Teaching Digital Literacies for the Common Core: What Results From New Assessments Tell Us

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Today's students require tomorrow's literacy skills. The Common Core State Standards, or CCSS, (2012) recognize the growing need to prepare today's students for literacy in a digital world. These standards require us to think in new ways about how best to assess and instruct students in digital literacies (Drew, 2013). What can assessment tell us about how we should teach digital literacies skills? What is most important for students to learn and teachers to teach? These are important issues for all of us in Connecticut.

The Internet and other digital technologies require both new literacy skills as well as new ways of thinking about traditional literacy skills (Coiro, Knobel, Lankshear, & Leu, 2008; Lankshear & Knobel, 2006). To be successful in college and career, as well as in their daily lives, today's students must learn how to conduct online research and comprehend information using online tools (CCSS, 2012; Organisation for Economic Co-operation and Development & the Centre for Educational Research and Innovation, 2010).

It is important to note that the CCSS effort (2012) is only one of many initiatives that have addressed the need for teaching and evaluating the new literacies needed for reading, writing, and learning on the Internet. Governments around the world have begun to address changes taking place to literacy by creating standards that include digital literacies (e.g., Australian Curriculum, Assessment and Reporting Authority, n.d.; Minister of Manitoba Education, Citizenship, and Youth, 2006; CCSS, 2012).

The New Literacies of Online Research and Comprehension

All of these initiatives, in different parts of the world, include skills needed to gather, read, evaluate, integrate, and communicate information online, a process now being referred to as online research and comprehension (Leu, Kinzer, Coiro, Castek, & Henry, 2013). Online

research and comprehension is a problem-solving process that takes place online and includes

five processing practices: 1) reading to determine important problems or questions (Leu, Kinzer,

Coiro, & Cammack, 2004); 2) reading to locate information (Bilal, 2000; Guinee, Eagleton, &

Hall, 2003); 3) reading to evaluate information (Sanchez, Wiley, & Goldman, 2006); 4) reading

to synthesize information (Goldman, Wiley, & Graeser, 2005; Jenkins, 2006); and 5) reading and

writing to communicate information (Greenhow, Robelia, & Hughes, 2009). As stated in CCSS:

> "To be ready for college, workforce training, and life in a technological society, students
> need the ability to gather, comprehend, evaluate, synthesize, and report on information
> and ideas, to conduct original research in order to answer questions or solve problems,
> and to analyze and create a high volume and extensive range of print and nonprint texts in
> media forms old and new. The need to conduct research and to produce and consume
> media is embedded into every aspect of today's curriculum."

(CCSS, 2012, p. 4)

Online research and comprehension includes the skills, strategies, and dispositions

unique to online research and comprehension, as well as those important for offline

reading comprehension. Assessing these online research and comprehension skills

becomes particularly important for us as we begin to prepare for and implement the

Common Core.

The Online Research and Comprehension Assessments (ORCAs)

Good teaching is informed by good assessment. Performance-based assessments can

allow us to gain a more precise understanding of students' abilities, since they can engage

students in tasks similar to real-life situations, while multiple-choice tests may not.

Online Research and Comprehension Assessments, or ORCAs, are performance-based assessments being developed by the ORCA Project (Leu, Kulikowich, Sedransk, & Coiro, 2009) and are aligned with the Common Core State Standards in reading and writing. In each ORCA, students are invited to conduct online research in science and write a short report in either an email message or a classroom wiki. The project has tested the assessments in cognitive labs, pilot tested the assessments in more than 40 districts in two states, and is now conducting a final validation trial with representative state samples of 1,600 seventh graders in two states (Leu, et al., 2012).

What is distinctive about these assessments of online research and comprehension is that they ask students to conduct actual research in an online environment. There are two versions: ORCA-Closed and ORCA-Multiple Choice. The ORCA-Closed version takes place within a social network where a student avatar (Brianna) directs each student through a research task with text messages, a search engine, web pages, wiki or email, and a notepad for summarizing information gathered during research.

The ORCAs assess students' ability to read and conduct online research in human body systems, a required topic for seventh graders in Connecticut for science. They measure students' abilities in four of the online research comprehension skill areas, including locating, evaluating, synthesizing, and communicating information, with four score points (three process points and one product point) for each of these four skill areas for a total of 16 points. The two different formats provide the opportunity to measure students' abilities in these four skill areas in two different ways.

