

Reading multiple sources online

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Title: *Reading multiple sources online.*

Resumo: *Nesse artigo, discutimos sobre os componentes da leitura online e como promover habilidades e estratégias que ela requer do leitor contemporâneo. Defendemos que a leitura em ambientes digitais e a leitura do impresso não devem ser vistas como atividades polarizadas, ou antagônicas, mas como um conjunto de práticas complementares. A leitura na Internet, no entanto, complexifica algumas das habilidades requeridas na leitura do impresso, uma vez que o leitor precisa lidar com questões como a hipertextualidade e a multimodalidade, bem como navegar por múltiplas fontes de informação enquanto, executa múltiplas tarefas simultaneamente. Focalizamos aqui o trabalho com múltiplas fontes, discutindo o papel da navegação, localização, seleção e avaliação, entre outros processos requeridos dos leitores online produtivos. Acreditamos que essas informações sejam importantes para orientar o trabalho do professor que busca dar suporte aos alunos no desenvolvimento de habilidades essenciais para a leitura em ambientes digitais.*

Palavras-chave: *Leitura. Internet. Hipertexto. Múltiplas fontes.*

Abstract: *In this paper, we discuss the components of online reading and how to foster online reading skills and strategies for today's readers. We argue that reading in digital environments and traditional reading should not be seen as polar opposites, but as complementary sets of practices. However, reading on the Internet complexifies some of the skills required by traditional reading. That is, online readers need to deal with issues such as hypertextuality and multimodality, as well navigating across multiple sources of information while simultaneously engaging in multiple tasks. Here we focus on work with multiple sources, discussing the role of navigation, location, selection and evaluation, among other processes required from productive online readers. We believe that this information is important to guide teachers seeking to support students as they develop essential skills for reading in digital spaces.*

Keywords: *Reading. Internet. Hypertext. Multiple sources.*

Introduction

In order to teach using the Internet as a source of information and to help our students become good readers of

digital environments, we need to better understand what is involved in reading online. In this paper, reading online is contextualized as part of media education for contemporary times. More specifically, it involves understanding the differences between reading printed texts and digital texts, and calling attention to specific skills, strategies, and practices involved in negotiating multiple information sources, one dimension of reading that is amplified by digital environments.

21st Century Shifts in the Culture of Literacy

Jenkins (2009) considers a participatory culture as a crucial component of 21st century media education. A participatory culture is one in which there are

relatively low barriers to artistic expression and civic engagement, strong support for creating and sharing one's creations, and some type of informal mentorship whereby what is known by the most experienced is passed along to novices. A participatory culture is also one in which members believe their contributions matter, and feel some degree of social connection with one another (at the very least they care what other people think about what they have created) (p.3).

According to Jenkins (2009), "participatory culture shifts the focus of literacy from one of individual expression to community involvement" (p. 4). In this case, Jenkins explains, literacy involves "social skills developed through collaboration and networking. These skills build on the foundation of traditional literacy, research skills, technical skills, and critical analysis skills taught in the classroom" (p. 4).

Jenkins' vision of a participatory culture, however, does not represent a disruption in relation to what is traditionally considered literacy, but an amplification of it, by emphasizing not only cognitive dimensions but also social aspects of literacy. Roots of this approach can be seen in Freire's work (1988), in Bazerman's (2006) theory of genres, and also in the concept of

social literacies (STREET, 1995). However, Jenkins adds to these ongoing ideas additional literacy practices generated by the intense and widespread use of Internet in our society.

To be well prepared to face the world and participate actively in our contemporary society, students need to acquire a set of new media literacy skills that can serve as a foundation to a paradigm shift in educational practices (JENKINS, 2009). These skills include:

Play — the capacity to experiment with one's surroundings as a form of problem solving

Performance — the ability to adopt alternative identities for the purpose of improvisation and discovery

Simulation — the ability to interpret and construct dynamic models of real-world processes

Appropriation — the ability to meaningfully sample and remix media content

Multitasking — the ability to scan one's environment and shift focus as needed to salient details.

