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Defining Literacy in the 21st Century: A Guide to Terminology and Skills

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Abstract

In the twenty-first century, literacy skills increasingly reflect technology use and the abilities necessary to problem-solve, collaborate, and present information through multi-media. As technology becomes more readily available to all students, concepts of literacy change. Researchers and theorists from various disciplines define and describe 21st century literacies using many terms that are inadvertently interchanged and/or unfamiliar to teachers. The purpose of this article is to review contemporary definitions of literacy to clarify what is currently known about 21st century literacy skills.

Literacy generally refers to reading and writing effectively in a variety of contexts. In the 21st century, the definition of literacy has increasingly reflected the ability to use technology for gathering and communicating information. The International Reading Association (IRA) stated that the literacies used by today's students are much different from those of their parents or even those of students from just a decade ago (IRA, 2009). The IRA position statement reported that in order "to become fully literate in today's world, students must become proficient in the literacies of the 21st century technologies" (p.1).

Since IRA's statement adoption in 2009, abundant research has been published about 21st century literacy skills. In addition, the National Education Technology Plan (NETP, 2010) called for an emphasis on 21st century competencies at all levels of education. However, literacy concepts have not only been changing, they have been overlapping, as information literacy, multiliteracies/multiple literacies, new literacy, digital literacy, and web literacy are all used to describe similar skills necessary for 21st century learning. The intent of this literature review is to document and clarify what is currently known about 21st century literacy skills in order to provide clarity and consistency among educators.

21st Century Literacies

Information Literacy

Information literacy has been historically used to reference the literacy skills needed for information access and problem-solving. Paul Zurkowski, President of the Information Industry Association, included reference to this term in a 1974 proposal recommending the establishment of a program to promote information

literacy. In 1976, Burchinal explained information literacy required new skills that would "…include how to locate and use information needed for problem-solving and decision-making efficiently and effectively" (p.11). In 1998, a report from the American Library Association (ALA) explained, "To be information literate, a person must be able to recognize when information is needed and have the ability to locate, evaluate and use effectively the needed information" (p.1). In addition, the report described those who are information literate as people…

> …who have learned how to learn. They know how to learn because they know how knowledge is organized, how to find information and how to use information in such a way that others can learn from them. They are prepared for lifelong learning, because they can always find the information needed for any task of decision at hand. (1998, p. 3).

The ALA report further outlined six areas of competency: 1) recognizing a need for information, 2) identifying what information would address a particular problem, 3) finding the needed information, 4) evaluating the information found, 5) organizing the information, and 6) using the information effectively to address the specified problem (ALA, 1998). This definition has remained the generally accepted foundational definition in the literature (Campbell, 2004; Spitzer, Eisenberg & Lowe, 1998).

Sources of information have changed since the original definitions of information literacy and as technologies have advanced, the ways in which research and learning transpire have become entwined with information literacy. The American Association of School Librarians (AASL) has established standards to guide practitioners. The four standards state that learners will use skills, resources and tools to: 1) inquire, think critically, and gain knowledge; 2) draw conclusions, make informed decisions, apply knowledge to new situations, and create knowledge; 3) share knowledge and participate ethically and productively as members of our democratic society; and 4) pursue personal and aesthetic growth (AASL, 2007).

While the term information literacy has provided the foundation for various literacy frameworks, it is somewhat limited as it focuses on the learner's use of information; while current technologies allow the learner to not only use, but to construct and disseminate information.

> While using information in this standard definition suggests a range of author practices, it exists independently from the act of creating and sharing information through collaborative ventures. The definition adopted by ACRL [the Association of College and Research Libraries]…expands upon the ALA definition by emphasizing the depth of the information needed, the ability to find the information effectively and efficiently, the incorporation of new information with existing knowledge, and an understanding of the information environment. (Mackey & Jacobson, 2011, p.63)

This extension is a necessary consideration as learners become literate in the information age and as literacy is evaluated from emerging perspectives.

