Chapter 4
Practicing Scientific Argumentation Through Social Media

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ABSTRACT

The use of social media in and outside the classroom is increasing in the number of popular applications as well as pervasiveness in our culture. Teachers utilize social media to engage students, connect with experts, and expand their own professional learning. This chapter provides educators with information about the use of social media to support STEM practices. Social media can be used to engage students in active learning and problem-solving through student-posted claims and effective online questioning. Using social media supports the scientific practice of engaging in argument from evidence, as well as emulates how scientists collaborate on their own research and share research findings. Best practices and lessons learned are shared in this chapter, including a case study from a secondary science classroom and suggestions for the use of social media for educator professional learning.

INTRODUCTION

The purpose of this chapter is to provide educators with information about social media use to support STEM Learning, particularly scientific argumentation. According to Merriam-Webster's Learner's Dictionary (2016), social media are online Web

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sites and applications "through which users create online communities to share information, ideas, personal messages, and other content (as videos)." Current sites include, for example, Facebook, Twitter, Snapchat, Instagram, and LinkedIn. The sharing of information on these sites may be as personal as the turn-taking that occurs during a dialogue or as removed as the posting of unrelated comments. As K-12 educators infuse technology into instruction, many teachers, building administrators, and district directors continue to ask for instructional resources on how to support student learning of 21st-century skills using existing and emerging digital tools. While educators may have considerable knowledge about technology integration, instructional strategies, and curriculum; they are seeking research-based and classroom-tested digital resources that they can quickly move into practice. This chapter explores the use of social media within STEM pedagogy, particularly as it can be used to support the practice of scientific argumentation. The chapter also identifies strategies to engage educators and students in teaching and learning through social media.

BACKGROUND

Social media use is on the rise. According to a recent survey by the Pew Research Center's Internet & American Life Project, 92% of teens ages 13–17 use the Internet daily, 76% use social media sites and 71% say they use more than one social media application. Seventy-one percent are Facebook users, 52% Instagram, 41% Snapchat and 33% say they used Twitter; up from 16% in 2011 (Lenhart, 2015). Chao, Parker, and Fontana (2011) write about the rise in the use of social media, stating that its impact is "so widespread and inculcated into our culture that it is futile to try to stop their [social media] influence at the classroom door" (p. 324). The 2015 Horizon Report (Johnson, Adams Becker, Estrada, & Freeman, 2015) ranked the increasing use of collaborative learning approaches as the top trend to impact K-12 education in the next three to five years (2015-2019). It states that collaborative learning approaches are a way to increase global collaboration by utilizing online technologies so students are able "to learn with others beyond their immediate environment" (p. 12). Ertmer and her colleagues (Ertmer, Ottenbreit-Leftwich, Sadik, Sendurur, & Sendurur, 2012) argue that technology "needs to be placed in the hands of students, who are encouraged and enabled to utilize it in the same ways, and for the same purposes, that professionals do -- that is, to communicate, collaborate, and solve problems" (p. 424). This perspective is echoed in the 2015 Horizon Report (Johnson et al., 2015) crediting social media apps such as Snapchat, Instagram, and Vine, for