Research

Digital Reading in EFL Reading-to-Learn Contexts

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Digital reading has now become a major form of information communication worldwide. It is a form of literacy that deserves explicit attention in English as a foreign language courses that address reading-skill development or integrated reading and writing instruction. Many students come to school reasonably skilled in using social media platforms, messaging on their smart phones, and using apps that follow popular stars. However, these forms of digital literacy will not support the development of academic literacy skills needed in advanced academic and professional settings. This article addresses this gap in digital literacy skills for reading-to-learn purposes. It outlines challenges that students (and teachers) face in literacy instruction and identifies opportunities for bringing digital literacy activities into the classroom. The article presents a sequence of basic tasks that introduce students to resources and strategies for developing digital reading skills.

[As of January 2018] “well over half of the world’s population was online, with the latest data showing that nearly a quarter of a billion new users came online for the first time in 2017.... Two-thirds of the world’s 7.6 billion inhabitants now have a mobile phone.... It’s not just the number of people using the internet that has increased; the amount of time that people spend on the internet has gone up.... The latest data from GlobalWebIndex show that the average internet user now spends around 6 hours each day using internet-powered devices and...
services—that’s roughly one-third of their waking lives.”

As we move further into the 21st century, the role of digital literacy in the lives of second and foreign language readers has taken on greater importance. Students in second and foreign language settings are becoming increasingly more adept at using digital devices. They use their devices (e.g., mobile phones, tablets, computers in Internet cafes) for a variety of purposes. They mainly use them for online social networking (e.g., Facebook, texting, emailing, blogging), entertainment (e.g., watching movies, following idols on Instagram, listening to music, gaming), and informal English study (e.g., with Google Translate, online dictionaries, language-learning apps, YouTube videos). They also use their digital devices to consult Google maps and weather sites, when needed, and to access local transportation. Some students use their devices to stay informed about the news, consulting online newspapers or listening to news broadcasts on their devices. In credit-card societies, students use their electronic devices to make online purchases. Some students read for pleasure on their devices (e.g., online graphic novels). In fact, most language students seem to spend much more time on their electronic devices than with print texts (Kervin, Mantei, & Leu, 2018).

These students—as skilled and as comfortable as they are using digital devices for non-academic purposes—rarely use their electronic devices effectively for academic purposes (Coiro, 2015; Dobler, 2015; Dobler & Eagleton, 2015; Zawilinski, Forzani, Timbrell, & Leu, 2019). In fact, these students typically lack experience (and practice) with digital tasks that have implications for academic success, including

• navigating the convoluted pathways inherent in online information searches;
• locating academically relevant online information;
• reading online sources critically;
• judging the accuracy, reliability, and bias of online sources;
• determining authorship;
• making connections within and across online texts; and
• using online information responsibly for written assignments.

To prepare students for the digital-literacy demands inherent in reading-to-learn contexts, at school and in the workplace, it behooves language teachers to find a way to address digital literacy for academic purposes explicitly in their classrooms (Cobb, 2017; Dobler & Eagleton, 2015).

In this paper, we consider the similarities and differences between print and online reading. We then explore the challenges and opportunities associated with digital reading. Finally, we conclude with some suggestions for integrating digital reading into language classes that have reading-to-learn goals.

Print and Online Reading: A Comparison

All the skills needed for successful reading of traditional written texts are also important for reading digital text.... Nevertheless, some characteristics of digital reading ... are different from reading print text. Hyperlinked online reading passages are multimodal, interactive, and non-linear. Navigating them
demands more flexibility, attention, focus, and quick judgment than reading traditional text in order to distinguish trustworthy and valuable content from junk. (Geva & Ramírez, 2015, p. 142)

Skilled reading, online and with print texts, is a complex process (Grabe, 2009). In reading-to-learn contexts, in which students are reading print and/or digital texts, readers strive to comprehend the texts that they are reading and then use the information learned (from one or more texts) for academic tasks (e.g., writing papers, giving oral presentations, engaging in multiple-step projects, defining research topics). To achieve comprehension, skilled readers make use of a range of language, reading, and metacognitive resources. These resources include vocabulary, grammar, discourse-structure awareness, comprehension monitoring, inferencing skills, working memory, and background knowledge. Skilled reading also requires the ability to read differently depending on the reader’s purpose(s), which could include (a) reading quickly to search for information, (b) reading quickly for the main idea, (c) reading to learn, (d) reading to summarize, (e) reading to integrate information, (f) reading to write, (g) reading to critique, and (h) reading for general comprehension. (See Britt, Goldman & Rouet, 2013; also Zhang & Duke, 2008, for a discussion of strategies used by good Internet readers when reading for different purposes.)

