FRONT PORCH SERIES
BROADCAST CALLS

Science for Preschoolers? Yes and No.

Rochel Gelman
Rutgers University, New Brunswick

QUESTIONS FROM AUGUST 27 FRONT PORCH SERIES BROADCAST CALL

Q:

One of our listeners wonders, is there a scientist-in-waiting — meaning that the children are waiting for the adult to do something, to allow their scientific inquiry to go forward — or is it more of a developmental process where they are just not quite ready?

A:

I think it's very unlikely that all of us are Newtons, that we can be left alone to spend our whole day making observations of the planets or whatever and come up with an "A-ha!" I think all of us need somebody who knows something to encourage a conversation that goes forward. There are just too many things around us that are or are not in science, and it is less challenging to work with the children who already know quite a lot, so people tend to work with them. If you don't get exposed to relevant inputs, it's very unlikely you will learn about them. And so, yes, adults do have an obligation to ask, "How can I engage their interests and their questioning minds and their tendency to explore, as opposed to just assuming with stages that they will move forward?"

Now, Piaget himself did not approve of Piagetian theory moving into the preschool and elementary school. He says, they're going to do it anyhow, why are you wasting yourself teaching that? And I wrote a review of that book many, many years ago and agreed with him. That's my answer.

Q:

Okay, thank you, Dr. Gelman. So the other question that came up is, many teachers do not feel comfortable enough with their own science knowledge to be able to approach this in the classroom. Do you have any suggestions for professional development opportunities, or some tricks of the trade that you might be able to suggest that our listeners would then be able to take back and implement in their own classrooms?

A:

Well, I have two answers. First, if 3-, 4-, and 5-year-olds can do what we're telling you they can do, then surely the teacher can too. In other words, the teacher knows a lot more science than he or she thinks they do. If you don't know Newton's laws of mechanics, well, maybe someday you'll want to learn it once you get into building up what the children already know. But if they can do an experiment, well, so can you. You're a lot older. You've been around for a long time. And then you might say to me, "But I don't have a fancy classroom with materials." Go to the supermarket. You'll find Crisco, paper bags or whatever. Be careful about the books you use. Relate your books to what you're talking about. There are thousands of resources sitting all over the place. My lab is a mess. We pick up and we say to ourselves, "Oh! We can use that in a class."

And I've said these things when I've given lectures at colleges. There's one teacher who came up to me and started the conversation as your questioner did, went away, came back 20 minutes later, and said, "I've had an epiphany. I can do science. Of course I can." Many of the teachers we started to work with showed the same reaction. They say, "If this is science, I can do it." It ends up being a little empowering, even. It gets a little more interesting in terms of what the kids are doing, the variability that you can build in. Without thinking, we're not doing anything interesting.

Q:

That's a terrific answer, Dr. Gelman. Another question came in regarding working with 3- and 4-year-olds. Does most of this effort need to take place one-on-one or in groups of small children, when you're thinking of science activities?

A:

Always, always introduce anything in a group. We often do things in groups. If we're doing experimental work that we have to have baselines and post-tests for, then we're one-one-one. But always count on adults to be present.

Q:

Okay. And then for our final question: One of our listeners asked if you could explain the difference between repetition and redundancy.

A:

Repetition is: "What is this?" "A stair." "What is this?" "A stair." "What is this?" "A stair." Over here, "What is this?" "It's made of wood." "What is the stair made out of?" "It's made out of wood." Procedures like, how can we tell whether the plant needs water or milk, instead of how can we tell if the plant needs water? As soon as you're comparing and contrasting, you've started into doing an experiment. But by redundancy, you mean the same structural notion. So we put on a coat in the winter. Bears grow fat in the winter. Some bears' fur goes from black to white so they can be camouflaged in the winter. What's redundant is the question of how to protect oneself when it's really cold. So it's the same question, but in different environments and different contexts. Does that help?

Q:

Yes, understood. That's very helpful, thank you. All right, we want to thank you all, particularly Dr. Gelman, for all of this wonderful information. And as noted, both the archive of this recording will be up on the ECLKC at some point in the future, as well as the list of questions, answers, and multiple resources. So again, thank you all and have a good day.

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