Distributed Cognition — the ability to interact meaningfully with tools that expand mental capacities

Collective Intelligence — the ability to pool knowledge and compare notes with others toward a common goal

Judgment — the ability to evaluate the reliability and credibility of different information sources

Transmedia Navigation — the ability to follow the flow of stories and information across multiple modalities

Networking — the ability to search for, synthesize, and disseminate information

Negotiation — the ability to travel across diverse communities, discerning and respecting multiple perspectives, and grasping and following alternative norms. (p. 4).

To adequately prepare students for real life in a digital information society, teachers and schools should emphasize these skills as part of their curriculum. Importantly, considering these skills does not mean having to give up many other traditional skills and instructional approaches that we already believe in. According to Jenkins (2009), “new media literacies include the traditional literacy that evolved with print culture as well as the newer forms of literacy within mass and digital media” (p. 8). He poses that “before students can engage with the new participatory culture, they must be able to read and write” (p. 8). So, we do not need to reinvent the wheel just because we are including another environment for reading. When we talk about reading online, we are still talking about reading. We are still talking about reading texts as decoding texts, reading across different textual genres, and making meaning. As McCutchen (2013) reminds us, we cannot forget the linguistic basis of literacy skill as we broaden our concept of reading in a digital age. For example, Shapiro and Neiderhauser (2004) mention a study conducted by Wenger and Payne (1996) in which they

examined whether several measures of cognitive processing that have been used to assess recall and comprehension when reading traditional text (i.e., working memory span, speed of accessing word knowledge in memory, reading rate) would also hold when reading hypertext. Twenty-two university students read three hierarchically structured hypertexts and completed a battery of reading proficiency assessments. They concluded that “...the relationships between the information processing measures and the hypertext reading measures replicate those documented between these information processing measures and performance with normal printed (linear) text” (p. 58). This provides support for the notion that the basic reading processes that guide the design of printed text can also be applied to the design of hypertext (p. 607).

In another study, Shapiro and Neiderhauser (2004) reviewed the main issues and findings across many studies of hypertext-assisted learning. They concluded that

...perhaps the most basic finding is that hypertext is not the panacea so many people hoped for at the time that it became widely available. Turning students loose on a hypertext will not guarantee robust learning. Indeed, doing so can actually mitigate learning outcomes in some circumstances, especially if students are novices and offered no training, guidance, or carefully planned goals. In the right circumstances, though, hypertext can enhance learning. It does so by presenting environments that offer greater opportunities for students to engage in the type of cognitive activities recognized by theorists as encouraging learning: active, metacognitive processing aimed at integrating knowledge and boosting understanding. In short, while hypertext does not offer any shortcuts for learners, it offers rich environments in which to explore, ponder, and integrate information (p. 618).

Recognizing print and digital reading as complementary processes

Computers have been part of our lives for some time now. Some people have dealt with computers for more than 30 years. The Internet has been part of our lives for almost 20 years. During this time, we have been trying to understand what is involved in reading on computers, reading online, and dealing with hypertexts. A reasonable amount of research has been conducted and published in both peer-reviewed papers and books.

In some of these works, computers have been and still are blamed for shallow thinking and for destroying our capacity to concentrate (CARR, 2011); for killing our culture (KEEN, 2007); and for separating digital natives from digital immigrants (PRENSKY, 2006). Early on, there was an initial excitement involved in anticipating the possibilities that computers could

bring to our lives. Many have argued that life, reading, and writing would be different because of computers; that we would be more intelligent, and that computers would cause a revolution. We cannot deny that computers have made our lives very different and that we might consider these differences as part of a revolution. But we cannot think that, in the past 20 years, computers have completely altered the very essence of humanity. We are still human beings, with a brain in which “neurons that fire together, wire together” (EDELMAN, 1992), with a limited memory, and a very smart system of making sense of diverse information (FAUCONNIER, TURNER, 2002).

