

# Social media helps students learn scientific argumentation better, study says

September 12 2017

---



Credit: CC0 Public Domain

Adults often bemoan the amount of time young people spend staring at a screen and browsing social media. But social media can not only be a way to teach students elements of the scientific process, those who took

part in a program to learn scientific argumentation through social media learned the components of argumentation better than their peers who did not, a University of Kansas study has found.

KU researchers designed a curriculum unit to engage nearly 400 ninth-grade biology students in learning about scientific argumentation through [social media](#) use with their teachers and classmates. Argumentation is a key element of both Next Generation Science Standards and Common Core State Standards. The researchers have since authored a chapter for the book "Digital Tools and Solutions for Inquiry-Based STEM Learning," an article in the *Journal of Education in Science, Environment and Health* and an article in *Educational Media International*, a Taylor & Francis online journal outlining the study, its results and how teachers can implement similar practices in their classrooms.

The project and publications grew out of a National Science Foundation grant to KU's Center for Research on Learning. As part of the grant project, researchers worked with teachers and administrators in several urban and suburban Midwestern schools to teach students about Next Generation Science Standards for scientific argumentation, including asking questions, analyzing and interpreting data, engaging an argument from evidence, constructing explanations and obtaining, evaluating and communicating information, all via Twitter and Skype with their classmates and teachers.

The chapter and articles were collaboratively authored by Amber Rowland and Jana Craig-Hare, assistant research professors at KU's Center for Research on Learning; along with Marilyn Ault, senior research associate at CRL; James Ellis, associate professor of curriculum & teaching at KU, and Janis Bulgren, research professor at CRL.

As use of technology and social media become more commonplace in American classrooms, the researchers wanted to address ways educators

can use the methods effectively. When compared with a group of students who did not take part in the project, the treatment group reported significantly higher use of social media to share [scientific claims](#), discuss scientific phenomena, post counterarguments and/or rebuttals to others' claims, demonstrate their knowledge of science content, convince others to see their points of view and opinions about science, understand other points of view about science and to follow scientists and researchers on social media.

The treatment group's students also scored significantly higher than their peers on a post test in areas of sharing scientific claims, discussing scientific phenomena and demonstrating knowledge of scientific phenomena. They also reported a significant increase in confidence regarding scientific argumentation and were more confident than their peers that they had the knowledge and skills to analyze and make strong scientific claims.

The book chapter is intended to help teachers, administrators, school boards and communities find new ways to incorporate technology and social media in the classroom. The authors include several tips to make social media and science learning work, such as students reporting they often didn't like Twitter's 140 character limits and not wanting to engage with teachers with their own accounts. Those concerns can be addressed by allowing students to use separate accounts for school, posting pictures of text, keeping discussions on track with school-specific hashtags and ensuring teachers and administrators keep close watch of discussions.

The arguments had to take the form of a legitimate scientific argument.

"There was no automatic right or wrong answer. They had to pass judgment, based on evidence and reasoning," Rowland said of the students' contributions. "I'd say one of our biggest findings was that topics had to be authentic, and social media brought interactivity to the

classroom that would otherwise have been nonexistent due to time, distance and schedule demands."

While students discussed scientific topics such as de-extinction and genetics, teachers in the project ended up using social media for professional development as well. Educators connected with colleagues in other schools to compare notes on the unit, share resources, discuss strategies for engaging students and provide evidence of their own successes.

"It really became professional development for the teachers, as well," Craig-Hare said of the social media and science project. "Not all of them were social media advocates when we began. It was great helping the teachers make those connections."

Students not only demonstrated that they learned scientific argumentation better than their peers, the book chapter outlines how students not comfortable with making verbal arguments in class, such as individuals with autism spectrum disorders or those with social skill deficiencies reported they were more comfortable making arguments via social media. The unit also stressed the importance of digital citizenship and how to appropriately conduct oneself on social media, no matter which forms are most popular in the future, something that is not inherently evident to young people, even though they are given to large amounts of time spent online from an early age.

"The unit was developed with teachers and focused on scientific argumentation from day one, and gave students more chances to practice via social [media](#)," Rowland said. "The underlying pieces we found apply across [social media platforms](#). The basic philosophies are what we hope they carry on. Kids are the digital citizens of today, but sometimes they need a reminder on how to appropriately use these mediums. It's more than just a lesson on [science](#) content, it's putting good digital citizenship

into practice."

**More information:** Jana Craig-Hare et al. The Effect of Socioscientific Topics on Discourse within an Online Game Designed to Engage Middle School Students in Scientific Argumentation, *Journal of Education in Science, Environment and Health* (2017). [DOI: 10.21891/jeseh.325783](https://doi.org/10.21891/jeseh.325783)

Amber Rowland et al. Social media: How the next generation can practice argumentation, *Educational Media International* (2017). [DOI: 10.1080/09523987.2017.1362818](https://doi.org/10.1080/09523987.2017.1362818)

Provided by University of Kansas

Citation: Social media helps students learn scientific argumentation better, study says (2017, September 12) retrieved 24 April 2024 from <https://phys.org/news/2017-09-social-media-students-scientific-argumentation.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.