

Issues in Earth Science

“Topics for Debate”

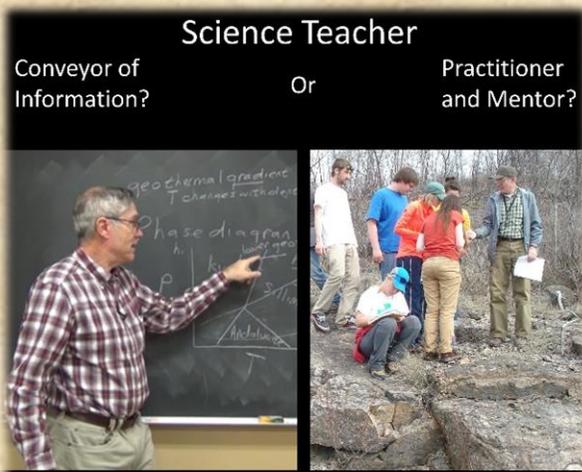
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This essay responds to the seed thesis: Science teacher: conveyer of information or practitioner and mentor?

# Seed Thesis for Science Teacher: Conveyer of Information or Practitioner and Mentor?

by

Russ Colson



In [Learning to Read the Earth and Sky](#), published by NSTA Press, and in several recent articles in teacher journals, I argue passionately that science teaching should be more

about engaging in science with students than in conveying information about science to them. I am

substantially invested in the idea. And not me only. One of my colleagues at Minnesota State University Moorhead, Jennifer Lepper, likes to say “I am not a content delivery mechanism.”

Science is something that we do, not something that we know, and students should learn how to do it, not simply accept and memorize the discoveries that others have made before them. This is a philosophy espoused by multiple iterations of science standards, including the National Science Standards (1996) and the more recent Next Generation Science Standards (2013).

Yet, the idea of science teacher as conveyor of information persists, perhaps encouraged by the realization that many practices of science, like arguing from evidence and constructing models, cannot be done without a substantial knowledge of the science that has come before us. We can't simply throw students into the fog of an investigation, without constraint or guidance, and expect any meaningful understanding to emerge from a forty-five minute class period. After all, most scientific discoveries took years, if not decades or centuries, to uncover.

Even so, for an investigation to arise from the students' own questions, experimental designs, and interpretations, it simply can't be pre-canned into a curriculum. If it's already set in stone in a curriculum, then any student contribution is simply a pretense. The goal of such an investigation becomes to 'get the right answer" and not to interpret and understand observations. I propose that an authentic investigation requires pursuit of unexpected questions and interpretation of unplanned results. This in turn requires an engaged teacher who is a practitioner of science and can therefore act as mentor and guide as students work through their investigation.

However, the idea of teacher as scholar, practitioner, and mentor has some substantial cultural headwinds to work against. There is an entrenched idea that teachers convey information in memorable ways, but are not themselves participants in investigation, and certainly not scholars.

What do you think? Please feel free to disagree, or take a different tangent.

Dr. C.



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[Link to Anthony Larson's response to this Seed Thesis, "Teaching Science Through Curiosity and Discovery"](#)

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