

Things got
a little

"Messy"

last spring...

By April Sawey

If there's one thing BRIT educators know, it's the value of getting kids outside with their hands in the dirt, encouraging them to get a little messy!

This spring, we had the honor of spending time in area school gardens with over 1,100 local students in a community initiative with Real School Gardens called Smart Potatoes. In this program, teachers are given seed potatoes and planting instructions. Their students plant and tend to the potatoes throughout the growing season and then harvest their crop to share with local needy families. As a companion to the program, The BRIT SEED (Science-Based Experiential Education Design) School offered "Messy Science: In the Garden with BRIT" to these students on their home campuses. We were thrilled and overwhelmed with the response from over 60 teachers asking us to bring "Messy Science" to their school. So we donned our gardening hats, grabbed our science journals, and hit the dirt!

"Messy" and "Clean" Science

The phrase "messy science" has a second meaning, besides just getting your hands dirty, for BRIT education. For too long, the concept of a linear "Scientific Method" has perpetuated misconceptions about the actual process of science (Weinburgh & Sawey, 2011). Historian and philosopher of science Thomas Kuhn (1962, 1990) points out that the way scientists report their findings can create misconceptions about the rich narratives of trial and error that more accurately represent



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the processes of science and the inherent human-ness of the scientists behind these stories.

There are two fundamental problems with the way we tell the stories of science: (1) We write scientific papers as if we followed a strictly prescribed, linear scientific method that led us to our conclusions. The truth is, the journals force scientists into this strict model, making it sound very *clean*. Indeed. Nothing could be further from the truth! Real science is a back and forth—sometimes circular—process of discovery and—inquiry. Science teachers are taught about inquiry and expected to use it with their students, but few realize that inquiry is simply the formal word for what we can simply call “messy science.” (Sawey, Holden, Bloom, Weinburgh, & Huckaby, 2008) (2) Too often we ignore the process of science and skip to the results. This is like telling the reader “whodunit” before they’ve even read the story! It’s the stories of science—especially the wonderfully messy, unpredictable, baffling ones—that excite and motivate us—especially children—to want to be scientists.

So why have we taken away or hidden this essential, messy, part of science? The strict process of publishing science does provide structure and is essential to validating the vast amounts of research published throughout the world. But this is not the way to teach science to young children. For many, it creates a barrier they can’t cross because of their fear.



Gettin’ down and dirty

It also creates the illusion that scientists somehow already know the information they’re reporting. They seem like unapproachable geniuses—instead of regular people who started just like everyone else—with a question and a burning desire to find an answer.

This is why messy science is

so essential. With it, teachers can help students approach science in a way they can understand; teachers can honor every child’s natural desire to *explore*—even before they are able to *explain*. (Sawey, 2007; Weinburgh & Sawey, 2011) By allowing the learner to be cognitively messy and explore different questions—making lots of observations and many possible conclusions—we introduce them to the very messy side of science. Once this messy process is complete, the learner and the scientists can then begin the process of analyzing their findings to come to a relatively “clean” conclusion. This is what eventually becomes our established knowledge and what we read in science textbooks and scientific journals.

Getting It Done

But we know teachers are asked to do so much in such a short window of time that getting kids out to their school gardens on a regular basis—getting messy—is a big challenge. This is why Real School Gardens offered their long-time sister organization, BRIT, the opportunity to support



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teachers and students. And so messy science left academia and entered the real world of elementary schools throughout D/FW—and what a wonderful, messy world it was! After weeks of digging, observing, comparing, journaling, and asking and answering questions, The BRIT SEED School surveyed the educators that took part in the Messy Science program to evaluate its effectiveness. Overwhelmingly, 97 percent of the teachers reported that they had continued doing messy science even after the program ended. When asked to talk about the program, one educator said, “It is so hard to put a value on this experience, a seed was planted in my students’ brains, and I feel that it will continue to grow.” Another educator responded to a question about what their students took away from the experience; she said, “Students were able to make connections to the value of science in the world and the scientific relatedness of plants, food, and people.”

So why are so many of today's students afraid of science? Maybe the science establishment is afraid of *them*. I remember my education in science and the way I learned the stories of the science greats. Most of the time it sounded like only the smartest (translate “book smart”) could ever succeed in science. As a child, I saw scientists as untouchable and certainly not as normal human beings. Today, as a scientist and science educator, this gravely concerns me. If my job is to inspire and grow the next crop of scientists, how do I convince them that they really are capable? Simple. I just get MESSY with'em!

Kuhn, T.S. (1962, 1990). *The structure of scientific revolutions* (3rd ed.). Chicago, IL: University of Chicago Press.

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Weinburgh, M.H., and Sawey, A.T. (2011). *Inquiry: Messy and Clean*. In Berlin, D. F. and White, A.L. (Eds.), *Science and Mathematics Education: International Innovations, Research, and Practices*. Columbus, OH: International Consortium for Research in Science and Mathematics Education, p 33

In recognition of the contributions made by The BRIT SEED School toward supporting inquiry in outdoor education, REAL School Gardens presented them with their Community Outreach Award on May 10 at their annual REAL People Celebration Event at Holiday Heights Elementary. The SEED School was honored to accept this award, particularly because this was the first time REAL School Gardens had presented this award to an organization that was not one of their participating schools.