

# INCOME INEQUALITY AND THE ONLINE READING GAP

## Teaching Our Way to Success With Online Research and Comprehension

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In an important recent study, Reardon (2011) reviewed national reading achievement data in the U.S. Using students in the top and bottom 10% of family income, he found that the reading achievement gap based on income inequality is both large and growing larger. It is greater than the black-white achievement gap, which, while important, is getting smaller (see Figure 1). Income inequality, perhaps more than ethnicity or race, defines our nation's challenge in reading.

The work by Reardon, though, only used data about offline reading performance. Reading, as we know, has been shifting from page to screen. In fact, students spend more time reading on a screen than they do reading traditionally printed pages (see Rideout, Foehr, & Roberts, 2010). Is there an achievement gap for online reading ability based on income inequality that is separate from the achievement gap in traditional, offline reading? If so, the reading achievement gap is much larger than we currently estimate, since it would

include both offline and online reading differences. To the extent that the reading achievement gap is greater than we think and goes unaddressed through educational policies, we limit, in important ways, any attempt to achieve greater equity and opportunity in our nation.

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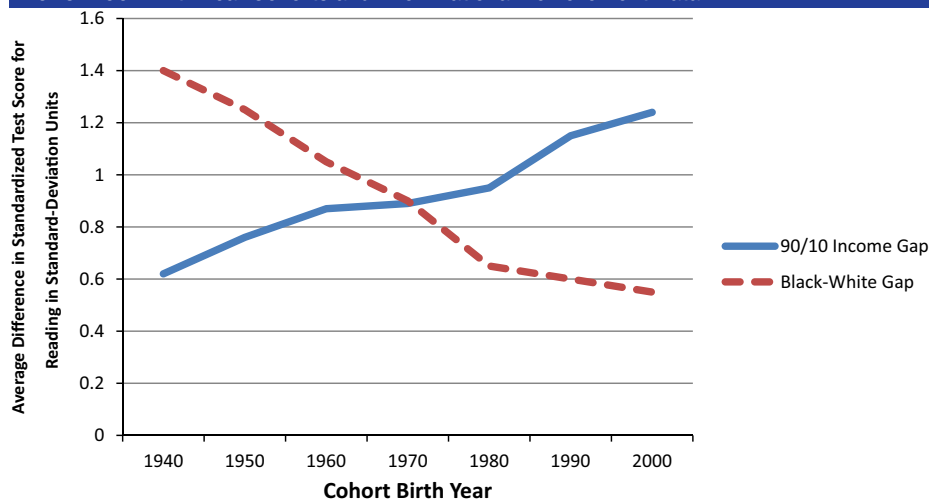
## A Recent Study

We set out to study the extent to which a separate, independent online reading achievement gap exists, based on income inequality, and recently reported the results in *Reading Research Quarterly* (Leu et al., 2014). Reports also appeared in *The New York Times* (Rich, 2014) and *Education Week* (Herold, 2014). The study took place in Connecticut, a state with the greatest income disparity between wealthy and poor families (Noss, 2012). The study used online research and comprehension tasks in science, an increasingly important area for disciplinary learning.

Our study measured online research and comprehension within a virtual online world that included a social network, web pages imported from the Internet, a fully functional search engine (“Gloogle”), e-mail, wikis, and text messaging with an avatar. The avatar, Brianna, guided each student through the online research activity with text messages at appropriate times. We recorded students’ responses in two performance-based online reading tasks. An image of the opening scenario in one of our online research and comprehension assessments (ORCA) appears in Figure 2. A video of the performance-based assessments, developed in a federal research grant funded by the Institute of Education Sciences, may be viewed at <https://www.youtube.com/watch?v=oTv07UCSBV0>. These assessments will be available, without cost, to schools and teachers who wish to use them. For additional information, see [orca.uconn.edu/professional-development/understanding/using-the-orcas/](http://orca.uconn.edu/professional-development/understanding/using-the-orcas/).

We controlled for pretest differences between students in two economically different districts on two measures of offline literacy (the state reading

Figure 1 Income Inequality and Black-White Achievement Gaps in Reading, Using 1943–2001 Birth Year Cohorts and Their National Achievement Data



Note. Data used to construct this figure are from Reardon, S.F. (2011). The widening academic achievement gap between the rich and the poor: New evidence and possible explanations. R. Murnane & G. Duncan (Eds.), *Whither opportunity? Rising inequality and the uncertain life chances of low-income children* (pp. 91–116). New York: Russell Sage Foundation Press.

