Describe the cicada you observed today and include a drawing with labels.”

For the final journal entry, the wording would be the same as the preassessment, providing an opportunity for students and their teacher to reflect on the extent of learning.

A retrospective assessment strategy is useful to gain formative, ongoing information as students are learning concepts, while journal entries used as broader pre- and postassessments tend to determine prior knowledge and overall gain.

More Strategies

Various assessments are needed to meet the diversity of learners in classrooms. Below are some ex-

amples of additional strategies and how they were used in particular studies to provide information about student progress.

Comparing and Contrasting Activities. As a preassessment to a study of properties of living versus nonliving things, students can either create lists of each group, sort pictures of various living and nonliving objects, or draw pictures of living and nonliving objects. Observing these activities provides information about students’ thinking, their ability to notice and describe attributes of objects, and their understanding and misconceptions about living and nonliving things.

Graphic Organizers. Concept maps, Venn diagrams, or flow charts reinforce learning as students explore ideas while they reflect on their understanding. Comparing a preunit or lesson concept map with a postunit concept map can give students a concrete look at their own learning.

Individual Interviews.

One-on-one conversations with teachers are an opportunity for students to simply tell the teacher what they know. This strategy is particularly helpful when students are learning more complex concepts or processes where misconceptions would not necessarily be revealed in written assessment tasks, such as short-answer or multiple-choice tests. The deeper questions of an interview reveal where errors in thinking occur and where additional experiences or instruction are needed.

Dramatic Representation. Some children may be best able to share what they know through dramatization, such as the dramatization of the steps to viewing a slide on a microscope. Dramatic representations are especially useful as assessments when students know more than they can write effectively (i.e., for preschool and primary students, English Language Learners, or students with learning challenges).

Physical Props. Other units may lend themselves

Figure 2.

The children’s web of winter.



to assessments that rely on physical props. For example, after a study of simple and complex machines, a teacher may provide an array of pictures of machines for students to sort, label, and identify their use. Activities using concrete examples are often clearer and more relevant for students, minimizing bias or lack of interest that can affect assessment results.

Constructions. As a preassessment for a study of insects, students can create “insects” using a variety of construction toys and materials. These three-dimensional models can reveal the physical details that students may not be able to represent in a drawing or narrative description. The process of “building” an insect promotes further thinking about form and function. Observing the building process, listening to student conversations, and noting the final products reveal where further study is needed. Following the study, students can redesign their original insect to reflect what they learned—reflecting the idea that learning is a continual process.

Assessments to Inform Instruction

Many of the assessment strategies discussed in the article can also be used as tools for the teacher to inform and plan effective instruction. For example, when determining the critical questions for a preassessment assignment, teachers first reflect on the learning they anticipate will occur and identify the measurable learning objectives prior to teaching those new concepts or skills.

When teachers develop concept maps while planning lessons for students, it supports the idea of “concept-focused” experiences rather than random activities related to a topic versus a concept. Figure 1 (page 25) shows a web a teacher created, listing some key concepts she hoped the children would learn in the lessons. She used the map to guide discussion and instruction. Working from her planning web, she introduced the season “winter” to the children by having them recall things they remembered from nature walks and lessons on previous seasons. Together, they made a new web to show their prior knowledge (Figure 2, page 26).

Assessments to Involve Others

Assessments can not only help teachers plan more meaningful experiences but also help draw others more deeply into the learning process. For example, to make learning highly visible to students, create two assessment folders for each study. Students put work in the “easy” folder that involves skills or knowledge they already have and place work that involves the learning of new concepts or skills in the “hard” folder. Moving their work from the “hard” folder to the “easy” folder is a visible sign of learning for the student. This strategy is particularly helpful when one concept builds upon another, as in mathematics or science

learning, and is best used as an overall self-reflection assessment. Periodic conferencing with the teacher to discuss the contents of each folder helps students and teachers share in the responsibility for learning.

Portfolios are another way for students—and parents—to stay informed of student progress. Typically, a unit’s pre- and postassessments are some of the work included in portfolios and presented at parent conferences. Many teachers have also begun documenting children’s work in the classroom as a form of assessment, a strategy adopted from the Reggio Emilia schools in Italy (Katz 1993).

Project documentation makes learning visible by capturing descriptions of students’ learning experiences, digital photos of their explorations, and concept webs and daily work samples (including preassessment samples)—all of which together tell a cohesive story of the learning experience that can be shared with students, parents, and administrators.

Effective assessments help teachers present a more accurate picture of what students know and are able to do. They also provide teachers with a more realistic picture of what students gained from the experiences offered, rather than making an assumption that everything they know about a concept was learned in the classroom. When assessments focus on individual learning needs and styles, students and teachers alike find the process satisfying. ■

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Resources

- Katz, L. 1993. What can we learn from Reggio Emilia? In *The hundred languages of children: The Reggio Emilia approach to early childhood education*, eds. C.P. Edwards, G. Forman, and L. Gandini, pp. 19–37. Norwood, N.J.: Ablex.
- National Research Council (NRC). 1996. *National Science Education Standards*. Washington, D.C.: National Academy Press.

Connecting to the Standards

This article relates to the following *National Science Education Standards* (NRC 1996):

Assessment Standards

Standard A:

The consistency of assessments with the decisions they are designed to inform.

Standard D:

The fairness of assessment practices.