Nevertheless, computers have brought with them new communicative possibilities and new genres, as well as new ways of dealing with information. Computers grant us access to a huge amount of information. This is very interesting and challenging at the same time. Arguably, the changes introduced by computers may prompt discussions about the polarization between apocalyptic and integrated thinking (see ECO, 1965). However, this is no longer a time to dispute whether print or digital texts are better, or to question which are easier to read, which are most dangerous or complex, and so on. Findings from contemporary research suggest that reading both print texts and digital texts is challenging (ROUET, et al. 1996; RIBEIRO, 2008; COIRO, DOBLER, 2007; COIRO, 2011; BRITT et al., 2013). The fact that many students across the globe struggle with print-based reading tasks on international assessments of literacy (see OECD, 2011), reminds us that the process of reading in any environment is a challenging and complex activity.

It is not productive, however, to think about what is better, what is worse, or which type of reading is dangerous or good. Historically, books have often been considered dangerous. Many books have been burned; many stories have been written about how books are to blame for the degeneration of people (e.g. *D. Quixote* (Cervantes), *Mme Bovary* (Flaubert); or *The city and the Mountains* (Eça de Queiróz); and many authors have claimed that books have caused people to be angry, unfaithful or unhappy. Yet, we do not need to burn books, as we do not need

to blame computers for destroying people and society. Indeed, both books and computers transform people, but, in most cases, these changes are hopeful and positive. In today's digital information society, we certainly hope our students will be fluent readers and critical thinkers. We believe computers, and more specifically the Internet, provides new digital spaces within which people can access diverse texts while practicing ways of becoming critical readers, autonomous apprentices, and better-informed global citizens.

We need, though, to support students as they practice productive Internet reading skills. Today, these practices include improving skills as readers of many different textual genres (e.g., books, magazines, papers, flyers) on many different devices (e.g., packages, computers, tablets, and mobile phones). As we work to support students, it is crucial that we recognize that print and digital texts are complementary; one complements, rather than replaces, the other.

Following this rationale, Kulikowich (2008) argues that an

examination of new literacies, therefore, cannot divorce itself from traditional literacy research. That said, experimental researches are well advised to make efforts to detect where traditional and new literacy processes and products diverge.[...] [Understanding] how they can complement one another and promote learning will become especially valuable as the demands placed on students in a knowledge society increase (p. 200).

Warschauer, Ware (2008) reinforce these ideas, and connect them to larger societal practices, when they write that

technology, literacy, culture, and society are viewed as being completely intertwined. From this perspective, technologies do not impact literacy, society, or culture, but rather are seen as embodiments of social and cultural relations that, in turn, structure social and cultural futures (p. 222).

In this sense, we need to better understand and respect the contributions of different types of texts produced in our society in different medias, rather than privileging only the canonical genres, authors and typical ways of supporting readers (BAZERMAN, 2006; STREET, 1995). We need to value different literate practices that take place in print or digital environments.

In addition, we need to value and connect formal learning and informal learning experiences in a more coordinated way that better aligns in-school practices with life experiences outside school. This includes recognizing that computers and games can help foster learners' intellectual and personal development and proactively engage students (ITO, 2009). As demonstrated by Sanford, Maddil (2006, in MILLS, 2010), "video games can be a powerful learning tool for the transfer of knowledge, intertextuality, and text design. However, little evidence was found that the video game players were engaging in social or moral critique of the cultural stereotypes" (p.259). So, it is not a matter of substituting one for the other but to show how formal and informal learning experiences relate to and complement each other.

In the same way that linguistics researchers do not judge one language or variation as better than another, literacy researchers should not invest a lot of energy in stressing how one textual genre is inherently good or bad; especially useful or not. Instead, there might be, for instance, a more or less adequate genre or language use for a specific situation.