Multiliteracies/Multiple Literacies

In 1996, the New London Group coined the term multiliteracies to describe a more contemporary view of literacy that reflected multiple communication forms and a context of cultural and linguistic diversity within a globalized society. Thus, multiliteracies was defined as the multiple ways of communicating and making meaning, including such modes as visual, audio, spatial, behavioral, and gestural (New London Group, 1996).

A similar term, multiple literacies, also depicts the ways people read and write in their lives. This definition includes a variety of static texts, such as books, magazines, labels, and pamphlets as well as non-print media such as music, art, film, and television. In other words, multiple modes of communication are possible, and these modes affect the ways readers approach a literacy situation.

Kress (2003) attributed the changes in concepts of literacy to the media. He specifically discussed media shifts from book to screen, which enabled the use of a variety of modes of communication. Therefore, the term multimodality describes the various ways print and media are represented and are a huge component of new concepts about literacy. Multimodal forms of information include visual and audio modes of communication presented through print, photos, videos, or graphs (Kress, 2010). These various modes of communication affect the way readers approach text. For example, graphic novels, a more complex version of the traditional comic strip (Schwarz, 2006), require visual literacy skills to comprehend both the text and the illustrations used by the author to represent meaning. The dimensions of multimodal literacy add to the complexity of online learning and expand the ways readers acquire information and comprehend concepts. Thus, teachers need to understand the literacy skills involved in comprehending text or media that utilizes various models of presentation.

Reading is a cognitive process as well as a social/linguistic process. Multiple literacies include the varied forms of text as well as the cultural identities expressed during communication, known as discourse (Sheridan-Thomas, 2007). Sociolinguists discuss discourse, semiotics and other terms relating to the use of symbols to convey meaning with and emphasize culture and the role it plays (Gee, 1996). Many cognitive researchers seek to understand the skills, strategies, and dispositions required for effective online reading comprehension (Coiro & Dobler, 2007; Jetton & Shanahan, 2012). The multiple disciplines/theories involved in defining literacy contribute to the complexity of this topic.

New Literacy

What is “new” about literacy? Researchers suggested that concepts of literacy beyond the traditional views of alphabetic writing, vocabulary knowledge, and recall of information

may be considered new (Coiro, Knobel, Lankshear, & Leu, 2008). Definitions of literacy depend on emerging technology tools which require different ways of conceiving and communicating meaning presented in multiple media and modality forms as a part of literacy. The Internet has greatly impacted literacy and has contributed to changing views of literacy (Coiro et al., 2008). New web-based tools emerge on the Internet constantly and require specific, new, skills.

The terms multiple literacies and new literacies signify a broad range of perspectives on literacy similar in that they convey an understanding of literacies as social and cultural practices that are continuously changing. However, discussion of new literacies tends to involve new technologies, and literacy education (Cervetti, Damico, & Pearson, 2006). These two concepts tend to involve many literacies and modalities beyond print literacy (including new literacies) as well as an emphasis on cultural considerations (Cervetti, Damico, & Pearson, 2006). Many terms are associated with new literacies. Digital literacy, 21st century literacies, internet literacy, media literacies, information literacy, ICT literacies, and computer literacy refer to terms which evolved to describe literacies associated with ways to gather and communicate information using the Internet and new technologies (Coiro et al., 2008).

Many disciplines recognize and define new literacies, and a new literacies perspective has emerged based on a wide range of research (Coiro et al., 2008). Because the research comes from various fields such as cognitive science, sociolinguistics, cultural anthropology, information science, and others, it can be difficult to understand the varying terminology. Leu, Kinzer, Coiro, and Cammack, (2004) stated that new literacies allow individuals to use the Internet "to identify important questions, locate information, critically evaluate the usefulness of that information, synthesize information to answer those questions, and then communicate the answers to others" (p. 1570). Therefore, one might consider any technique requiring new technological reading and writing skills to be a new literacy. For example, blogging is an online form of a journal that requires new skills for users. Media sharing, such as photo and video sharing, also requires new skills for users (Pilgrim & Bledsoe, 2013).

