



## FRONT PORCH SERIES BROADCAST CALLS

### SCIENCE AND MATH IN PRESCHOOL CURRICULUM: CAN ALL YOUNG CHILDREN BENEFIT?

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## QUESTIONS FROM THE MARCH 24, 2014 FRONT PORCH SERIES BROADCAST CALL

- Q:** One question was this idea about STEAM. That is, putting the A in STEM, with the A being Arts. Could you talk to just that idea of integrating arts in this whole process, and how it might even map onto your four steps?
- A:** I certainly believe that in ensuring that we're covering all that, (teach literacy, teach math, teach science), there's certainly been a concern that we may be dropping that other piece off. In our curriculum, that was one of the first things that teachers asked us. When are we going to do our creative arts? So, many of our teachers helped us move beyond thinking of art as crafts, and thinking of that as creative arts. They were the leaders in supporting our embedding many more hands-on, creative activities in scientific thinking.
- The scientific thinking process can nicely open up creative thinking. Having children think about their predictions, for example, as being expressed not just verbally, (or having the teacher take dictation and take down their predictions), but having children use their fine art, creative arts as a way of communicating those predictions. Also having children think about how they communicate the results of their actions (through other modes than verbal communication or dictated communication), would be a fabulous way to integrate that.
- Q:** Another question is the applicability to toddlers, even infants. What would you suggest for those out there that are thinking birth to five?
- A:** If we had to say there was one thing that infants needed to learn, obviously it's language and communication. Of course, language and communication then overlaps with social competence and social relationships. But language overlaps so much with our science and math abilities as well. There was an example (that I didn't end up going over), that infants are much more competent in math than we think they are. Let me just share that real quick. Studies in language development have shown that infants are actually, in a way, using statistics to hear the sounds in their world. Infants are played a tape made up of language with sounds that are not part of their native language. So infants are constantly sorting out sounds that they hear as "language" sounds, or "not part of my language system" sounds. [When] they listen to a tape made up of language with sounds that aren't part of their native language, and they fairly quickly get bored and stop listening.

But, if a combination of sounds from their own language is introduced into that made-up language, they'll perk up and start paying attention again. Basically, they're making decisions based on data as to whether to attend, or not attend, to a tape. What does that tell us about our thinking processes? That scientific thinking process not only may be, it clearly is, a way in which we're developing our strategies for understanding the world.

The more we can create opportunities for even infants to explore their world, to safely reach out, interact with an object, and make a prediction—that trial-and-error process is scientific thinking.

- Q:** Can you just explain very briefly this idea that, you took from a few different curricula and then you figured out how to integrate them, right? So you might have Dinah and Wally, who are puppets in “Incredible Years” presenting a science lesson. Is this correct?
- A:** Exactly, yes. The CSS+ curriculum is actually a framework. It's not a curriculum that we would publish. Basically, we took evidence-based curriculum that were domain-specific, and put them into an integrated package, and then provided strategies for teachers to support universal design for learning (as well as individualization for kids) across those activities.

So there are multiple tiers to the framework. And yes, “The Incredible Years” was the social curriculum that we implemented and integrated. We found Dinah and Wally puppets to be— particularly Wally as a child-size puppet—a wonderful peer in the classroom. He not only helped with the role-playing and social competence activities, but also across activities.



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