For many years, educators have been worried about teaching students how to read words and how to build verbal language skills. These worries exist for a clear reason. Reading words is not an easy task. Neither is transforming written verbal language into deep meaning. These are important tasks that we cannot stop worrying about. It is critical that teachers help students to develop all of the skills and strategies involved when reading and writing in a range of different interfaces. Importantly, the Internet has introduced new dimensions of text that are worthy of investigation. In the following sections, we

focus on the additional skills and strategies required to comprehend and use online texts. More specifically, we highlight, differentiate, and integrate important dimensions of these additional online reading demands.

Reading

Regardless of where a text is found, reading requires specific skills from the reader. These skills can be organized in different ways. One way to organize these reading skills is by linguistic and cognitive domains (e.g., lexical access, syntactic parsing, semantic processing, and discursive analysis). Another way to organize these skills is by function such as reading to locate, reading to evaluate, and reading to synthesize, visualize, or monitor understanding.

Since each reading act is unique, readers need to know how to use and adapt their repertoire of skills and strategies to make sense of different texts in different circumstances. In each case, reading involves a particular communicative situation that raises specific purposes. In turn, this reading purpose triggers certain mental activities in the reader's head, depending on his prior knowledge and the information he is able to activate at that moment. These specific reading purposes as well as the information activated place certain demands on the reader that involve different ways of reading to get the expected results.

For instance, Shanahan and Shanahan (2008) illustrated the differences that reading entails from the perspectives of experts in math, chemistry and history. These differences point to the highly specialized nature of literacy required in different disciplines. In one study where reading was observed, experts in these different areas demonstrated very different ways of approaching texts. The math expert, for example, read math texts by paying a lot of attention to textual details; thus, reading and rereading were very important strategies. Unlike other fields, even "function" words were important; one math expert explained how even the word "the" has a very different meaning than the word "a." From the patterns that emerged, Shanahan, Shanahan concluded, "Math reading requires a precision of

meaning, and each word must be understood specifically in service to that particular meaning” (p. 49).

On the other hand, chemists in the same study spent much of their reading time writing down formulas or moving between different ways of representing the content. Whether it involved using pictures, graphics, diagrams or charts, each representation demonstrated important ways of thinking that led to a fuller understanding of the concepts. Notably, historians, a third group of experts in the study, differed from mathematicians and chemists in that they “emphasized paying attention to the author or source when reading any text. [...] They were keenly aware that they were reading an interpretation of historical events and not “Truth” (SHANAHAN, SHANAHAN, 2008, p. 49).

Findings from this study suggest that different texts require different approaches. Consequently, teachers need to explicitly prepare students to be able to use adequate strategies to read deeply and to do the kind of thinking required by each situation or discipline. Ironically, the authors report, as the level of text difficulty and subject complexity increases, the level of instructional support and reading assistance to support students often diminishes. “By the time adolescent students are being challenged by disciplinary texts, literacy instruction often has evaporated altogether or has degenerated into a reiteration of general reading strategies” (SHANAHAN, SHANAHAN, 2008, p. 45).

Overall, Shanahan and Shanahan’s (2008) research demonstrates that reading is a complex process, one that cannot be treated as an activity that requires a basic set of skills and strategies that can be applied in every reading situation. Rather, these researchers present enough evidence to show that reading can be very unique in each discipline and that students can benefit from disciplinary reading instruction well into the secondary grades, since these disciplinary differences are not trivial.

Amplifications of Typical Reading Experiences

When reading online, readers need to independently monitor and determine the comprehension demands associated with each specific reading situation and its related texts. Coiro and Dobler (2007) developed a qualitative study in which they tried to clarify the processes of reading on the Internet. Patterns that emerged among a small group of 11 sixth-graders revealed that

Web-based physical reading actions appeared to interact with conventional printed texts strategies (e.g. monitoring and repairing meaning) and new Internet text comprehension strategies (e.g., querying search engines, evaluating search results, gleaning relevant information from multiple media formats, conceptualizing the multilayered relations between passages of Internet text) (COIRO, DOBLER, 2007, p. 238). [...] Current conceptions of self-regulated reading in printed texts, however, do not reflect the intricacies of rapidly integrating a physical process of clicking the mouse, dragging scroll bars, rolling over dynamic images, and navigating pop-up menus that intertwines with a cognitive process of planning, predicting, monitoring, and evaluating. (p. 242).