Skilled readers of both print and digital texts are, by definition, strategic (Grabe, 2009). Strategic readers use combinations of strategies that permit them to, among other things, connect information from different parts of a text, work through a difficult section of a text, and take steps to repair faulty comprehension when it occurs. Strategic readers know when, where, and how to use those strategies in a deliberate way to achieve their goals. Strategies used by skilled readers include global, monitoring, and support reading strategies, as shown in Table 1.

Table 1
Strategies Used by Skilled Readers

<table>
<thead>
<tr>
<th>Strategy Types</th>
<th>Example Reading Strategies</th>
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<tbody>
<tr>
<td>Global reading strategies</td>
<td>Identifying goals for reading</td>
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<td></td>
<td>Previewing</td>
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<td>Predicting and checking predictions</td>
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<td></td>
<td>Forming questions and answering those questions</td>
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<td></td>
<td>Paying attention to text structure</td>
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<td></td>
<td>Creating mental images</td>
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<td>Identifying difficulties</td>
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<td></td>
<td>Taking steps to repair faulty comprehension</td>
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<td></td>
<td>Judging how well objectives are met</td>
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<td></td>
<td>Re-reading</td>
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<td></td>
<td>Reflecting on what has been learned</td>
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<td>Monitoring reading strategies</td>
<td>Paraphrasing</td>
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<td></td>
<td>Translating</td>
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<td></td>
<td>Underlining, highlighting</td>
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<td></td>
<td>Summarizing</td>
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<td></td>
<td>Synthesizing</td>
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</table>

*See Grabe (2009) and Grabe & Stoller (2011) for more on reading strategies.
As has been explained here, the successful reading of print and digital texts requires many similar skills and strategies. Yet, digital reading has created new contexts for reading and a wide range of new text types (Cho & Afflerbach, 2017). These new contexts and text types have led to the need for additional sets of reading skills and strategies. In digital contexts, especially those with reading-to-learn expectations, successful readers typically navigate multiple websites while using the most appropriate keywords and descriptors to guide their online searches. Successful digital readers intentionally suppress the distractions inherent in digital reading, stay focused on their goals for reading, and strive to find information needed to achieve those goals. Successful digital readers also use critical reading skills to recognize biased and/or (un)reliable online information (Coiro, 2015). Furthermore, they pay attention to the sources of website information (e.g., commercial versus non-commercial).

These same online readers also keep track of the array of digital materials accessed while in the midst of moving from one website or mode to another, even when making use of online enhancements that permit bookmarking and highlighting. Effective digital readers typically recall where relevant information is located, and then backtrack to find it, not necessarily a straightforward endeavor. Finally, they find ways to evaluate and integrate multiple sets of information that are not in clear view at the same time (as they might be with multiple books and/or photocopies of readings spread out on a desk). This range of online reading abilities is especially important for students in reading-to-learn contexts.

Challenges and Opportunities Associated with Digital Reading

Cobb (2017) has depicted digital reading as “continuous with the reading challenge[s] of the past” (p. 312), but also with its own distinct set of challenges and opportunities. In the sections that follow, we explore some of the challenges faced by and opportunities available to language students and their teachers.

Challenges

Many of the challenges that are faced by digital readers stem from the fact that the Web is massive, comprising countless, constantly changing non-linear linkages among interconnected links. That the Web is multimodal, unfiltered, and unbounded certainly creates formidable challenges. Hypertext features result in increased cognitive load and the need for more working memory capacity. Furthermore, the Web comprises many “inconsiderate” texts, which may be disorganized and lack lexical and organizational cues, requiring the reader to work hard, through inferencing, to synthesize information from different parts of a digital text or from multiple texts. Digital readers can also become easily distracted by hyperlinks to, for example, audio files, podcasts, glossaries, embedded images, videos, advertisements, and unrelated sites. These distractions pose additional challenges, especially among digital readers accustomed to using online resources for social communication and entertainment rather than for academic goals. Hyperlinks can interrupt comprehension as readers move from one site to another and from one modality to another (e.g., from reading to listening and then back to reading again). Further complicating matters is the fact that Web readers typically spend a lot
of time trying to find their way around the Web, leaving limited time for actual reading and information processing (Dobler & Eagleton, 2015). Digital-reading instruction reveals another set of formidable challenges. Apart from the fact that few language programs currently address digital reading in their curricula, few instructional materials exist to assist teachers with their lesson planning. Furthermore, some schools may not permit or cannot guarantee Internet access. Moreover, teachers may themselves feel uncomfortable with technology and their own digital-reading skills. Teachers may have irregular access to the Internet, in and out of school, and may have mobile phones with limited capacity, resulting in minimal experience using the Web for more scholarly tasks. Their own students, in fact, may be more knowledgeable about digital applications. Because of teachers’ incredibly busy lives, they may also be reluctant to devote the time required to revise their lessons to incorporate digital literacy into instruction. If they work in settings largely defined by national curricula and/or standardized exams, teachers may not be in the position to modify their teaching to incorporate digital literacy into instruction; they may have to wait until the Ministry of Education gives the go-ahead to do so. For teachers who have some ability to adjust their lessons and curricular objectives, they may not do so simply because of the comfort that accompanies the status quo (Stoller, 2012). Some of these teacher challenges could be lessened if digital literacy were addressed in preservice teacher-training programs. (See Damico & Panos, 2016, for the description of a teacher-training effort that guided preservice teachers in evaluating web sources about climate change and reading for bias, authorship, claims, and evidence.)

