



A Project Emerging from Partnership

Recently, Marcy Sliwinski, a chemistry teacher, and Melanie DePray, an English and social studies teacher, both at Ypsilanti New Tech High School, collaborated with Hans Sowder, a former New Tech teacher, now an academic program officer from the nearby University of Michigan College of Engineering, and his colleagues to enact a six-week study of “Great Changes in the Great Lakes?” The unit involved their eleventh grade students, and the team ended up shaping it to explore various kinds of argumentation and evidence—a timely focus, given the attention to the Common Core State Standards in Michigan and across the nation. The driving question for the unit was “What is climate change, is it having an effect on water quality in the Great Lakes, why should I care, and what can be done about it?” A partnership with university colleagues engaged in the generation of new models of the Great Lakes watershed and climate change factors influencing ecosystem health helped provide resources for speakers and field trips. In addition, the university resources made it possible to organize a study involving multiple frames, texts, and data sets—probably beyond what would be readily available to most

teachers. By engaging with a research team that was itself engaged in using multiple lenses on climate change, the school efforts were greatly enhanced—though also complicated by additional layers.

Students and their teachers rode on a research vessel with scientists and tested the water quality in Lake Erie. They studied a variety of arguments and counter-arguments about climate change, and they examined a broad array of data. They also reflected on and analyzed claims by biologists, chemists, climate scientists, economists, public policy makers, and historians—some of whom visited the class—weighing evidence, and learning to distinguish between various disciplinary lenses. At the end of the study, students presented their findings at a public event held on the university campus. Working in small teams, they created poster displays of their findings, and took turns giving explanations to guests. Many posters listed multiple categories such as “an engineering perspective,” “a chemistry perspective” or “a biology perspective,” and students listed the kinds of information and evidence that they had encountered and that fit the specific lens. Students reported that the study made them recognize the way the problem of climate change was actually having an impact on them and the world they were inheriting. While not every student decided to become a scientist, many students noted that they found the whole project important and interesting. The event was attended by university faculty, graduate students, school district personnel, and parents.

But just because a collaboration and partnering attempt ends up being memorable and extremely worthwhile doesn’t mean it all flows smoothly without complications. In this particular case, Marcy and Melanie had been newly assigned into a school-based team different from the initial group Hans Sowder had conversed with to establish an agreement about the project. In fact, Marcy and Melanie were just getting to know one another as teaching partners. Inevitably, they relied on their college collaborators to arrange for visits by scientists and others partnering on the larger climate change and Great Lakes watershed project. Some of the visitors were unused to conversing with diverse high school students, and weren’t able to tailor their presentations to resonate as fully with student questions and interests as might have been ideal. Both Marcy and Melanie are now thinking about the kinds of supports and initial conversations teachers could have with community presenters so classroom visits can be as useful as possible.

And as Marcy indicated, her students were taking chemistry—and this project involved lots of science, but it didn’t aim squarely at the chemistry outcomes at all times. Although Marcy and Melanie have tons of ideas about ways they could improve the study

if they had a second chance to enact it, they probably won't have that opportunity, and certainly not in the exact same fashion—in fact, Melanie is being transferred to a district middle school next school year. Still, Melanie says, “I learned a lot. English language arts doesn't have to be driven by narrative. I know this as a social studies teacher, but I really enjoyed getting the kids to write and speak from these various points of view.”

Problems and Possibilities

The example above begins to point to the struggle: disciplines, by their very natures, have specific knowledge bases and ways of working. On the one hand, it could be considered “efficient” to plunge someone into a particular discipline, to introduce a specialized vocabulary, and to aim squarely at the key content outcomes. On the other hand, if Marcy had only aimed squarely at chemistry without opening up the broader domain of scientific inquiry, and of the various players and ways of arguing about climate change, her students might just think chemistry is a mere course. After the climate change study, they know that chemistry has a real role in the discussion, but it certainly isn't the only lens to use as we navigate the topic.

The project that Marcy, Melanie, and Hans developed has promise in highlighting a common communications thread across disciplines, applied fields, and professions: the process of making an argument. Even if a teaching team or school didn't have access to the resources around climate change that a university research connection can bring, the idea of introducing different ways disciplines and fields make arguments about a particular topic is an idea worth developing into a project or unit. Argumentation is an important way that human beings engage with each other is by making cases for certain preferred frameworks for understanding, approaches, or even artifacts and objects. Arguments are made everywhere, but the preferred evidence and structure of these arguments differ considerably. If we really dig into the different kinds of evidence, and the varying structures, we can help students navigate diverse situations effectively, leveraging what they are learning in their various classes. Below is a chart illustrating how arguments and evidence differ across disciplines and fields. The courage Marcy, Melanie, and Hans demonstrated, by moving ahead and making something exciting and memorable happen for the Ypsilanti New Tech 11th graders in the face of complexities, gives them all a powerful experience that can lay a foundation for other collaborations and partnerships in their teaching futures.

	English language arts	Mathematics	Science	Social Studies/ History
What counts as evidence	Narrative and anecdote; quoted literary passage; material from all disciplinary frames	Empirical, verifiable observation, diagram or calculation	Graphs, charts, statistics drawn from experiments and empirical observation	Historical records: documents, photographs, accounts, both primary and secondary

Important ideas	Sequence Differing perspectives and points of view drawn from identity Genre constraints and possibilities	Everyday language to abstract symbolic representation Multiple ways of representing a problem	Developing models; constructing explanations; designing solutions; structure and properties of matter; chemical reactions; patterns (Next Generation Standards)	Sourcing Corroboration Contextualization (Wineburg, 1991)
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Figure 6.2 Argumentation Across Disciplines