Overall, reading online has a lot in common with the traditional act of reading print texts (JENKINS, 2009), including all of the complexities and peculiarities of each reading situation. At the same time, as Coiro and Dobler (2007) point out, reading on the Internet has its own idiosyncrasies. Some of them are novelties, and some are amplifications of possibilities of what we could already do when reading text on paper.

One example of novelty in online reading environments is the digital hypertextual format. Many researchers of printed comprehension have argued that every text is a hypertext and that there is no such thing as a linear text or a linear reading. (For a more detailed discussion see XXX, 2009; RIBEIRO, 2008; SMITH, 1996, apud SHAPIRO, NEIDERHAUSER, 2004;

KRESS, VAN LEEUWEN, 1996, 2002). Nevertheless, we also know that digital environments, in which connected texts are presented to the reader through embedded hyperlinks, cause us to consider new dimensions of reading. These include, for example, the design of new reading spaces, unique navigation pathways, new genres (or adaptations of traditional genres), quick access to other texts and the integration of different media (as sounds and animations, for instance).

As examples of how online reading amplifies typical offline reading experiences, we can consider ideas related to multimodality, multiple sources reading, and multi-tasking. Multimodal texts introduce the possibility of reading information represented in a range of images, fonts, colors and other multimodal resources (KRESS, VAN LEEUWEN, 1996, 2002; MAYER, 2008). Multiple sources of information and communication channels offer opportunities to read about the same topic across different texts, designed in different genres, and by different authors who present their ideas from different perspectives (BRITT, ROUET, 2012; BRATEN, STROMSO, 2011; GOLDMAN, LAWLESS, MANNING, 2013). Multi-tasking introduces the opportunity for individuals to accomplish different tasks at the same time, or deal with more than one media simultaneously (MAYER, 2008; PRENSKY, 2006).

Despite the opportunities introduced by these unique online textual features, each type of amplification demands that readers develop or improve some dimension of their reading skills. As teachers and researchers, we need to know how best to help learners access and use digital hypertexts in productive ways. Nevertheless, in order to be able to help our students, we need to better understand online reading. So, in the next section, we discuss ideas around navigating and reading digital texts before turning our attention to reading multiple online sources.

Reading online

Besides having basic computer skills, such as managing how to use a mouse and recognizing the functions of common

icons within application menus and online interfaces (DIAS, NOVAIS, 2009), students need to develop many other types of skills to become good online readers.

In particular, reading in digital environments like the Internet involves complex navigation skills. Similar to moving about the physical space,

effective navigation through virtual environments requires users to know where they are, where they need to go, how to get there, and when they have arrived. Navigation, conceived of in this manner, describes not only the behavioral actions of movements (e.g., locomotion from one destination to another), but also elements of cognitive ability (e.g., determining and monitoring path trajectory and goal orientation). (LAWLESS, SCHRADER, 2008, p. 269)

However, “readers cannot get so absorbed in superficially navigating texts that they do not build any deep meaning,” explains Trumbull, Gay and Mazur (1992) in Shapiro and Neiderhauser (2004, p. 607). During navigation, good readers search for information, select relevant links, and establish connections between the texts and webpages they visit, all while evaluating and selecting the most appropriate information to accomplish the task. Productive online readers, according to Lawless, Kulikowich (1996) (as cited in LAWLESS, SCHRADER, 2008), are “critical knowledge seekers” who strategically pursue information related to their topic by “systematically selecting logical sequences of screens” (p. 271). Less productive readers, on the other hand, have been described as either “feature explorers” who “invest more time in understanding features in the environment than trying to gather important information” (p. 271) or “apathetic hypertext users” who “engage with information on a very superficial level...[spending] little time navigating and visiting a limited number of screens and [taking] the quickest and shortest route through the environment” (p. 272).