Opportunities
When digital reading is addressed explicitly in language classes, numerous opportunities become available. Students can be guided in using appropriate strategies for managing browsers, search engines, and keyword searches. These strategies are especially important for novices to digital reading for academic purposes because those readers typically just click the first source listed (often an ad), without scrutinizing it, and then work their way down search engine results (Zawilinski, Forzani, Timbrell, & Leu, 2019). Students can also be guided in maintaining goals for reading and staying on task. Teachers who address digital reading skills in class can also build students’ capacity to self-regulate—to monitor comprehension, adjust strategy use for reading purpose, and coordinate multiple processes, including navigation, selection, and evaluation (Goldman, Braasch, Wiley, Graesser, & Brodowinska, 2012). Students can also be taught to match digital resources to goals, find connections across multiple texts and text types, and make use of digital enhancements (Goss, Castek, & Manderino, 2016), which include glossaries, online dictionaries, bookmarking, and highlighting. And, of course, teachers can guide students in reading extensively, continuously, and for comprehension, practice needed for all forms of skilled reading (Grabe, 2009).

Explicit Digital-Literacy Instruction in Reading-to-Learn Instructional Contexts

“Once considered ancillary, [web reading] is now essential in school, at home, and in the workplace, as people use online information to learn, solve problems, answer questions, and participate in a digital society.” (Dobler & Eagleton, 2015, pp. 2-3)
Now that we are well into the 21st century, we need to take stock of our language students’ most pressing needs. In teaching contexts with academic and reading-to-learn objectives, it is time that we make a commitment to incorporating digital literacy into our curricula. To do so, we must first help students master the skills and strategies needed for both print and digital reading (Grabe & Stoller, 2018). In addition, we should address the challenges that students face when reading digitally and take advantage of the opportunities that become available to us to assist students in becoming more critical and efficient readers of online informational texts. We must recognize that the skills that students have developed using their digital devices for social purposes will not readily transfer into the reading comprehension skills that they need for more advanced academic tasks with longer informational texts. What this suggests is that digital texts and tasks should become an integral part of reading comprehension instruction.

Even though few ready-made digital-literacy teaching materials are available to language teachers, the Web is at our fingertips. We can integrate digital-literacy instruction into our instruction most easily by building upon our coursebook units with related informational texts from the Web. For example, if our coursebook units have one or more passages on robots (Savage, 2017), or the Association of Southeast Asian Nations (Hoàng & Phan, 2015), or nature’s fires (McEntire, 2014), we can integrate level-appropriate texts from the Web on those topics into our instruction. When we do so, we can (a) build upon students’ knowledge of the topic, (b) recycle key thematic vocabulary, (c) explicitly address digital literacy skills and strategies, and (d) assign academic tasks that require students to make use of information learned from multiple sources (as they will have to do on their own when moving beyond our language classes).

Before working with coursebook themes and related websites, it is important to start with simple, controlled tasks that introduce key vocabulary related to web searches and essential features of URLs (see Tasks 1 and 2 below). Tasks 3–5 take students further and are particularly useful when connected to coursebook themes.

**Task 1**

Introduce students to key terminology that will assist them in interpreting and discussing information from the Web. We suggest teaching students the three essential elements of a web-search entry: title, URL/Web address, and descriptor (Appendix A). Consider highlighting other vocabulary that will assist students in discussing and interpreting web entries (e.g., *date*, words like *ad* indicating an advertisement, *YouTube* indicating a video).

**Task 2**

Ask students to look more closely at URLs (see Figure 1) to learn to interpret domain names and country codes (e.g., *vn* for Vietnam). Common domain names include .com (commercial site), .gov (government or government agency site), .edu (education site), and .org (organization site).
Task 3
When students are comfortable with the essential elements of a web-search entry, engage students in a task with a manageable set of web-site entries that complement a coursebook theme (e.g., robots). Include questions such as those listed in Appendix B, followed by a task requiring students to identify the information in the website entry that proves most useful to them (title, URL, descriptor, and/or familiarity with the website).

