Engaging Students to Show What They Know

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It was one of my proudest moments as a civics teacher—listening to my 11th-graders prepare to debate whether the decision to drop atomic bombs on Hiroshima and Nagasaki was justified. And the debate was what every teacher hopes for: my students backed their positions with facts, played devil's advocate, and respectfully challenged each other's reasoning. As teacher and author David Sherrin writes in this issue, these are the times teachers know they have truly witnessed their students' learning.

Last spring, I visited Sherrin's classroom at Harvest Collegiate High School in New York City and witnessed *his* students' learning as they shared their research on the experience of colonial women. Clearly, not only had these students learned so much from their research projects, but in presenting what they learned, they were teaching their classmates as well.

Sherrin's article explores the mock trials he prepares his students to conduct several times each year. Reading it, I recalled the moot court trials my students conducted in the high school law class I taught. As they argued cases and issued judges' opinions, my students showed levels of engagement and excitement we don't always see among high school students. They gained knowledge and skills, and were proud of their accomplishments, developing a confidence that would serve them well in the future.

What all these examples have in common is that they are different forms of project-based learning, which, when it works, is one of the most effective ways to engage students and help them "own" the learning process. Students "show what they know" as they progress through the unit, not simply at its conclusion. This approach to teaching and learning tells us far more about what students know and can do than having them select A, B, C, or D on a standardized test ever could.

The focus on project-based learning in this issue is especially timely. The House of Representatives recently voted overwhelmingly to pass the Strengthening Career and Technical Education for the 21st Century Act, which will help offer students multiple pathways to prepare for the jobs of today and tomorrow through career and technical education (CTE) programs, such as the robotics program at Toledo Technology Academy in Ohio and San Francisco's citywide collaboration to bring programming and computer science to all its public schools. And the Every Student Succeeds Act allows seven states to pilot innovative assessments, such as the performance-based assessments used in project-based learning.

Westinghouse High School in Pittsburgh is a great example of how project-based learning can be used in career and technical education programs. With a $300,000 grant from the AFT Innovation Fund and support from the city, Westinghouse offers students a full academic program as well as a number of CTE programs. The newest program, preparing students for public safety careers in firefighting, emergency medical services, and law enforcement, uses project-based instruction to help students apply the technical knowledge and skills they will need to perform entry-level duties in these fields. The courses will lead to industry certifications based in large part on performance-based demonstrations of students' competency.

Seymour Papert, the late visionary educator and mathematician, was an early advocate of this approach to learning, which he called "constructionism." Constructionism, Papert wrote, is learning that happens "in a context where the learner is consciously engaged in constructing a public entity, whether it's a sand castle on the beach or a theory of the universe."

"This is the way that mathematics started," Papert told the online journal *Edutopia*. "It started not as this beautiful, pure product of the abstract mind. It started as a way of controlling the water of the Nile, building the pyramids, sailing a ship. And gradually it got richer and richer."

While abstract concepts may interest some learners, project-based learning can engage students. Building knowledge by working on actual problems and situations is much less likely to leave students wondering whether they'll ever use what they're learning in "real life."

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There are barriers, in many schools, to using project-based learning. One is the unrelenting focus on standardized testing and its effect on curriculum and instruction. Another is the way the school day is often organized, with class periods that are too brief to undertake in-depth projects. And teachers need the time, tools, and trust to develop and refine project-based instruction, including opportunities for professional development, to confer with colleagues, and to experiment with different projects and approaches. But these barriers can and must be overcome, because project-based learning helps develop skills students need and employers value, such as collaboration, communication, creativity, and critical thinking.

At a time when one presidential candidate's education plan would destabilize public schools and decimate funding for public education, we must do what the other candidate has proposed: follow the evidence and lift up educational approaches that open doors for young people and propel the economy.