The Closed format requires students to search for, select, and use websites from the project's search engine, named "Gloogle," which is populated with a predetermined set of

websites. The Closed format is thus a performance-based measure since it provides students the

opportunity to perform actual online research. Because the research takes place within this

Closed environment, however, students' responses are easier and faster to score. Additionally,

the assessment is stable over time, since the webpages do not change. This important feature also

allows the same assessment to be used over time.   Figures 1-3 illustrate several locations in the

ORCA-Closed assessment, "How Do Energy Drinks Affect Heart Health?" You may also view

an online video of a student taking this assessment at: http://neag.uconn.edu/orca-video-ira/.

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FIGURE 1 ABOUT HERE
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FIGURE 2 ABOUT HERE
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FIGURE 3 ABOUT HERE
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Unlike the Closed format, the Multiple Choice format invites students to select answers

from a set of four choices per question. The ORCA-Multiple Choice versions contain the same

research tasks as the ORCA-Closed and the same 16 items, but at each key decision point

students select responses from one of four options rather than compose responses to questions.

Each question and answer set is accompanied by screenshots of the websites or other web tools

(e.g. emails, wikis) that students need to use in order to successfully answer the question.

Students can toggle between the different screenshots as they gather the information they need to

answer the question. The Multiple Choice format thus attempts to provide students with a richer context than some more traditional multiple-choice assessments, but it is somewhat less performance-based, compared to the Closed format.

Initial results indicate that both ORCA-Closed and ORCA-Multiple Choice yield high levels of both reliability and validity (Leu et al, 2012). While the ORCA-Multiple Choice requires less time to score, the ORCA-Closed is a more performance-based representation of online research and comprehension.

The ORCAs and the Common Core State Standards

The ORCAs have been designed and developed to align with the digital literacy standards in the CCSS such as Writing Anchor Standard 6, "Use technology, including the Internet, to produce and publish writing and to interact and collaborate with others" (CCSS, 2012, p. 41), or Writing Anchor Standard 8, "Gather relevant information from multiple print and digital sources, assess the credibility and accuracy of each source, and integrate the information while avoiding plagiarism." (p. 41). As students move through the guided research process, they do so in a way that requires them to use and connect multiple skills at once within a task scenario that is carried out throughout the assessment rather than using each skill for a series of disconnected tasks. In this way, teachers may be able to gain a better understanding of how students might perform in an actual research scenario. This is consistent with the CCSS (2012), which ultimately aim for students to be able to engage in complex tasks consisting of multiple steps and skills, such as working with others to "produce and publish" (p. 41) written texts based upon online information research.

Instruction in Online Research and Comprehension

Two studies are helpful for thinking about classroom instruction in online research and comprehension skills (Corrigan, Leu, Burlingame, & Forzani 2013; Forzani & Burlingame, 2012). These studies provide us with an initial understanding of some of the ways in which teachers can prepare for the digital literacies standards in the Common Core. They focus our attention on the two online research and comprehension skills with which students struggle the most: evaluation and communication. These are the two areas where students consistently score lowest on ORCA assessments. Important possibilities for instruction and assessment of these two skills are presented here.

Critical Evaluation of Online Information

Focusing instruction on helping students critically evaluate online information may be especially important. The critical evaluation of online information is arguably one of the most important skill sets required by readers today (Goldman, et al., 2012; Wiley, Goldman, Graesser, Sanchez, Ash, Hemmerich, 2009). Yet, it is often the area of online research and comprehension with which students struggle the most (Kuiper & Volman, 2008) and has been found to be the most difficult of the four ORCA skill areas of locate, evaluate, synthesize, and communicate (Forzani & Burlingame, 2012). By paying particular attention to helping students understand and engage in each of the three process skills of identifying author, evaluating an author's point of view, and judging the author's expertise, teachers can help students become more effective at evaluating the reliability of webpages, a particularly critical skill for online reading and research.

To help students learn how to critically evaluate online information, teachers can assist students in considering the three process skills mentioned above. One way to do this is to have students research a topic together that has multiple points of view and then discuss the reliability of each source found. For example, students can research a topic such as, "Is Raisin Bran really

healthy?" Students can work in pairs or groups to research information that will help them answer this question. Students will find multiple points of view on this topic as well as multiple definitions of the term, "healthy." Students will have the opportunity to consider with their peers which sources they trust and why as they attempt to answer this question. Then, as a class, students can determine which of the criteria they used for judging reliability are important and why.

The above activity can also be extended by providing students the opportunity to examine author biography pages to evaluate authors' expertise. Most informational websites have an "About" page that leads to a short author biography. We can point students to multiple sources that include webpages written by both reliable and unreliable authors and have students determine which pages are reliable and which are not by investigating the author's biography. By examining the author's credentials, work history, and other experiences, readers can make informed decisions about the degree to which they trust the information the author writes.

