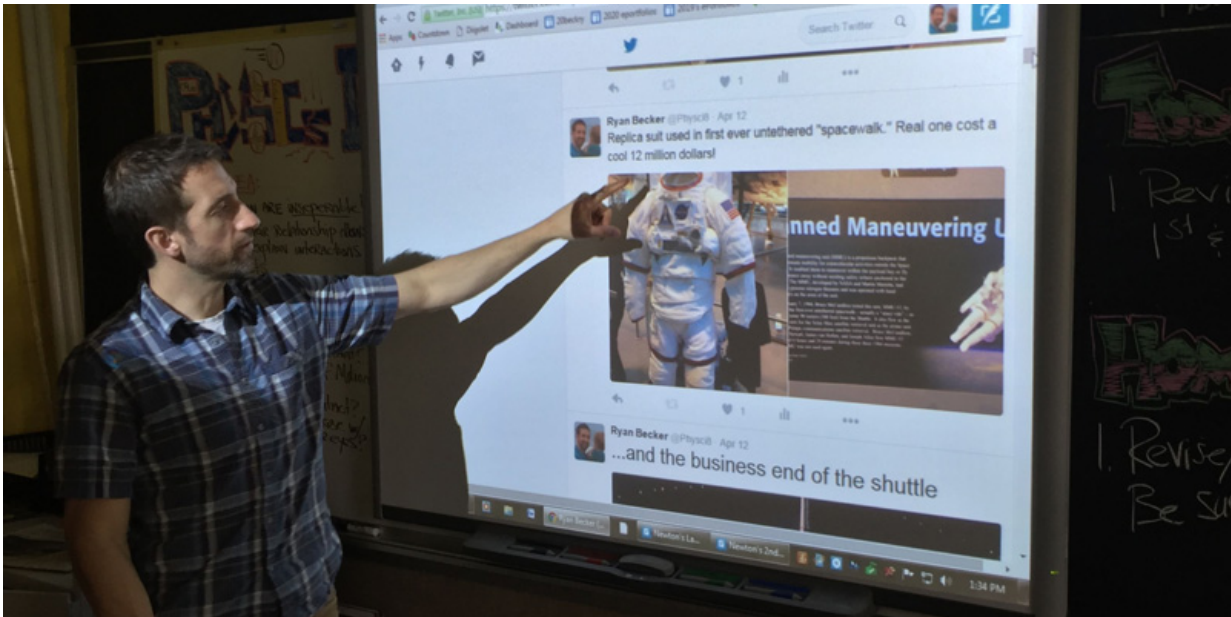


Transforming teaching with Twitter

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Conversations about science with classmates, teachers and well known experts continue long after class is over if students are encouraged to use Twitter. Credit: Luis Bango

Imagine a teaching tool so effective that students look forward to using it in class and continue to seek out new information with it after the school day ends. New research offers powerful evidence that Twitter, if used properly, can produce these outcomes among middle school students and enhance the way children learn in the 21st century.

A forthcoming article in *Middle School Journal* shows the potential

benefits of using Twitter as a pedagogical tool based on survey results, interviews, and classroom observations of eighth-grade students in [science](#) classes. Students reported significant increases in four key areas that contributed to their learning: exposure to reputable science and leaders, like Bill Nye "the science guy," in real time; a broadening of the audience for their work outside the classroom; more opportunities for connecting science to their own lives; and new ways to communicate about science.

Ryan Becker, a 2015 graduate of the doctoral program in Educational Leadership and Policy Studies at the University of Vermont, used his [middle school science classes](#) to conduct the research in conjunction with co-author Penny Bishop, professor of middle level education and director of the Tarrant Institute for Innovative Education. Becker found that 95 percent of his students agreed or strongly agreed that Twitter enabled them to follow real science in real time as it develops around the world.

Particularly motivating was the ability to interact via Twitter with leading organizations like NASA and science-related programs like PBS' NOVA and NPR's Science Friday. "NASA, and scientists that I follow, tweet a lot about cool science stuff," commented one student. Becker suggested to another student who tweeted him outside of class about an interest in black holes that they reach out via Twitter to well known and popular astrophysicist Katie Mack. Much to the delight of the student, Mack tweeted her back and included her in a conversation about black holes with other experts and students.

Becker's initial work with Twitter in his classroom led to his dissertation research focused on using Twitter for science learning. The findings in his dissertation, "A Science Instrument for the Digital Age: #SciStuChat Participants' Perceptions of Twitter as a Tool for Learning and Communicating Science," further highlight the potential of Twitter as a

means to personalize learning and to expand secondary students' encounters with science professionals and organizations.

"Research on the use of Twitter as pedagogy is limited thus far," says Bishop, an expert on the use of technology in middle schools. "Most studies that do exist have focused more on its use in college and university settings. Ryan's work adds a critical lens to the role of open social networking tools such as Twitter in the context of adolescents' learning; considers important implications for educators and school leaders in the 21st century; and raises new questions about the potential for social media as a lever for increasing the personalization of education."

Thinking bigger about science

The paper in *Middle School Journal*, "Think Bigger About Science: Using Twitter for Learning in the Middle Grades," also revealed that 93 percent of students surveyed think Twitter enabled them to interact and share perspectives with a global audience outside the classroom. "When I have something important to share about science that I like, as many as 52 people (Twitter followers) can see what I tweet instantly," commented one student. Another student said they use Twitter for academic support by tweeting with other students about concepts, assignments and projects.

Ninety-one percent said Twitter helped them make connections between science and their own lives and interests. "Twitter has made me think about things that I like and had me think about the science related to them," said one student. Others said Twitter helped them learn about science in new ways that related to their everyday lives.

Additionally, 81 percent of students agreed that Twitter helped them think creatively about new ways to communicate science. "Every

amazing photo or video I find on Twitter makes me more and more interested. And I am learning more about science every time."

Making Twitter work in the classroom

Becker uses the [black holes](#) example and others on his Twitter account to show teachers how to incorporate the social networking service into their own lesson plans to engage all students. With more than 82 percent of 13-year-olds using social network sites regularly, teachers have been feeling pressure to incorporate such networks into their curriculum, but remain concerned about implementation and security issues, he says.

Becker reported experiencing problems with initially setting up Twitter accounts for some students and the potential for misuse of the social media platform, but says most obstacles can be overcome with some basic tools and training. Another obstacle can be the preference of middle school administrators to use "closed" digital environments—ones that allow teachers to initiate prompts and keep the user population within the classroom—because it allows them to maintain structure and moderate discussions.

Becker advocates for the use of open networks, which is in keeping with a migration to the more open end of the Web 2.0 spectrum that includes publically popular forms of media like Twitter and Facebook.

Twitter is also an extremely powerful assessment tool, according to Becker, who recommends displaying tweets on an electronic "smart" board so students and teachers can assess and discuss them together. Teachers can also ask students to tweet examples of specific scientific concepts like the students in Becker's class who tweeted personal examples of Newton's First Law.

Teachers can also have students respond to scientific poll questions and

share instant results with their class. Students continued to tweet outside of class making certain topics a constant conversation. The 140-character limit also forces students to distill down major concepts like "what is chemistry," says Becker.

"The purpose of this article was to offer a deep, reflective analysis from an actual teacher who initiated a unique effort and who has seen, firsthand, its many successes and challenges, as well as the varied reactions of involved stakeholders such as [students](#), parents, administrators," Becker says. "My classroom-based perspective combined with the wealth of experience Penny brings as a researcher, professor, writer and director of a multi-million dollar effort to support technology integration in schools across the state provides teachers with a guide, of sorts, for implementing this kind of technology."

Provided by University of Vermont

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