Figure 2 The beginning Screens in One ORCA Assessment. See: <https://www.youtube.com/watch?v=oTv07UCSBV0>

The screenshot displays a virtual social media environment. At the top, it says "That Social Media Site The Study of Human Body Systems" with a "Gloogle" search bar. Below, a chat window shows messages from "Brianna":

- "Hi there. I am a student at Kiley Middle School."
- "The President of the School Board needs your help."
- "She wants you to research the question, *How do energy drinks affect heart health?*"
- "Check your email. Find the message from our Principal, Ms. Torres. When you have read the message, type 'OK' below."
- "To find the email from Ms. Torres, [Click here](#)"
- "Are you finished reading? When you are finished..."

An "Email" window is open, showing an email from Ms. Torres:

**From:** Ms. Torres <torres@AlbroSchools.edu>  
**To:** Test <Test@myschool.com>  
**Subject:** Energy Drinks and the Heart

Good morning,  
 My name is Ms. Torres. I am the principal at Kiley Middle School.  
 Mrs. Kira Marin is the President of our School Board. The School Board wants to learn more about having energy drinks at school. We need you to do research on this issue: *How do energy drinks affect heart health?*  
 Brianna and Jordan will help you do research.  
 When you are done with your research, send Mrs. Marin an email. Tell her what you learned about how energy drinks affect heart health.  
 Send an appropriate email to Mrs. Marin at [kmarin@AlbroSchools.edu](mailto:kmarin@AlbroSchools.edu).  
 Thank you!  
 Ms. Torres  
 Principal, Kiley Middle School

Note. These images contain the opening sequence of messages from the avatar, guiding each student through the research task in an ORCA. Here, the avatar directs the student to the initial e-mail from the principal, defining the nature of the research request from the president of the school board. From Leu, D.J., Forzani, E., Burlingame, C., Kulikowich, J., Sedransk, N., Coiro, J., & Kennedy, C. (2013). The new literacies of online research and comprehension: Assessing and preparing students for the 21st century with Common Core State Standards. In S.B. Neuman and L.B. Gambrell (Eds.), *Quality reading instruction in the age of Common Core Standards* (p. 228). Newark, DE: International Reading Association. Copyright 2013 by the International Reading Association. Reprinted with permission.

*“The results indicated a separate online reading achievement gap based on income inequality.”*

assessment and the state writing assessment). We also controlled for pretest differences in prior knowledge.

The results indicated a separate online reading achievement gap based on income inequality. Moreover, the effect size (an indication of the extent of the difference) was large. Finally, the results were robust, appearing in each of the four major skill areas, which included locating, evaluating, synthesizing, and communicating information, for each of the two online reading tasks as well as each of the major skill areas in each of the separate online reading tasks.

There was also a second important finding in our study: the students in both schools were not particularly skilled with online reading. Students had a hard time successfully conducting online research, comprehending the information they had encountered, and writing a report of their results either in an e-mail message or on a classroom wiki. On average, students performed successfully on slightly fewer than 50% of the items. Students were least skilled in the areas of critically evaluating online information (only 21% of items correct) and communicating online information (only 27% of items correct). The results should give us pause, especially if we consider that these types of new literacy skills are important to enable all students to achieve their dreams in life (Organisation for Economic

Co-operation and Development, 2010). The results suggest that the reading achievement gap is much larger than we currently recognize, since it should now include online reading.

The additional gap in online reading, based on income inequality, and the generally low level of preparedness for online reading, suggest the need for both policy and instructional solutions. From a policy perspective, we require greater recognition of the issue from our leaders as well as policy responses built on that understanding (Leu, Kinzer, Coiro, Castek, & Henry, 2013). From an instructional perspective, we must support the development of the strategies, skills, dispositions, and social practices important to the new literacies of online research and comprehension. These skills are central to students' ability to take full advantage of information online to learn and solve problems. Many exceptional ideas designed to support the development of online research and comprehension skills have previously appeared in this journal, written by colleagues well versed in this area. In this article, we contribute the best research-based ideas that we have developed to support online literacy skills, consistent with Common Core State Standards.

