UNDERSTANDING LITERACY IN A CONNECTED WORLD: WHY TEACHING DIGITAL SKILLS IS A CRUCIAL PART OF HIGHER EDUCATION, AND HOW TO MAKE IT WORK

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As instructors in a higher education setting, we often assume that our students come to us with the basic literacies needed to navigate the world around them. But while this may have been true previously, the extremely fast pace of change in our current digital reality has meant that many students do not leave secondary school with the skills and fluencies that they will need to succeed in our connected world, where the very idea of literacy has rapidly shifted and morphed into something completely new in recent years. As such, it falls to those of us who teach these students to find ways to help students acquire these emerging literacies, while simultaneously presenting students with the content knowledge of the various subject areas in which we teach.

In this paper, we have endeavoured to provide instructors with a solid grounding of the literacies and skills that our students will need to navigate an increasingly digital culture, as well as offering suggestions for integrating these important lessons into our pedagogical practice. Thus, we begin by unpacking what is meant by the term "literacy" within the context of our digital world. We then offer some models for understanding the new and emerging literacies that we need to navigate our present reality, and we examine *why* these literacies are so key to the ability to succeed and thrive. Finally, we offer ways that we might integrate opportunities for developing these emerging literacies into university courses in authentic and meaningful ways.

Changing Understandings of Literacy

> This is the thing about literacy today, that needs above all not to be misunderstood. Both the people who say that reading/ writing have declined and that reading/writing are stronger than ever are right, and wrong. It's not a return to the word, unchanged. It's a literacy transformed by the existence of the electronic media that it initially has nothing in common with. It's also transformed by all the textual forms – mail, the newspaper, the book, the bulletin board, etc. It's not purely one thing or another. (Snarkmarket, 2009)

The concept of literacy has a fundamentally different feel than it did in a pre-Web world. What once meant simply "reading and writing" takes on a broader definition as we expand our idea of what constitutes "text."

"Traditional" literacy is typically understood as the ability to read and write. In this model, texts are defined as various forms of writing (e.g., books, chapters, articles, poetry, etc.), and to be "literate" means to be able to work with texts proficiently. In the past several decades, however, we've seen a mainstream shift in what is considered a "text" and with it, a much broader idea of "literacy." On a daily basis we now encounter traditional print texts, visual and audio texts, and a wide variety of digital texts that include video, audio, and written components. A "text" now includes anything that we "read" or interpret: books, posters, movies, songs, comics, websites, games… Because of this, we now speak of the "multiple literacies" required to interpret or decode this wide array of texts: visual literacy, physical literacy, mathematical literacy, media literacy, info literacy, just to name a few. In classrooms, theories like Gardner's (1983) multiple intelligences (which shares some of the same philosophical roots) has now led to differentiated instruction to meet the needs of learners with various learning preferences.

Even more broadly, though, we can think of literacy as competency or fluency in a particular area of knowledge. With this understanding of literacy, we can broaden our list of "types of literacies" to things like financial literacy, ecoliteracy, social or emotional literacy, and physical literacy. As well, as Belshaw (2011) points out, it's not really possible to make a binary distinction between literate and illiterate - we might be more literate (more competent) in some areas than others, but literacy is more of a continuum than an either/or state.

If we define literacy as the ability to read (or interpret) the world around us,[1] then digital literacy should not be thought of as requiring a separate set of skills. Rather, digital literacy adds a layer to traditional literacy, enabling us to read or interpret the connected reality we live. Unfortunately, many of the existing models of literacy for the 21st century (that is, those that explicitly include online spaces) separate digital literacies from their "traditional" counterparts.

In these models, digital literacies are treated as totally separate from "offline" literacies. But if it's no longer possible to separate our on- and offline worlds (as Jurgenson [2011] argues), it doesn't make much sense to separate on- and offline literacies either.

Instead we might imagine digital and traditional literacies as two overlapping sets. In many cases, digital literacies are not separate from these other literacies - rather, they simply add an additional layer to them. For instance, visual literacy might include particular skills in an offline context, but when

[1] Paulo Freire, an educator and theorist known for his work in the area of critical pedagogy, famously asserted, "Reading the world always precedes reading the word, and reading the word implies continuously reading the world" (Freire & Macedo, 1987, p. 35). While we have not focused on the critical lens here, it's important to consider Freire's argument: That our context for reading - our worldview - will always inform the way that we interpret the texts around us.

looking at an online visual text, we might need these skills *plus* some additional skills to help us interpret the digital elements of the text. Of course, there are certainly some literacies that are unique or specialized to digital (or traditional) settings, it is important to acknowledge that there is a great deal of overlap, just as the online and offline worlds are becoming increasingly enmeshed.