Task 4
This task centers around two websites that are relevant to a question being asked, but that report different answers. Such a task is particularly important in instructional contexts with reading-to-learn goals because it helps students learn to read digital texts as “healthy skeptics” (Zawilinski, Forzani, Timbrell, & Leu, 2019, p. 348). With this type of task, students learn to question information that they read online for reliability, accuracy, bias, point of view, authorship, and/or source. In the case of our example (Figure 2), students must decide which URL is most reliable: a government census site or a commercial real estate site. (NB: We include this example here for its clarity. While exploring a course book theme, it would be more appropriate to use theme-related examples.)

What is the population of Flagstaff, Arizona (location of Northern Arizona University?)

1. Approximately 67,000
2. Approximately 72,000


Figure 2. A simple task that asks students to judge the reliability and accuracy of two different websites.

Task 5.
A much more advanced task, linked to a research paper assignment, directs students’ attention to additional qualities and components of websites, including mode/presentation, authorship, bias/credibility, and audience (see Appendix C).

Conclusion
One of today’s major gaps in literacy instruction is our lack of attention to teaching students how to navigate digital information resources when engaged in reading-to-learn tasks. This problem is often masked by student facility with social media and smart phones. But more advanced literacy abilities require skills and strategies for using digital media that go well beyond standard social media platforms.
We address this serious gap by highlighting the challenges and opportunities associated with digital literacy instruction, for students and teachers alike. We also consider digital literacy much like we would more traditional print literacy, but with a few additional twists. Just like in more traditional reading lessons, we should structure our digital-literacy lessons around explicit instruction, modeling, scaffolding, student engagement, guided practice, classroom discussion, and feedback. The twist involves adding new text types, tasks, strategies, and critical awareness skills to digital reading instruction. This can be accomplished by linking digital literacy instruction to conventional reading coursebooks, which can provide the thematic background knowledge that students need to comprehend online sources. We present a sequence of five tasks that teachers can adapt to their students' needs as a way to begin to make a commitment to digital literacy instruction.

Because digital literacy instruction is a new endeavor for most of us, the ideal for the discipline would be for teachers to conduct action research (Grabe & Stoller, 2011) on their initial efforts with digital literacy instruction, consider the results of their action research, and report them at professional conferences (such as CAMTESOL) so that we, as a field, can move forward to meet our students' digital reading needs.
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References


Appendix A
Three Essential Elements of a Web-search Entry

Title
Robots Will Devour Jobs More Slowly Than You Think - MIT ...
https://www.technologyreview.com/.../robots-will-devour-jobs-more-slowly-than-you... ▼
Jan 13, 2017 - An automated workforce is inevitable, but humans may labor alongside machines for the foreseeable future.

Descript

URL/Web address
Appendix B
Sample Task that Guides Students in Analyzing Web-search Entries Related to a Coursebook Theme
(adapted from Zawilinski et al., 2019)

Look at the four website entries from our search about robots. Choose the best link to answer each question. Then identify the information that influenced your decision: title, URL, descriptor, and/or familiarity with the website. (NB: We have listed decision-making items in this appendix only under the first question.)

1. Which web-search entry leads to a government website?

___ Title
___ URL
___ Descriptor
___ Familiarity with the website

2. Which web-search entry leads to a local story?
3. Which web-search entry leads to an advertisement that may try to sell you something?
4. Which web-search entry leads to a YouTube video about the topic?
Appendix C
Sample Advanced Digital Literacy Task

Students are tasked with writing a 1-2 page research paper. The assignment explicitly requires that information from multiple credible sources be integrated to answer the research question. The tasks outlined below intend to strengthen students’ ability to evaluate web sources related to their research topics.

1. All students are given a sample research question, such as Do in-class robots support student learning?
2. With 3-4 links provided by the instructor (at least in initial, scaffolded iterations of this activity), students visit websites that contain information that may answer the research question.

Possible links (accessed in March 2018)

3. Students explore the websites provided and, for each, answer a set of questions (such as those listed below) that direct their attention to specific qualities and components of the sites, such as mode/presentation, authorship, bias/credibility, and audience.

Questions that direct attention to mode and presentation
Does this website contain hyperlinks? Click on some of the hyperlinks. What do the hyperlinks lead you to (e.g., other articles, videos, definitions)?
What kinds of images or figures does this website contain? Do these features help you understand the text better? Why or why not?

Questions that direct attention to authorship
Is the author of this website clearly named? If not, who do you think wrote the information here?

Questions that direct attention to bias and credibility
What do you know about the author’s qualifications, training, or education?
Do the ideas in the website seem more like opinions or facts? How do you know?
What evidence (e.g., personal beliefs, research results, statistics, quotations) is included to support the ideas presented in the site?

Questions that direct attention to audience
Who do you think the information on this website is meant for (e.g., teachers, researchers, students, anyone)?

Questions intended for critical reflection and evaluation
Would you use information from this source to write your research paper? Why or why not?