One of the reasons that navigating is such a demanding task is because it is not easy to ignore distracting elements of the online environment and focus on the initial purpose. Besides that, it is not trivial to anticipate what will be available behind any link and evaluate how relevant and necessary that information is. When considering which aspects of reading are affected by digital text, authors of the PISA report (OECD, 2011) explain

The processes involved in building a mental representation of the text, such as identifying referents of anaphoric expressions or maintaining coherence locally and globally, would also appear to be relatively unaffected. Differences between print and digital reading are more apparent when considering macro-aspects of reading, such as accessing texts of interest, integrating information across texts, or evaluating texts for quality and credibility. [...] Digital texts require the reader to search phrases, scan heterogeneous links, and use navigation devices. [...]The opening, layout and closing of multiple windows is arguably a skill in itself.” (p. 36). Even though the core principles of textuality and the core processes of reading and understanding text are similar across media, there are good reasons to believe that the specific features of digital texts call for specific text-processing skills (p. 38).

Also Jenkins (2009) argues for the importance of traditional skills and reinforces their necessity since the Internet amplifies the number of available reading sources and relies on the readers’ abilities to collect and curate information. Besides that, Jenkins stresses the importance of the social aspects of learning.

A resourceful student is no longer one who personally possesses a wide palette of resources and information from which to choose, but rather, one who is able to successfully navigate an already abundant and continually changing world of information. Increasingly,

students achieve this by tapping into a myriad of socially based search systems (JENKINS, 2009, p. 49).

Similarly, Jenkins argues, students need effective research skills. They need to know

how to access books and articles through a library; to take notes on and integrate secondary sources; to assess the reliability of data; to read maps and charts; to make sense of scientific visualizations; to grasp what kinds of information are being conveyed by various systems of representation; to distinguish between fact and fiction, fact and opinion; to construct arguments and marshal evidence. If anything, these traditional skills assume even greater importance as students venture beyond collections that have been screened by librarians and into the more open space of the web (JENKINS, 2009, p. 19)

Although it is not easy to separate reading from navigating and to identify the skills involved in each dimension, we need to know that navigating is a very important part of the reading process, especially when networked online environments such as the Internet are concerned.

For these reasons, we argue that reading and navigating are complementary activities. “The search process and comprehension go hand in hand, complementing each other with every step of the online reading process” (KINGSLEY, TANCOCK, 2013, p. 393). When the reader is looking for information, browsing or searching, he is also reading, and when reading, he might also be searching (RIBEIRO, 2008, AZEVEDO, 2013). This attempt to study these two processes is not to find a clear cut between them, but to understand better what happens when one or the other activity is in focus. That is, what are the skills involved in each process and what difficulties might readers face when focusing on one or the other?

As mentioned earlier, reading on the Internet complexifies some traditional reading skills since the reader has to regularly deal with multimodality, multiple sources, and multiple simultaneous tasks. To better understand the skills students need in order to be successful readers who use the

Internet to learn in academic contents, we look closer at reading from multiple sources in the next section.

Multiple source reading

Because the Internet promotes easy and fast access to many sources of information, it is important to understand how multiple text comprehension works. As Britt et al (2013) explain:

When engaging in in-depth learning, students read multiple accounts of the same situation and must reconcile agreements and discrepancies in those accounts. Reading multiple texts requires integration mechanisms that go beyond the construction of a model of a single author's description of a situation. The documents might provide discrepant accounts of a particular event. To maintain a coherent representation, a reader must either dismiss one of the accounts [...] or somehow represent the discrepancies (p. 160).