Leu et al. (2004) presented a difference between the terms new literacies (lower case) and New Literacies (upper case). This difference may best be explained with the familiar umbrella analogy. Consider the overarching umbrella to be New Literacies. Everything in the field under the umbrella, including topics in this article, includes new literacies. According to Leu (2011), lower case theories reflect the rapidly changing nature of literacy in a deictic world since they are closer to the specific types of changes that are taking place and interest those who study them. Lower case theories enable the use of multiple lenses that are used and the technologies and contexts that are studied. All theoretical insights are valued, even if they do not share a

particular lens, technology, or context (Leu, 2011).

Digital Literacy

Digital literacy describes reading and writing tasks utilizing media powered by technology. Digital literacy is the ability to find, evaluate, utilize, share, and create content using information technologies and the Internet (Cornell University, 2009, para. 1). This is a very general, broad term related to skills necessary in the 21st century and often used interchangeably with new literacy and information literacy. Jones-Kavalier & Flannigan (2008) narrowed the definition of digital literacy as "…the ability to read and interpret media (text, sound, images), to reproduce data and images through digital manipulation, and to evaluate and apply new knowledge gained from digital environments" (p.14).

Digital literacy has become a more common term since Marc Prensky (2001) coined the terms digital native and digital immigrant to describe generational differences among learners. According to Prensky, a digital native was born in the digital age with access to technology. A digital immigrant refers to one lacking exposure to technology until later in life. However, just because one is born in the digital age does not mean the digital natives have instinctively learned how to use technology effectively. It cannot be assumed they know how to synthesize and analyze what they access, as ….

> the greatest challenge is moving beyond the glitz and pizazz of the flashy technology to teach [new] literacy in this new milieu. Using the same skills used for centuries-analysis, synthesis, and evaluation-we must look at digital literacy as another realm within which to apply elements of critical thinking. (Jones-Kavalier & Flannigan, 2008, p.14)

The Department of Education used the term digital literacy in the National Education Technology Plan (U.S. Department of Education, 2010) in reference to skills teachers need for the development of appropriate assignments for students to improve learning, assessment, and instructional practice. This extensive plan for transforming education referenced the ISTE standards for additional information about what it means to be digitally literate in an age of evolving technology. According to The International Society for Technology in Education (ISTE), "Today's students need to be able to use technology to analyze, learn, and explore. Digital age skills are critical for preparing students to work, live, and contribute to the social and civic fabric of their communities" (ISTE, 2012, para. 2). ISTE developed the National Educational Technology Standards (NETS) for student success in a digital age which include skills related to creativity and innovation; communication and collaboration; research and information fluency; critical thinking, problem solving and decision making; digital citizenship; and technology operations and concepts.

Web Literacy

Web literacy refers to the skills needed for successful web navigation

(November, 2008). Online reading requires specific skills, and these skills are often referred to by educators in K-12 settings as web literacy skills. Classroom practices often involve research and "the rules of research have changed with society's move from paper to digital information" (November, 2008, p. 6). Web literacy may fit under the umbrella of New Literacies in that it relates directly to skills needed to locate information accurately and effectively. Web literacy is also reflective of digital literacies, as it is a term used to explain knowledge an individual needs to find information, to examine content, to find out who published a Web site, and to see who is linked to a site (November, 2008).

Web literacy skills are similar to traditional reference skills used to navigate textbooks and paper based reference materials. For example, where a student may use key words at the top of a dictionary to help them navigate the resource, they may use words/symbols in a URL (uniform resource locater) to help them navigate a website. A student may use web literacy skills to determine the author of a website, or he/she may use knowledge of domain names (edu, .org, .com) to determine what type of website is available. As more and more online research is required of students, educators need to understand the importance of knowledge about Internets searches, hyperlinks, search engines, and other components of Internet searches. This knowledge is crucial to help students find reliable information online, while keeping them safe in the process.