Online Communication

Students also consistently have difficulty communicating the results of their online research to others (Corrigan, Leu, Burlingame, & Forzani, 2013; Forzani & Burlingame, 2012). Spending time helping students learn important communication skills, such as sharing information on a wiki or via email message, is therefore an important part of online research and comprehension instruction. One possibility for teaching students to communicate information online is to model writing and sending an email message or wiki entry for students and provide students with authentic experiences for communicating the ideas they have gathered during research. For example, use ePals (ePals.com) or another tool to connect with students in another classroom. Have students work on research projects with the other class of students and create

wikis detailing what they have found. While they are working on the wikis, provide opportunities for students to email with their peers in the other class about the information they have found and the sources where they have found it so they can work collaboratively to share and synthesize information for their wikis.

Another strategy is for students to create blogs about topics of their choice that they have researched. Blogs allow students to write for a real outside audience, and can help students improve their writing and communication skills (Zawilinski, 2011). As students conduct online research, they can write blog entries updating viewers on what they have learned. They can also include their sources to help guide their readers to additional information.

These teaching strategies provide our students with experiences that help them build digital literacies skills directly stated in the Common Core standards. Over time, students can gain many opportunities to gather and synthesize important and relevant information from multiple, digital sources as well as to create written texts for an audience while collaborating with peers.

Conclusion

There is much to learn about how best to teach and assess digital literacies, including online research and comprehension. The ORCAs provide us with initial but important information needed for implementation of the Common Core standards in 2014. Not only do the ORCAs assess many of literacy skills stated in the Common Core standards document, they do so in a manner that is practical, authentic, and efficient for teachers, while yielding results that demonstrate students' abilities in complex and nuanced tasks. As we continue to prepare for Common Core, we can use some of what we have learned so far to assess and teach online research and comprehension, especially evaluation and communication skills. As additional

assessments emerge, what we learn from them will help us build upon and extend our initial understanding of what is important for us to know about instruction of digital literacies for Common Core.

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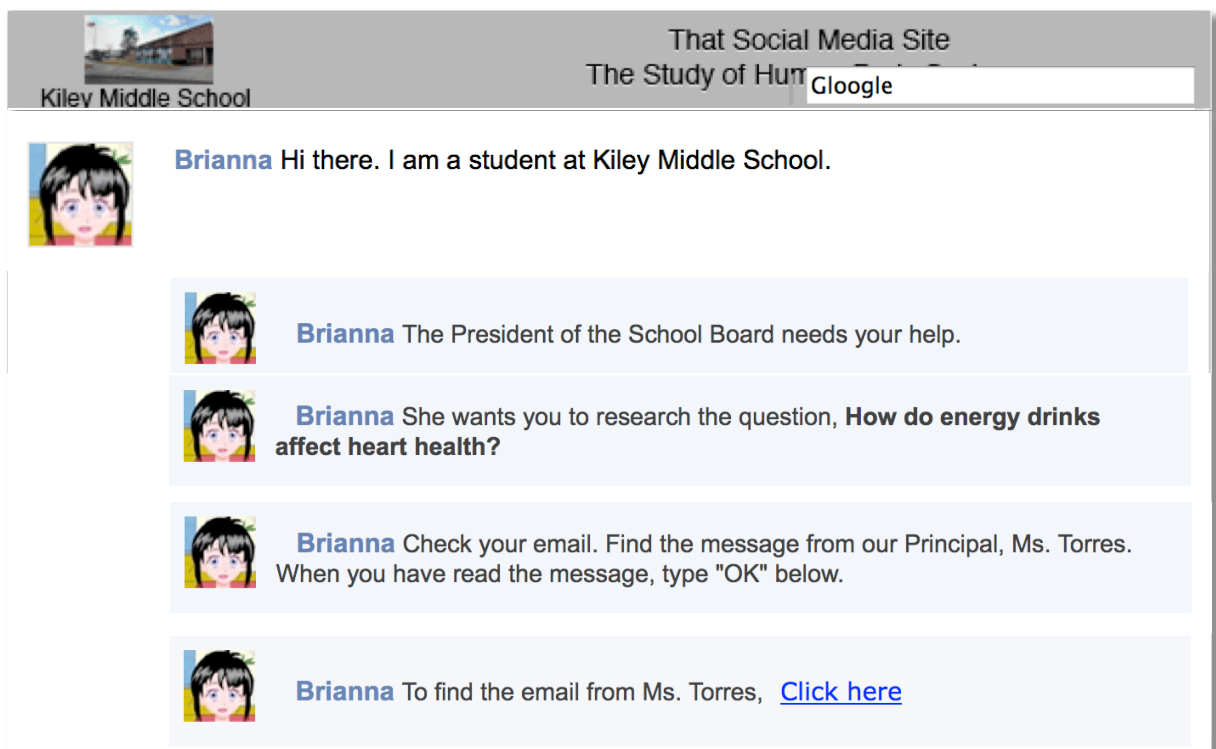
Figure 1.   The beginning sequence of text messages for the Closed version of Online

