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# Negotiating with Art Media to Deepen Learning

by George Forman

Art is an interpretation of experience, not a high fidelity copy. Art causes us to look at how we look at something. Art calls attention to itself. Therefore, at a minimum, an appropriate art activity even for young children encourages children to look at how they look, to treat their art as an expression of their current understanding rather than a representation of an object. This perspective makes art a rather paradoxical enterprise, a planned journey into the unknown, a negotiation with the tools for making meaning. And art media are just that — tools to help children make their ideas visible, their thoughts, theories, and perspectives, and in the process traverse the terrain of their own bias in order to construct a new understanding of the subject.

Children learn a great deal when they use several media to express the same idea. They begin to understand that each type of representation captures different aspects of their concept. When children routinely cycle a single concept by rendering it with different media, they begin to understand that each rendering is just that, a first draft of their idea, a perspective that they take when working in a particular medium, to be rethought when the concept is rendered in the next medium.

## Using Several Media to Deepen Learning

An object drawn with markers will look different when made in stiff paper and wire. For example, the volcano a child drew in our preschool had a huge red ball of fire on top of a brown cone with a flat top. The wire and paper volcano had a great empty volume and a sense of pent-up power. The drawing portrayed the immense size of the lava; the paper and wire volcano represented the mass and slope of the mountain down which the lava would flow. These representations were both attempts to represent (and we should say re-invent) the volcano. Together, they deepened the child's understanding of the volcano.

When the teacher revisited the drawing with the child, she asked him about the rather perfect circle of fire (an unlikely configuration for exploding lava). She also asked him about the flat top of the volcano because this flat top was made only on his volcanoes, not on other hills that he drew. He explained that there was lava all around this big rock (instead of lava being hot rock). Thus we can understand why he drew the red lava in a spherical shape, given that a big boulder would have this look. He explained further that the volcanoes have a hole, thus the flat top. The lava splashes out when the rock falls into the hole and hits the lava. The idea that the *splash* comes from an eruption of released pressure was not prominent in his mind.

When the teacher revisited the paper and wire volcano, the discussion turned more to where the lava would fall. Would it all be near the top? Children, looking at the paper and wire model, began to think about lava rolling down the sides of this three dimensional mass and spewing out and falling all around the base of the model. We decided to pop popcorn through the opening of the paper and wire volcano so the children could test their ideas about where the *lava* would fall.

Certainly the children profited from rendering volcanoes both with graphic markers and with paper and wire sculpture. The drawings allowed the children to express their theory about the lava itself, how it looks coming out and how it moves as it explodes. But the paper and wire model helped the children think more clearly about the interface between the lava and the mountain, how it

flows down the side and eventually how the lava itself makes the mountain grow. Their knowledge deepened as they integrated what they learned from each medium. The drawings on paper, in effect, represent questions that can be answered as children traffic through different media.

## Different Media Allow Different Expressions

Drawings allow the children to represent most any idea. The marks need not conform to the constraints of the physical world, e.g., the pull of gravity, the actual shape of a working part, the transitory presence of a movement. This freedom to make even their implausible ideas visible helps children later when they attempt to understand more completely. They have a record of their theories and this visible public record helps them negotiate deeper meaning with others.

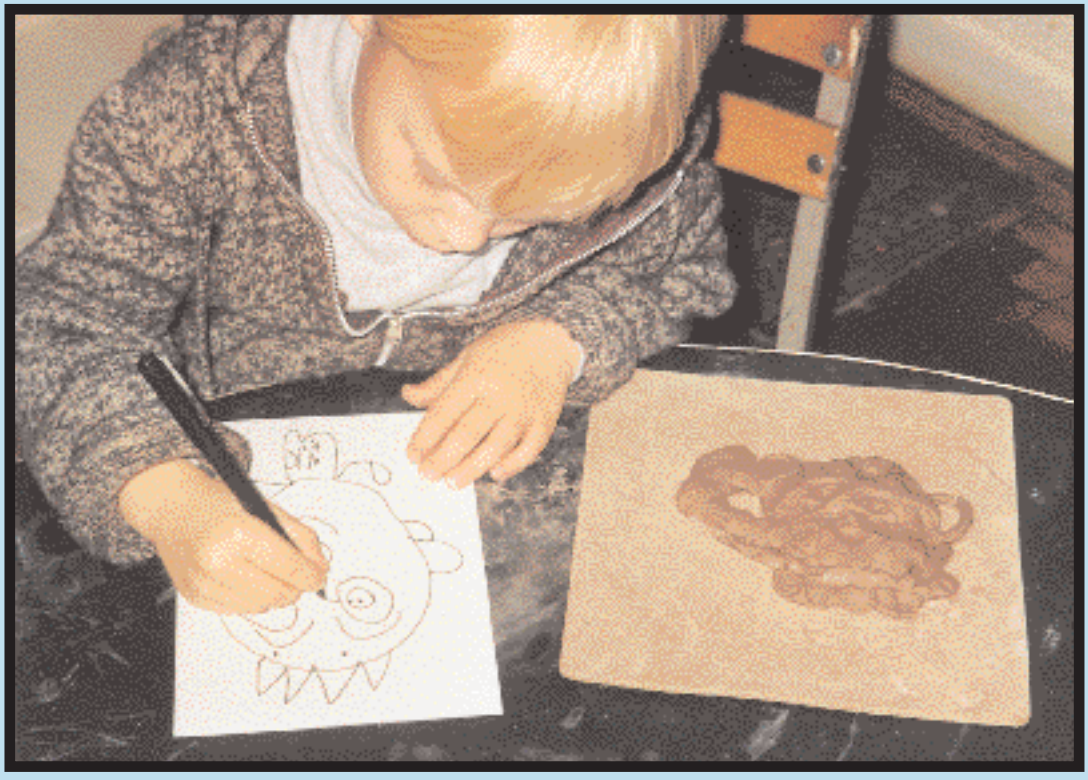
Wire and paper models allow children to compare the drawn theories with what might actually work. The wire and paper model directs the children's thoughts to the kinetic aspects of the volcano, the flow of the lava down the physical surface of the model. The voluminous sculpture also directs their thoughts to what is happening inside, an aspect less salient in the drawing.

