Strategies for Online Academic Research (SOAR): Digital Literacy for Middle School Students

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ABSTRACT

The ability to conduct research is essential for meeting Common Core State Standards, for success in post-secondary education, and for access to many 21st-century careers. Although today’s students increasingly turn to the Internet for information, they are often unprepared to engage effectively in academic research online. This article describes work at the University of Oregon’s Center for Advanced Technology in Education in developing and testing nine Strategies for Online Academic Research (SOAR) designed for middle school students, with specific attention to the needs of students with learning disabilities. Included is information about the SOAR Student Toolkit, a multimedia website with step-by-step instructional modules for learning the nine strategies, as well as results from an evaluation in Connecticut. Results indicate that using the SOAR Student Toolkit improves online research performance for sixth-, seventh-, and eighth-grade general education students and students with learning disabilities. Implications for future research are discussed.

KEYWORDS

Academic Research, Digital Literacy, Internet, Learning Disabilities, Middle School, Online Learning, Reading, Strategies

INTRODUCTION

The Common Core State Standards (CCSS, 2010) expect U.S. students to make complex decisions about how, when, and why to use technology, especially when conducting research online. The critical importance of information technologies for 21st-century academic research has been well documented (Leu, et al., 2015; Julien & Barker, 2009; Coiro, Knobel, Lankshear, & Leu, 2008; Eisenberg, 2008). Nonetheless, American college students have historically lacked the skills needed to conduct academic research online effectively (Jensen, 2004), even though an overwhelming majority of students use the Internet more than the library for research (Jones, 2002).

The CCSS initiative is an effort to establish consistent educational standards for U.S. students by defining what they should know and be able to achieve at each grade level. CCSS for English Language Arts and Mathematics were released in 2010, and have been adopted by most U.S. states and the District of Columbia. Embedded within the content standards for English Language Arts and the standards for Literacy in History/Social Studies, Science, and Technical Subjects is the requirement that teachers help their students master digital tools and conduct research using the Internet. The
2010 introduction to the CCSS states that “the need to conduct research and to produce and consume media is embedded into every aspect of today’s curriculum” (National Governors Association Center for Best Practices & Council of Chief State School Officers, 2010, p. 4).

Because of the CCSS, the impetus for meaningful technology integration into learning in K-12 schools in the U.S. is higher than ever (Stafford, 2012). To be ready for college and for careers in the modern digital world, students must be able to use online tools and resources strategically; construct sound arguments and critique the reasoning of others; communicate and collaborate effectively; and solve problems, construct explanations, and propose solutions.

Inherent in the CCSS is the recognition that the Internet has become a primary source of knowledge in the information age (Levin & Arafeh, 2002), and that web-based technology tools can help promote student literacy, academic achievement, and engagement (Conner & Slattery, 2014; Hutchison & Colwell, 2014). To help students improve online academic research, teachers must provide instruction and practice in (a) using digital tools and online resources; (b) engaging in argument, reasoning, and problem solving; and (c) collaborating on authentic tasks that require academic reading, writing, and research (National Governors Association Center for Best Practices & Council of Chief State School Officers, 2010).

The process of conducting online academic research requires that students use the Internet as an “inquiry tool” to access digitized information (Frechette, 2002; Windschitl, 1998, 2000). They need to be able to (a) ask testable questions and obtain analyzable results, (b) search efficiently, (c) decide which results are credible, and (d) draw connections between different sources (Kingsley & Tancock, 2013). Success depends on high-level facility with reading and comprehending complex information (Alexander & Jetton, 2002; Bransford, Brown, & Cocking, 2000).

Unfortunately, online research can be challenging for many students—particularly for students with learning disabilities. Most teens and young adults (93%) go online at least once a day (Pew Research Center, 2009), but more for entertainment than academic purposes (Rideout, Foehr, & Roberts, 2010). Despite their familiarity with the Internet, students lack online academic research skills (Belland, 2010; Mullenburg & Berge, 2007; Currie, Devlin, Emde, & Graves, 2010; Holman, 2011); often prefer to obtain information rapidly rather than from credible resources (Biddix, Chung, & Park, 2011); and quickly abandon Internet research strategies they have not learned well (Colwell, Hunt-Barron, & Reinking, 2013).

The Pew Research Center conducted an online survey about student use of technology in 2012, gathering data from 2,462 U.S. middle school and high school Advanced Placement and National Writing Project teachers. Approximately 75% of the teachers said that recent technological advances impacted education in a positive way, but that students did a fair to poor job of carrying out online research (Purcell, Heaps, Buchanan, & Friedrich, 2013). Students had difficulty typing effective search queries (38%), realizing that some websites were biased (71%), determining accuracy (61%), and finding multiple sources to support an argument (59%). These findings are probably not surprising, given that most students are not taught the skills necessary to conduct online academic research accurately and efficiently.

Struggling students, such as those with learning disabilities, often have additional challenges conducting online research because of poor decoding skills and problems with vocabulary, language, and reading comprehension—all of which impact their ability to read at grade level (Bryant, Bryant, & Hammill, 2000; Gersten et al., 2008; Spencer, Quinn, & Wagner, 2014). Evidence also suggests that students with learning disabilities typically are not taught, and therefore do not know how, to conduct and manage Internet searches for academic assignments (Roberts, Crittenden, & Crittenden, 2011).

The purpose of this paper is to describe Project SOAR (Strategies for Online Academic Research), and to report results from a case study implementation of the project’s strategies and materials. Project
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