**Effective Instructional Strategies for Increasing Online Reading Skills**  
*Help Students Critically Evaluate the Reliability of Online Information*

Provide developmentally appropriate opportunities for students at all grade levels to evaluate the reliability of sources for both reliable and unreliable websites. Regularly assign an age-appropriate website to review, and engage students in discussion about their evaluation of its reliability. Periodically include spoof

sites that seek to fool readers, such as the site “Buy Dehydrated Water” (see buydehydratedwater.com). During the discussions, focus the conversation on five essential questions, individual skills that contribute to this ability:

1. Who is the author/creator of this information? What evidence supports your answer?
2. Is the author/creator an expert? What evidence supports your answer?
3. What is the author's/creator's point of view? What evidence supports your answer?
4. What do others online think about the reliability of information at this site and why? What evidence supports your answer?
5. How reliable is this site? What evidence supports your answer?

Build a site on your blog or classroom website, or on a bulletin board in your classroom, from the discussions that you have about critical evaluation of source reliability.

***Encourage Collaborative Online Research and Comprehension***

Research shows that working collaboratively offline can lead to significant gains in student learning (Johnson, Johnson, & Smith, 1998). Recently, studies have shown that the same is true for online research and comprehension (Castek, Coiro, Guzniczak, & Bradshaw, 2012; Kiili, Laurinen, Marttunen, & Leu, 2012). Allowing students to work in pairs or small groups gives them the opportunity to jointly monitor their comprehension and share online reading and research skills and strategies while also building habits of mind. Students generally do better when they read online and learn together. Google

*“The results should give us pause... these types of new literacy skills are important to enable all students to achieve their dreams in life.”*

Docs is especially useful for this type of work when writing is required.

### ***Use Internet Reciprocal Teaching in One-to-One Laptop Classrooms***

Internet Reciprocal Teaching is a three-phase model designed to teach online research and comprehension in one-to-one laptop classrooms. Phase 1 teaches basic tool use through teacher-led instruction. During Phase 2, groups of students solve problems in which the target skill is embedded and required for successful task completion. This phase features collaborative modeling of online research and comprehension strategies by students. Phase 3 uses these skills in online research and inquiry projects, culminating in an online project with students in other parts of the world. It is a rich instructional model, integrating online research and comprehension into disciplinary learning, and is more completely described in Leu, et al. (2008).

### ***Conduct Internet Message of the Week Projects***

Exchange weekly e-mail messages with classrooms around the world, describing what took place in each classroom that day. Locate teachers and invite classrooms to participate with you using ePals, a child-safe e-mail network with more than 100,000 connected classrooms and the “Match a Classroom” tool ([bit.ly/1tEftaG](http://bit.ly/1tEftaG)), which allows you to review other teachers’ grade levels, interests, and language preference to find matches in several nations. Send each an invitation

with a beginning and ending date for the project and a description of how it will be run. On one day every week, print out all the messages for students to read and enjoy from classrooms around the world. Afterward, invite your class to compose another response, describing the new literacy and learning experiences in your own classroom to send out the next week.

### ***Model the Online Research and Comprehension Process for Students***

Research on offline reading has shown that modeling thinking strategies while reading is an effective practice (Duke & Pearson, 2002). The same approach may be used for online reading. Use think-alouds to model your own thinking while conducting research, and invite other students to do the same for the class or for small groups. Always ask, “How did you figure that out?” to encourage students to share the problem-solving strategies they used during online reading.

### ***Integrate a Classroom Blog or Wiki Into Lessons***

Blogs and wikis support both higher-level thinking and the development of new literacies in classroom lessons.

They can be exceptional vehicles to support online reading and research. Students can report the results of their online learning projects and share them in safe ways with parents, classmates, and others. Zawilinski (2009) provides a thorough description of how to begin. You might also review examples by these teachers:

Mr. Boyer’s League of Extraordinary Learnersmr: [boyersclass.weebly.com](http://boyersclass.weebly.com)

Mrs. Tanksley’s Classroom Blog: [tanksleysextonmountain.blogspot.com](http://tanksleysextonmountain.blogspot.com)

Ms. Cassidy’s Classroom Blog: [msscassidysclass.edublogs.org](http://msscassidysclass.edublogs.org)

Mrs. Lee’s Classroom Blog: [bit.ly/ZGslcX](http://bit.ly/ZGslcX)

### ***Help the Last Become First***

New technologies, with new literacies, provide a special opportunity to place students who struggle with literacy at the center of your literacy and learning classroom, celebrating their expertise with skills others may not yet possess. Here’s how. Each time you bring a new technology into your classroom, such as a wiki, a blog, or e-mail, be certain to first teach the new literacies required to use it to students who are struggling with literacy learning. Then, have these students teach others. This enables these students to become newly literate with a new technology and help others who are not yet literate with the new literacies that are required. It empowers

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*“Students can research local or global issues that are relevant to their communities.”*

struggling readers and writers in wonderful ways. The approach also can be used when you wish to teach a new strategy; perhaps a new search strategy with a search engine. Simply teach it to a struggling reader, then have her model and teach it to others.