Each medium orients children to different aspects of the subject matter. Each medium makes certain questions more *askable* than other questions. And in order to eventually find the solution to any problem, children have to ask of the event many different types of questions. Thus by using a variety of media to represent a single phenomenon, we are helping children ask better questions.

Blocks help children ask questions about the balance (both gravitational and visual) because the elements of this medium are easily moved as modules and because the elements actually fall when physical laws are violated.

Clay helps children ask questions about the gradual transformation of one shape into another, something impossible with blocks. Thus clay would be a good medium if we wanted children to consider the four or five stages in a growth process or the procedure by which a geological formation was made.

String helps children ask questions about boundaries and continuities, particularly when these lines need to be changed in small ways from time to time. With string, the *line* can be modified slightly rather than having to redraw an entire pencil mark. This medium encourages the children to consider not only how the boundary changed but also how the boundary remained the same. Thinking about change within invariance is fundamental to a deeper understanding of natural phenomenon.



*Photograph by Cathy Weisman Topal*

## The Importance of Cross Comparisons

It is important to ask children to compare their representation in medium one with their representation in medium two. In the case of the volcano, the children should bring their drawings to the studio where the wire and paper model was made. As was said before, the drawings

often present assumptions about the phenomenon that might be clarified in the second medium.

The children talk about both the drawing and the paper and wire model in a deliberate attempt to reconcile their differences or to use one to answer questions raised by the other. The teacher can set this up as follows: "Jason, I notice that in your drawing the volcano has a flat top. Where is that in our model?" While this is a simple question, almost rhetorical, it holds the potential of having Jason begin to describe his theory about the splashing lava, but this time in the presence of the wire and paper model. Talking about this theory in front of the wire and paper model could help Jason reconstruct his theory, specifically because the paper and wire model will more likely cause him to think about elements erupting from the inside rather than being thrown in from the outside.

## The Importance of Redoing the First Representation

The traffic through different medium should not be treated as a linear progression, say from two dimensional first then on to three dimensional media, or from a written script to the acted play. Traffic needs to flow in a cycle where children return to the first representation. Drawings are redone after sculpting, scripts are rewritten after being tested on the stage. It is in the reconstruction of the first representation that true learning occurs, where new knowledge is integrated into the initial knowledge, where new knowledge reveals the gaps in the initial version. It is the understanding of errors, not their avoidance, that defines meaningful learning.

In the case of our volcano activity, we could ask Jason to look at his first drawing, the one where the lava was drawn as a large red sphere. How would he modify this drawing after modeling it in wire and paper? He may choose to capture the flow of lava down the mountain and that in turn might cause him to reconsider the lava as a liquid state rather than a solid state. It is interesting to note that in the presence of the model his talk was all about the tiny streams of lava that flow down the *cracks* in the mountain. It is important for us to help Jason confront his ideas about liquid states and solid states by revisiting and redoing his initial drawing. This editing and doing again is a step often omitted in today's classrooms. Without this step, we run the risk of having new knowledge exist without challenging the initial theories, theories that sometimes are held more strongly by deeply felt, but incorrect, intuitions.

## Art As a Tool for Thinking

Art can help us look at how we look at life. When children use a variety of media to represent their current view of something, we can help them realize that these representations do not say the same thing. We do this by cross comparisons among the media and by encouraging children to redo their work within each medium. In this manner, art becomes a tool for thinking. Children draw to learn as opposed to merely learn to draw. Children are revising their theories, not simply revising the accuracy of a copy. In this regard, art becomes part of the core curriculum.

## Resource

Forman, G. "Helping Children Ask Good Questions." In B. Neugebauer (editor), **The Wonder of It: Exploring How the World Works**. Redmond, WA: Exchange Press, 1989.

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