

Workshop 8

Learning to Listen

DESCRIPTION

Formative assessment is a term that has gained prominence as teachers recognize the value of uncovering students' thinking during the course of instruction. This information is then used to guide the development of lessons as well as provide feedback to students to assist them in their learning. In this workshop, we see teachers encouraging students to ask questions, thus affording them the opportunity to test their ideas and restructure their own thinking.

DR. WYNNE HARLEN

Wynne Harlen worked as a professor of education at universities in Reading, London, and Liverpool before being appointed as the director of the Scottish Council for Research in Education. She has spent her working life in research, development, and evaluation of children's learning in science. Her particular concerns are to help teachers help children learn with understanding and, through the use of scientific process skills, to develop concepts, attitudes, and values that promote scientific literacy, lifelong learning, and respect for the environment. Her 16 books include *Taking the Plunge*, *The Teaching of Science in Primary Schools*, and the recently published third edition of *Teaching, Learning and Assessing Science*.

Workshop 8 Timeline

Getting Ready

30 minutes

Observation Skills

Five Minutes

Working individually, choose an object in the room but do not tell anyone what you have chosen. Then, write a paragraph which describes the object (but does not name it). Your paragraph should illustrate your observation skill.

Five Minutes

Depending on the size of the group, either read your description and let the whole group identify the object, or swap your description with one person and see if they can identify the object.

Twenty Minutes

Now imagine that you had asked your students to complete this observation exercise. How would you assess the quality of their descriptions?

Discuss what you would look for in your students' paragraphs that would illustrate to you that their observation skills are developing appropriately. (You might develop an observation skill assessment scheme in order to decide which students need more assistance.)

Discuss how you would assist students in future lessons if their paragraphs showed that they needed support in developing the skill of observation.

Workshop 8 Timeline

Watch the Workshop Video

60 minutes

Going Further

30 minutes

Student Work

Preparation

You were asked to bring examples of children's work to discuss. If you were unable to bring any, use the example responses given below.

Example Responses

Listed are the types of responses that could be expected from elementary children when asked, "Why can you hear a tuning fork after it has been struck and is then held on a table?"

- A. Tuning forks make sound waves that aren't loud.
- B. The tuning fork was hit and it vibrated. The table made it louder and the sound waves went through the air to my ear.
- C. The tuning fork vibrates and this vibrates the table. The air vibrates and that vibrates my eardrum so that I hear its noise.
- D. The fork makes a noise and I hear it hum on the table if I listen hard.

Discussion

Using either your own examples or the ones provided, show your colleagues examples of how several children in your class thought somewhat differently about a science idea they had learned.

When you have each described your examples:

- Choose the work of one child whose idea needs further refinement. Discuss how you might structure a lesson (for the whole class or for a small group) which might help to clarify the concept for children.
- Discuss how the responses differ.
 - Were terms used by the children that did not completely convey their understanding?
 - For each set of children's work you have discussed, choose the work of one child whose idea needs further refining. Develop a series of questions that you might ask him/her in order to gain more information about the child's thinking.

Final Assignments

Ongoing Activity

Reflective Journal

In this workshop, you have read about and seen the use of assessment during the course of instruction. Looking at students' learning in progress and not just at the end of a unit of instruction is the means by which we help children better understand concepts and master skills.

- What do you currently do to keep track of each student's learning?
- What personal data-management issues do you envision or face as you document students' learning during instruction?
- What did you see or hear in today's workshop (either from the video or from discussions with your colleagues) that you think you might like to use in your own classroom?
- How important to you, personally, is it to find out about children's thinking during the course of instruction?

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Kaput, James. "Transforming Algebra From an Engine of Inequity to an Engine of Mathematical Power By 'Algebrafying' the K-12 Curriculum." In *The Nature and Role of Algebra in the K-14 Curriculum: Proceedings of a National Research Council Symposium*. Washington, DC: National Academy Press, 1998.

Sadler, Philip. "About Project DESIGNS: Project DESIGNS Goals That Cross All Modules." In *Project DESIGNS*, 3-6. The President and Fellows of Harvard College. Project DESIGNS, NSF grant ESI-9452767, 1996.

Swartz, Robert, Fischer, Stephen, and Parks, Sandra. "Critical and Creative Thinking in Science." In *Infusing the Teaching of Critical and Creative Thinking Into Secondary Science*, 29-32. Pacific Grove, Calif.: Critical Thinking Books and Software, 1998.

Other Resources

Hewson, Peter. Genetics Construction Kit computer program. Go to <http://bioquest.org> or call (608) 363-2743.

Kaput, James. SimCalc computer software. Go to <http://www.SimCalc.umassd.edu>.

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Appendix

Index of Readings

The Reading Assignments, below, correspond with the workshops of the same number.

1. “About Project DESIGNS: Project DESIGNS Goals That Cross All Modules,” by Philip M. Sadler. From *Project DESIGNS*. © 1996 The President and Fellows of Harvard College. Reproduced with permission.
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