### ***For Younger Readers, Narrow the Pool of Information***

Many websites are geared toward older readers. Young readers may have a hard time sifting through them to find sites with easier text that they can comprehend. Finding websites ahead of time that are more accessible to young readers will help maximize lesson time and make the information more manageable to students. Bookmark these links or otherwise make them easily accessible to your students. This is especially useful when you provide online reading experiences at the sites of authors whose books you are reading in your classroom. Typically, these sites have exceptional resources and are great locations for students to conduct research on an author that they love to read.

### ***Select Sites With Reading Supports to Help Young Children Understand Online Text***

Because many websites are geared toward older readers, some students may need reading supports. Images, videos, interactive features, and tools

that read text aloud to students can help make difficult text more accessible for young readers. Some sites have a higher ratio of images to text, which makes it easier for young children to comprehend and learn; see, for example, kids.nationalgeographic.com and wonderopolis.org. Include sites with features like these in your lessons.

### ***Integrate Online Research and Comprehension Skills With Hands-On and Offline Activities***

Let students explore a research topic in multiple ways and not just online. Hands-on experiences and offline reading activities will allow students to develop important background knowledge before and during online research. This will help to both motivate students to learn more about the topic and allow them to better grasp the information they read online.

### ***Provide Students With Tools They Can Use to Organize and Synthesize the Information They Read Online***

As students read and conduct research online, they will encounter a vast amount of information. Using one of many online note-taking tools can help students organize this information, synthesize it with their existing knowledge, and determine which websites to use and which not to use, depending on how credible the sites are. Show students how to use note-taking tools such as Evernote, Microsoft OneNote, or Google Docs.

### ***Create Opportunities for Students to Engage in Online Research Around Appropriate But Controversial Issues***

Providing students with opportunities to conduct online research around

appropriate but controversial issues can motivate students, help provide important background information, and give students an authentic audience for communicating the information they find (Kiili, et al., 2012). Students can research local or global issues that are relevant to their communities and discover many different sides to any issue, increasing the importance of critically evaluating sources. How can snacks be both tasty and healthy? Can cosmetic contact lenses harm your eyes? What is third-hand smoke, and can it be harmful? Does playing video games harm your eyes? All are useful topics for online research when they are related to your curriculum.

### ***Encourage Students to Research Topics of Their Own Interest***

Introduce online research by allowing students to conduct research on a topic of their choosing. This provides important motivation for students as they conduct research. It also provides a built-in scaffold for students, since they often have a good deal of background knowledge about topics of their own choosing.

### ***Our Students' Future: The Future of Reading***

Our students have spent their entire lives in an online world and often come to school quite skilled in many online literacy practices, including gaming, social media, texting, and video use. In these areas, they certainly are “digital natives” (Prensky, 2001, p. 1). Research indicates, however, that students are not yet especially skilled in online reading for disciplinary learning; students

*“The future of reading is online.”*

are limited in their ability to locate online information (Kuiper & Volman, 2008) and think critically about online information and sources (Walraven, Brand-Gruwel, & Boshuizen, 2008). Many students find it difficult to judge the accuracy, reliability, and bias of online information (Bennett, Maton, & Kervin, 2008; Graham & Metaxas, 2003; Sanchez, Wiley, & Goldman, 2006). Indeed, many students tend to over-generalize their ability to read online, informed by their ability in other online skills (Kuiper & Volman, 2008).

Soon, we will no longer distinguish between offline and online reading, since reading will be almost entirely online and will include all of the affordances inherent in digital text. The future of reading is online. If we are to advance as a more thoughtful world, it will become increasingly important for all students to be fully prepared to build it. Helping each and every student successfully transition from page to screen while developing important online research and learning skills will be essential to this task. If we are successful in our classrooms, we will have prepared all students for a world in which online reading is a fundamental part of literacy, learning, and life.

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