Blanchard and Farstrup (2011) suggested that Internet searching skills are essential for secondary students and they are in need of instructional support. Many educators in higher education have left the dissemination of literacy knowledge and search skills to the technology experts. However, web literacy skills are a component of all disciplines and should be integrated into the curriculum. According to Pilgrim and Bledsoe (2012), teachers in a middle school utilizing a one-to-one iPad initiative reported concerns with plagiarism and with students skimming online information. Teachers reported students lacked skills needed to find information in an online setting. Middle school students seemed to skim the text and focus on pictures, unable to find and retain the important information in the text. These concerns mirror Kymes' (2005) research, in which he described a "snatch and grab" (p. 494) strategy where readers skimmed and scanned online information in order to navigate overwhelming amounts of information.

In addition, online information is "linked" in ways that vary from tradetional text. For example, information is interconnected through hyperlinks and visuals in multiple ways, and understanding online text can be a complex process (Coiro & Dobler, 2007). Intertextuality and text navigation become critical variables in constructing meaning (Jetton & Shanahan, 2012) and have contributed to the new notions of literacy.

Conclusions and Recommendations

The Texas College and Career Readiness Standards addressed technology skills and literacy applications, including the ability to gather, organize, manage, analyze, and communicate information (Texas Higher Education Coordinating Board, 2009). As teachers integrate these skills into classroom instruction, they need to have a clear understanding of what it means to be literate in the 21st century.

A review of the literature provided some insight into various 21st century literacy terms as well as skills needed for 21st century learning, as online reading tasks differ from offline tasks. Teachers need to understand the similarities and differences in order to use reading and writing strategies and apply skills within an online reading environment (Coiro, 2011). Text features presented in online reading, such as hyperlinks, digitized speech, embedded glossaries, and interactive questions, affect the online environment (Gunning, 2012). Students encounter a great deal of information during online reading tasks and need to know how to navigate the information in an effective manner. As teachers address these skills in the classroom, we recommend consistency in term usage in both practice and in teacher preparation programs.

Understanding the distinctions of these terms allows teachers to effectively integrate the specific discerning associated skills. The common thread across all literacy terms defined in this article is technology. Table 1 presents a summary of the aforementioned terms.

The chart shows that while all of the literacy concepts presented include technology, while new literacies or multiple literacies extend beyond technology-related literacy skills to include visual media. In addition, all the terms deal with how knowledge is gained. And, even though information literacy was initially used to recognize information gathering using reference materials housed in libraries, the definition today is used infrequently in library and information science literature to include skills necessary for successful information access through Internet navigation. Thus, teachers must address the students' ability to read nonlinear text in an online environment.

The two terms that seem most practitioner-friendly are web literacy and digital literacy. Web literacy, as the term implies, describes a user's Internet navigation skills as well as critical thinking skills required to evaluate online information. This term is not as broad as digital literacy, but the skills provide teachers with concrete ways to help students search for accurate and reliable information in a safe Internet environment (November, 2008). This type of information and support for teachers has enabled educators to develop curriculum for teaching literacy skills.

Definitions of literacy will continue to change as new technologies emerge (Leu et al., 2004). Additionally, these new technologies will continue to

impact education and how teachers address literacy tasks. Thus, educators need to understand 21st century literacy skills and the roles they will play in classroom instruction.

Table 1

Summary of 21st Century Literacy Terminology

Term	Description
Information Literacy	The ability to recognize when information is needed and to have the ability to locate, evaluate, and use effectively the needed information (ALA, 1989).
Multiliteracies	The multiple ways of communicating and making meaning, including such modes as visual, audio, spatial, behavioral, and gestural (New London Group, 1996).
New Literacy	The use of new technologies to gather and communicate information (Coiro et al., 2008).
Digital Literacy	The ability to find, evaluate, utilize, share, and create content using information technologies and the Internet (Cornell University, 2009).
Web Literacy	The knowledge and use of specific skills needed to locate, analyze, and communicate information found online.

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