We'll now turn to some models of literacy that include digital and emerging literacies. Each of these models has its pros and cons, and there are many overlapping pieces, but it is helpful to look at several major models in order to get a sense of how we might understand digital literacies.

Models for Understanding Emerging Literacies

If you Google the phrase "models of literacy," you'll find no shortage of ideas. Search for "types of literacy" and you'll get an equally broad range of answers. From "traditional" to "new," "financial" to emotional," there seem to be as many different understandings of literacy (and what it includes) as there are people writing about it. Add in the term "digital" and you'll discover an entirely new set of definitions and skillsets.

Before we begin, a few things to note: first, you'll notice that these models tend to fall into one of two categories. Some outline what successful, literate learners should *be* - global citizens, designers, navigators - while others outline what these learners should *do* - collaborate with others, share artefacts with a global audience, analyze and manage information. Second, it's important to understand that this is by no means a comprehensive list of all (digital) literacy models; rather, this list provides an overview of a few frameworks that have been influential in educational circles. Finally, while we refer to them here as models of *digital* literacy, these frameworks go by a wide variety of names, including media literacy, 21st century literacy, info literacy, and computer literacy, but they share the common element of dealing with online texts.

ISTE

One of the most prominent organizations in the area of digital literacy standards is the International Society for Technology in Education (ISTE). ISTE first released standards for " Learning to use technology" in 1998. Since then, ISTE has updated their standards for students twice: once in 2007 ("Using technology to learn") and again in 2016 ("Transformative learning with technology").

The most recent ISTE (2016) student standards contain both a descriptor of what successful learners should *be* and an action statement outlining what these learners should *do.* The standards are:

- Empowered Learner: Students leverage technology to take an active role in choosing, achieving, and demonstrating competency in their learning goals, informed by the learning sciences.

- Digital Citizen: Students recognize the rights, responsibilities and opportunities of living, learning and working in an interconnected digital world, and they act and model in ways that are safe, legal and ethical.
- Knowledge Constructor: Students critically curate a variety of resources using digital tools to construct knowledge, produce creative artifacts and make meaning learning experiences for themselves and others.
- Innovative Designer: Students use a variety of technologies within a design process to identify and solve problems by creating new, useful or imaginative solutions.
- Computational Thinker: Students develop and employ strategies for understanding and solving problems in ways that leverage the power of technological methods to develop and test solutions.
- Creative Communicator: Students communicate clearly and express themselves creatively for a variety of purposes using the platforms, tools, styles, formats and digital media appropriate to their goals.
- Global Collaborator: Students use digital tools to broaden their perspectives and enrich their learning by collaborating with others and working effectively in teams locally and globally.

Key ideas in the context of this paper: the critical curation of information; the focus on creating artefacts for particular contexts; the inclusion of global collaboration

NCTE

Another well-known framework is that of the National Council for Teachers of English (NCTE). The NCTE first published a 21st Century Literacies Framework in 2008. The 2013 update includes these goals:

- Develop proficiency and fluency with the tools of technology.
- Build intentional cross-cultural connections and relationships with others so to pose and solve problems collaboratively and strengthen independent thought.
- Design and share information for global communities to meet a variety of purposes.
- Manage, analyze, and synthesize multiple streams of simultaneous information.
- Create, critique, analyze, and evaluate multimedia texts.
- Attend to the ethical responsibilities required by these complex environments. (NCTE, 2013)

Key ideas in the context of this paper: the emphasis on cross-cultural collaboration; the focus on the skills needed to deal with an abundance of information

6 Cs

The third approach that we'll look at is Michael Fullan's (2013) list of 6 Cs, first developed in 2013. These key areas, necessary for student and society well being in the 21st century, are:

- Character education: honesty, self-regulation and responsibility, perseverance, empathy for contributing to the safety and benefit of others, self-confidence, personal health and well-being, career and life skills.
- Citizenship: global knowledge, sensitivity to and respect for other cultures, active involvement in addressing issues of human and environmental sustainability.
- Communication: communicate effectively orally, in writing and with a variety of digital tools; listening skills.
- Critical thinking and problem solving: think critically to design and manage projects, solve problems, make effective decisions using a variety of digital tools and resources.
- Collaboration: work in teams, learn from and contribute to the learning of others, social networking skills, empathy in working with diverse others.
- Creativity and imagination: economic and social entrepreneurialism, considering and pursuing novel ideas, and leadership for action.