The reader might also make an “Integrated Mental Model” (BRITT, ROUET, 2012) in which his understanding of this information is represented. This mental representation results from the connections made among the representations of single texts. Making these connections may be “more challenging in multiple-text contexts because single texts frequently contain cues that signal relationships among different parts of the text” (GOLDMAN, BRAASCH, WILEY, GRASSAER, BRODOWINSKA, 2012, p. 357). “These signals typically do not exist across multiple texts, so readers must infer and construct them” (GOLDMAN et al., 2012, p. 356). Based on research about information integration across sources during Internet inquiry tasks:

Perfetti et al. (1999) proposed a new theory of documents representation to capture the additional elements that arise from the simultaneous comprehension of multiple sources. The new framework consisted of the individual representations (situation models) for each of the sources;

the situation model that reflects the overall understanding of the event or phenomenon from integrating across a set of sources (or multiple situations); and the intertext model, which contains representation of meta-information about individual texts (such as the authors, attributions about the sources of the texts, and evaluations of text reliability or quality) in document nodes. The intertext model also contains information about the relations between texts, such as instances of converging or corroborating evidence or contradictions across sources (WILEY et al, 2009, p. 1066).

Goldman et al. (2012) also point out the importance of metacognitive monitoring for making effective study choices across multiple documents.

Because multiple-source comprehension requires managing and tracking different sources, monitoring one's own understanding from multiple sources, and making decisions about what to read next and when, successful learning depends on effective self-regulation (p. 358).

According to Wiley and colleagues (2009), most multi-source successful readers make “selective rereading of reliable information: This involves returning to reliable sites more than once and, if unreliable sites are also reread, returning to reliable sites at least twice as often as unreliable sites” (p. 1074). This source evaluation is important for learning outcomes because it helps readers to create stronger intertext models, which, in turn, leads to better comprehension in multiple-source inquiry tasks (WILEY et al., 2009).

As a means to help students to deal with multiple sources, one study found that better comprehension was achieved when teachers selected the set of texts to be read, gave explicit instructions and information about the reading purpose and the task, and asked the readers to monitor their strategy use while reading (BRATEN, STROMSO, 2011). In this study about multiple-text comprehension strategies, in which Norwegian

education undergraduates read seven separate texts on a science topic, the authors concluded that

readers concentrating on accumulating as many pieces of information as possible from the different texts seemed to be disadvantaged. At the same time, readers who reported that they elaborated on the information by trying to compare, contrast, and integrate contents across texts were more likely to display good intertextual comprehension (BRATEN, STROMSO, p.125).

Although selecting the information for students is a way to help students understand multiple materials, it should be used only temporarily as a scaffold. Ultimately, when learners encounter information on the Internet, they must be able to independently select and evaluate the information sources they consider most pertinent.

In sum, when reading on the Internet for learning purposes, readers need to realize that visiting multiple sources for information is not only unavoidable, but also desired. This process prompts the need to evaluate the relevance and reliability of these different sources and languages, as well as select and/or integrate the information from different sources.

In order to accomplish the task of reading multiple source information to learn using the Internet, the user needs to develop a set of reading and navigating strategies that will allow him to be successful. From an inquiry-based perspective of online reading (see KINGSLEY, TANCOCK, 2013; COIRO, 2013) some of the basic strategies readers use to deal successfully with multiple sources involve:

- Generating a question / set a task (Asking)
- Finding information that best suits the task (Locating)
- Selecting the most appropriate to the purpose/Determining relevance of information to task (Analyzing / Evaluating)
- Comparing claims and evidence across sources for consistency and relevance to task (Synthesizing)

- Integrating information from different sources (Integrating)
- Keeping the reading aim or task in mind during the whole process (Monitoring)

Based on studies including Leu, Leu, Coiro (2004), Ribeiro (2008), Dias, Novais (2009), Jenkins (2009), Wiley et al. (2009), Braten, Stomso (2011), Hobbs (2011), Azevedo (2013), Goldman et al. (2013), students need to develop a range of skills to more efficiently read and integrate information from multiple sources as part of this online inquiry process. These skills can be organized into three main categories: finding and evaluating information; synthesizing and integrating information, and reasoning information. These are the skills students need to develop in order to read texts from multiple sources, because searching for relevant information is a crucial part of this process. Students need to be good curators, to find and select reliable and precise information that will help them build the knowledge they are looking for.