Research and Comprehension Assessment, "How Do Energy Drinks Affect Heart Health?"
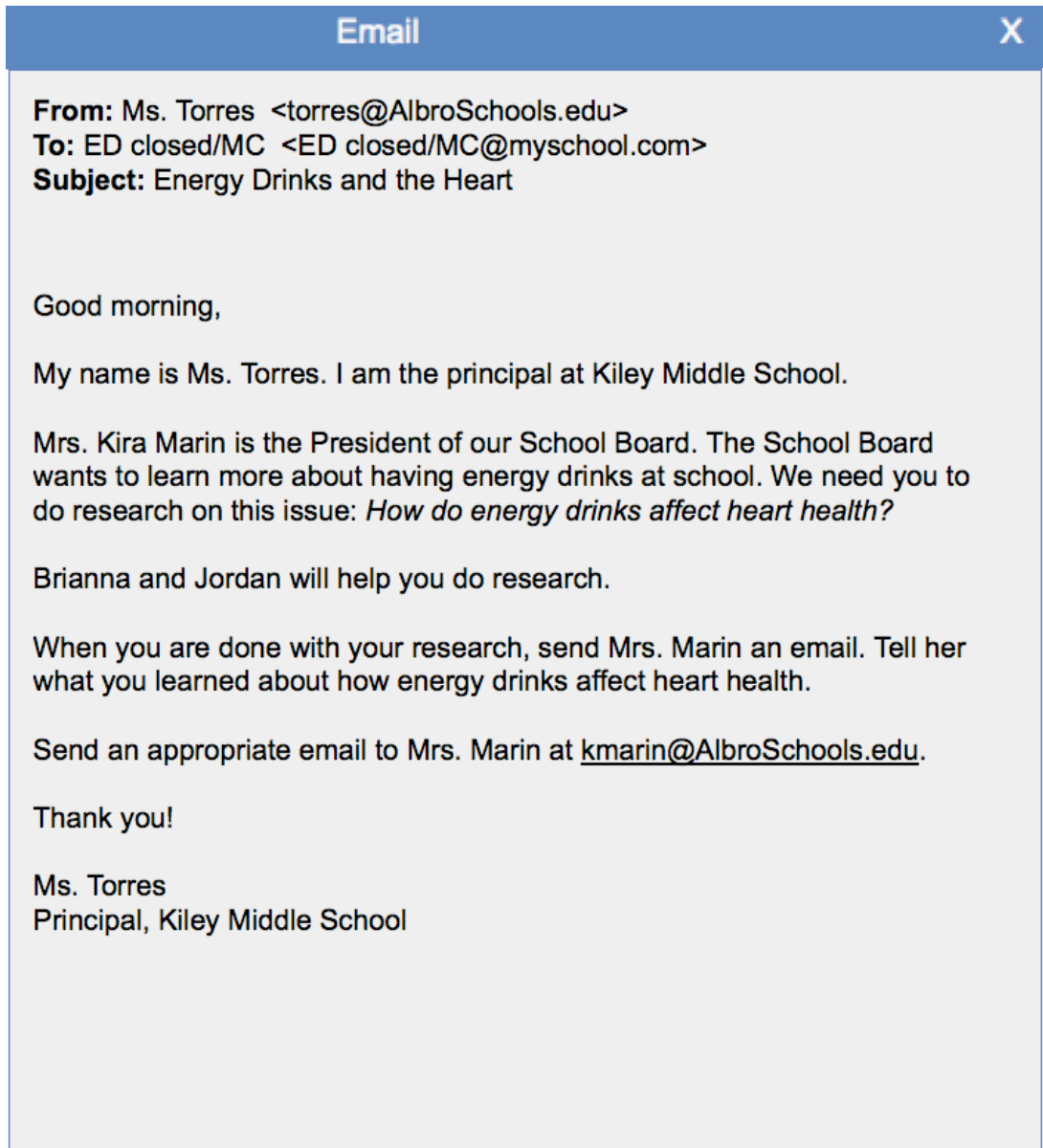
Figure 2. The email message appearing in a student's inbox defines the online research

problem in the Online Research and Comprehension Assessment, "Energy Drinks."

Figure 3. The sequence of text messages and the website used in evaluating students ability to critically evaluate source information in the Online Research and Comprehension Assessment, "Energy Drinks."