Key ideas in the context of this paper: the broader conception of literacy; the emphasis on developing networking skills and working with a variety of people

Obviously, there are elements of these models/frameworks that are targeted to K-12 students; however, many students are entering higher education without these skills - and, as we will see below, these literacies are crucial for anyone hoping to succeed in our increasingly connected reality. Thus, we would argue that the models apply equally to tertiary education settings, and so it falls on university and college instructors to teach and model these skills in their courses.

Why Teach Digital and Emerging Literacies?

Now that we know what digital and emerging literacies look like, we need to understand why they are so important. In order to understand this, we need to look more closely at the challenges of "reading" our connected world. Note that we have certainly not identified every one of the challenges that exist: rather, we have chosen to highlight a few in order to underscore the need for digital literacy development.

Challenge #1: Information Abundance

With nearly ubiquitous access to the Internet, we now have instant access to an incredible amount of information at the touch of a button. Given this information abundance, one of the most important literacies relates to the efficient and critical consumption of information. As Schwartz (2004) has

noted, "Learning to choose is hard. Learning to choose well is harder. And learning to choose well in a world of unlimited possibilities is harder still, perhaps too hard" (p. 144). Traditional information literacy strategies have readers check for validity of a text (whether found online or offline) by examining details such as the source, author, accuracy, objectivity, currency, and relevance. However, when dealing with digital texts, we see a number of added layers of complexity (as in the outer "digital" ring in our first diagram above). In particular, the sheer volume of information makes it more difficult to sort through what is important.

In order to address this challenge, we need to develop our attention literacy. Simon (1971) writes:

> … in an information-rich world, the wealth of information means a dearth of something else: a scarcity of whatever it is that information consumes . . . . What information consumes is rather obvious: it consumes the attention of its recipients. Hence a wealth of information creates a poverty of attention and a need to allocate efficiently among the overabundance of information sources that might consume it. (pp. 40-41)

Developing attention literacy involves developing the skill of focusing our attention on the relevant pieces of information. This often means learning to use particular tools and apps to curate information.

Challenge #2: The Proliferation of "Fake News"

In 1957, the British Broadcasting Corporation pulled off the fantastic spaghetti tree hoax, a short "documentary" detailing the incredibly fruitful harvest of the spaghetti tree that year in a small Italian village. Because most British people at the time were unfamiliar with the actual origins of spaghetti, they were easily convinced that the food grew on trees (My Switzerland, 2013).

The spaghetti tree hoax was possible because of the difficulty of looking up information in a pre-Web world. Today, however, we have the opposite problem: there is now such a proliferation of texts (digital and otherwise) that it becomes difficult to separate fact from fiction - especially when tools like Photoshop make it increasingly easier to create fake images. Unsurprisingly, then, another key literacy skill for our digital world is the ability to determine fact vs. fiction by reading all types of text with a critical eye. Without this skill, it is easy to fall prey to the many scams and fraudulent sites that circulate online.

Challenge #3: Communicating with a Global Audience

Thanks to the incredible connections made possible by the Internet, we now have the ears (and eyes) of a potentially global audience when we share ideas online. In many ways, the globalized, connected nature of our world is a powerful tool, as it allows us previously unfathomable access to new perspectives and voices. However, communicating and collaborating with others around the globe is a complicated task, one that requires new understandings of the idea of audience and also takes into account the concept of "context collapse," described by both Wesch (2009) and boyd (2013).

Wesch notes that in face-to-face interactions, we are able to use context clues to determine how we should present ourselves. In open digital spaces, however, these context clues are not available; rather, our work has the potential to be seen by "an infinite number of contexts collapsing upon one another [...], virtually all possible contexts" (Wesch, 2009, p. 23). This added complexity means that presenting work online is considerably different from simply submitting an assignment for the teacher's eyes.

All of this complexity has profound impacts on the skills needed to communicate with a global audience. As we saw above, emerging literacy models point to the need for young people to learn to communicate and collaborate globally, as well as to produce artefacts for a variety of audiences, in order to be successful in our connected reality. Thus, it is important for those of us in all levels of education to create opportunities for students to practice these important literacies.

Challenge #4: The Rapid Pace of Change

Another significant challenge in our digital world is the rate at which technology advances. Ray Kurzweil (2005/2012), a well-recognized futurist, explains the pace of change like this:

> In the nineteenth century, we saw more technological change than in the nine centuries preceding it. Then in the first twenty years of the twentieth century, we saw more advancement than in all of the nineteenth century. Now, paradigm shifts occur in only a few years time (p. 304).

This rapid change makes it difficult to "prepare" students for their future careers as we did in the past, because the very nature of work has changed (and continues to change) with new technologies.