Finding and Evaluating Information. Findings across the aforementioned studies suggest that in order to accomplish this process of finding and evaluating information, good readers need to:

- Identify the author of an information source
 - o Identify author's status/knowledge/access to information
 - Identify author's biases/motives
- Evaluate the author's status/knowledge/access to information
 - Evaluate author's biases/motives
 - Evaluate information reliability based on the analyses of the author
- Identify and consider the context or setting (e.g., place, time, and culture) within which information is produced and circulated;

- Evaluate information based on this context or setting
- Identify document information (e.g., publisher, language style)
 - Evaluate information reliability based on document information
 - Identify and analyze the perspective of the producer: who is presenting what to whom, and why.
- Identify rhetorical goals (e.g., intent/purpose, audience)
 - Evaluate information reliability based on rhetorical goals
 - Determine the truth value of information
 - Be aware of the motives behind the creation of websites
 - Identify the sources of authority behind claims made by website authors

Synthesizing and Integrating Information. In addition to finding, evaluating, and selecting quality information, students need to contrast and understand the relationship among key ideas while building a coherent representation of knowledge from the information they consider most appropriate. These processes require the ability to:

- Compare claims across sources for consistency and relevance to the inquiry task
 - Determine which claims agree, disagree, or complement one another
- Compare evidence from different sources
 - Determine which evidence is consistent and which is inconsistent across sources
- Recognize the relationship between information coming from multiple sources
- Integrate multiple approaches of the same situation, idea or topic and reconcile agreements and discrepancies found among the claims

- Combine and organize claims and arguments
 - Take claims from different sources and combine them into one claim or set of claims.
 - Take arguments from different sources and combine them into a coherent set of arguments (for and against).
- Recognize, relate, and evaluate discrepant claims and arguments
 - Relate evidence to claims
 - Take a position in favor of certain claims and arguments
 - Build a logical reasoning against other claims and arguments

Reasoning. Online readers also need to constantly monitor and think about their reading actions as well as evaluate, contrast and integrate the information they find in their searches. They need to develop sets of skills to cope more efficiently with some of the challenges they will encounter when reading on the Internet. Some of these skills include the ability to:

- Raise hypotheses and build models based on partial, fragmented, or intermittent information
- Understand problems from multiple viewpoints in order to assimilate information and adapt ideas in response to a changing environment
- Critically assess the pros and cons of an argument when arguments are not explicitly identified as such
- Distinguish fact from fiction, argument from documentation, real from fake, and marketing from enlightenment

When used in conjunction with other fundamental reading skills involved in decoding and building deep comprehension of texts, these sets of reading skills will enable students to be more efficient readers of multiple sources, for both academic purposes and for life.

Final considerations

Reading online and encountering multiple sources of information is a typical situation in a networked digital information space. Consequently, teaching reading in a digital age involves helping students to be good readers of different kinds of texts that are written by different authors with varying levels of support. In addition, effective reading instruction involves giving students practice with being able to efficiently curate and integrate online information that will be relevant to specific academic tasks. To successfully read multiple sources of information online, readers need regular opportunities to practice and develop these skills as part of their natural reading practices. In this paper, we have tried to point out some of these skills.

We have also discussed some aspects of online reading that deserve more focused attention as the relationship between reading print and digital texts, and the idea of navigation as integrally embedded within the concept of online reading comprehension, continues to evolve. The final part of this paper focused on seeking clarity about what is required for students to read and comprehend information across multiple sources, one dimension of reading that is highly amplified by digital environments. By focusing on these elements, we hope to support teachers as they apply this research-based knowledge to help students develop the reading skills essential for success in a rapidly changing digital world.

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