For students, then, an increasingly critical digital literacy is the ability to be a self-directed, independent, lifelong learner. As careers and fields of study shift, students must be able to adapt quickly and learn new skills and information independently, essentially taking up a just-in-time model of learning. As such, it's critical that we move beyond simply teaching content and provide our students with the ability to learn *how* to learn in their field of study.

Challenge #5: Complexities of Digital Identity

A final challenge of our digital age is the complexity of building and maintaining a digital identity. Given the extent to which our on- and offline lives are now enmeshed, absence from online spaces can be a disadvantage and may even be perceived as suspicious (Hill, 2012). Marshall (2015) notes, "If you do not have a clear online presence, you are allowing Google, Yahoo, and Bing to create your identity for you"(para. 7). Thus, the development of a digital identity has become a de facto requirement for participation in today's networked world. However, as we see frequently online, digital identity is incredibly fragile and is fraught with possibilities for missteps that can easily become part of an online permanent record, particularly given the culture of documentation in which we now find ourselves.

Given these complexities, then, it is critical for those of us working with young people to help them to build positive digital identities that showcase their skills and abilities in their field of study. Not only does this provide a solid basis for the continued development of students' digital identities, but there is also evidence to suggest the online portfolios will replace traditional CVs in the years to come; thus helping students to build platforms for showcasing their work gives them a head start as they begin their careers.

Ideas for Integration of Digital Literacy Development in Course Design

Given the challenges presented here, we offer below a few assignments that have allowed us to integrate opportunities for digital literacy development within our courses. In our context, we work with pre-service teachers, and so the examples below relate primarily to this area, but these assignments could be easily adapted to most fields of study.

Building a Professional Learning Network

In the *Networked Professional Learning assignment,* students participate in networked learning environments. In practice, this means students are introduced to a number of social networking tools where they might connect to others in their field, learn how to find and curate relevant sources in order to read widely from a number of traditional (e.g., academic journals) and non-traditional sources (e.g., blogs, Twitter), and connect with others in their field (in this case, educators) who are already 'connected.' Then, students use these same tools to share and reflect on their learning, including by writing blog posts and tweeting resources they have discovered.

The ultimate goal of these interactions is to aid students in developing their professional learning networks (PLNs), with the intention that these students will graduate already part of an established group of professionals in their area of study. Moreover, in the course of this process, students also develop the skills to address the challenges described above. For instance, as students learn how to find and the sort through academic and non-academic sources, they are learning strategies to deal with the challenges of information abundance and of fake (or incorrect/biased) sources. As they blog and tweet, students also learn to connect to a global audience in a variety of ways. Perhaps more importantly, the PLNs built by students will provide them with a network of colleagues and resources that will enable their continued learning in their evolving fields.

Developing an Online Identity

The *ePortfolio assignment* is a piece of the networked professional learning assignment: here students take control of their online identity through the development of an open, online portfolio (in this case focused on their teaching experiences. Not only are students asked to take ownership of their digital presence, but they also come away with a rich portfolio that showcases their strengths and abilities; on more than one occasion, former students have credited their ePortfolios as a key factor in being hired.

This assignment can easily be integrated into almost any field of study, and it provides an important opportunity to students to build their positive digital identities as well as creating a platform for showcasing their skills and knowledge. As well, the process of building the ePortfolio is itself an opportunity for students to gain new tech literacies that can assist them in communicating with a global audience.

Learning to Learn Online

Finally, *the learning project assignment* requires that students use both online and (local) community resources to learn any skill or topic that is of deep personal interest to them. Additionally, as they learn, students are required to openly document their learning on the web in innovative and authentic ways (i.e., make their learning visible). Over the years, the assignment has resulted in our students taking on a variety of passion-based topics: playing the guitar, speaking a new language, even highly specialized skills such as tattooing and welding. This assignment is particularly powerful in that students are able to choose their own pathways for learning, taking their individual interests and passions into account.

Again, this assignment could easily be adapted to fit a variety of fields of study. More importantly, the assignment enables students to develop a variety of digital literacies. For instance, students share their learning by trying out and then using a variety of different tools, which builds tech literacy. As well, by sharing their projects online, students are able to practice communicating with audiences around the globe. Perhaps most importantly, students are given the opportunity to learn *how* to learn online, a key skill that will allow them to be self-directed, lifelong learners.

Conclusion

Our world is a rapidly changing place, and young people will need to develop previously unimaginable digital literacies and skills in order to succeed in it. While institutions of higher education have often relied on K-12 systems to teach these important skills, we will all need to find ways to integrate the development of emerging literacies into our subject areas if we want our young people to succeed.

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