

Colin Lankshear

James Cook University (Australia) & Visiting Scholar McGill University (Canada)
colin.lankshear@jcu.edu.au

Michele Knobel

Montclair State University, USA | knobelm@mail.montclair.edu

Digital Literacy and Digital Literacies: *Policy, Pedagogy and Research Considerations for Education*

«Digital literacy» er i stadig større grad uttrykt som et utdanningspolitisk mål. Populære definisjoner varierer i innhold, men målsettingen for begrepet er sjelden problematisert. Denne artikkelen diskuterer «digital literacy» ut fra en forståelse om at begrepet ikke er lukket, entydig og selvforklarende. Snarere enn å forstå «digital literacy» som et enhetlig fenomen, er det bedre å tenke seg et spekter av «digital literacies». Artikkelen konkluderer med å synliggjøre dette argumentets mulige implikasjoner for utdanningspolitikk, pedagogikk og forskning.

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Defining digital literacy

Definitions of digital literacy are of two main kinds: conceptual definitions and standardized sets of operations intended to provide national and international *normalizations* of digital literacy. We will briefly survey examples of both kinds.

(a) Typical conceptual definitions of «digital literacy»

Richard Lanham (1995: 198) claims that «literacy» has extended its semantic reach from meaning «the ability to read and write» to now meaning «the ability to understand information however presented.» He emphasizes the multimediated nature of digital information, and argues that to be digitally literate involves «being skilled at deciphering complex images and sounds as well as the syntactical subtleties of words» (Lanham 1995: 200). Digitally literate people are «quick on [their] feet in moving from one kind of medium to

another ... know what kinds of expression fit what kinds of knowledge and become skilled at presenting [their] information in the medium that [their] audience will find easiest to understand» (ibid.). Digital literacy enables us to match the medium we use to the kind of information we are presenting and to the audience we are presenting it to.

Paul Gilster defines digital literacy as «the ability to understand and use information in multiple formats from a wide variety of sources when it is presented via computers» and, particularly, through the medium of the Internet (Gilster, in Pool 1997: 6). He emphasizes what he sees as inherent differences between *digital* information media and conventional print media. Digital literacy involves «adapting our skills to an evocative new medium, [and] our experience of the Internet will be determined by how we master its core competencies» (ibid.). These competencies are not merely «operational» or «technical» competencies, however. Digital literacy involves «mastering ideas, not keystrokes» (ibid.). Gilster identifies four key digital literacy competencies: knowledge assembly, evaluating information content, searching the Internet, and navigating hypertext. He describes each at length in his book, *Digital Literacy* (Gilster 1997). Gilster claims we need to teach and learn «how to use the Web properly and how to be critical» and that «we all need to learn that skill» (Gilster, in Pool 1997: 8). Citing the familiar image of students using the Internet to find information that they simply cut and paste into a «cobble-together collection of quotes or multimedia items,» Gilster argues that we need to teach students «how to assimilate the information, evaluate it, and then reintegrate it» (in Pool 1997: 9).

(b) Some typical «standardized operationalizations» of digital literacy

«Standardized operationalizations» refer to attempts to operationalize what is involved in being «digitally literate» in terms of certain tasks, performances, demonstrations of skills, etc., and to render these as a standard set for general adoption. Some are little more than codifications of sets of specific operations at the level Gilster refers to as «keystrokes.» Others are closer to Gilster's idea of «concern with meanings.»

Toward the «keystroke» end of the spectrum is the approach of the Global Digital Literacy Council (GDLC). One of the Council's core objectives is to «review and update the Digital Literacy Standards based on input from subject matter experts worldwide.» (gdl-council.org) Current GDLC standards are reflected in the Internet and Computing Core Certification (IC³) program provided by Certiport (certiport.com). This covers Computing Fundamentals, Key Applications, and Living Online. The Computing Fundamentals test items involve tasks like asking learners to click on all the «output devices» from a list containing items like joystick, monitor, speakers, keyboard, etc.; to choose among four items (one thousand, one million, one billion, one trillion) for the number of bytes in a megabyte; to create a new folder on the C drive within a simulated file manager; and to match «operating system,» «application» and «utility program» to three provided defini-

tions. The items testing Key Applications use a range of simulations and ask learners to insert content from the clipboard at the designated insertion point, and exit Word without using the close box. Items assessing knowledge and skills related to Living Online use simulations to have respondents enter a subject in an email message and send the message, go to a specified address on a web page, and locate the history of sites visited in a web browser.

Toward the «concern with meaning» end of a spectrum is an operationalization developed by the US Educational Testing Service for higher education environments. According to the ETS, digital literacy is «the ability to use digital technology, communication tools and/or networks appropriately to solve information problems in order to function in an information society,» (ets.org) and comprises

the ability to use technology as a tool to research, organize, evaluate, and communicate information, and the possession of a fundamental understanding of the ethical/legal issues surrounding the access and use of information. (ibid.)

The ETS operationalization comprises 12–15 real time tasks that are «scenario-based» (for examples of tasks see <ets.org/Media/Tests/ICT_Literacy/pdf/ict_literacy_task_matrix.pdf>). Tasks include subject matter from the areas of humanities, natural science, social studies, popular culture and practical affairs, and use a generic version of one or more of 12 named ICT tools (e.g., a word processor, presentation software, a web browser, an email client). Test takers perform a range of «information management tasks,» including «extracting information from a database, developing a spreadsheet, or composing an email based on research findings.» The seven competencies are: Define, Access, Manage, Integrate, Evaluate, Create and Communicate.

Key features of mainstream definitions of digital literacy

There are many other conceptual definitions and standardized operationalizations of digital literacy than those sketched here. Our examples are typical, however, and they exemplify what we think are three key features of mainstream accounts of digital literacy.

First, they confine «digital literacy» to roles concerned with *information*. This tendency is well illustrated by the ETS operationalization, where potentially expansive competencies like «Create» and «Communicate» are described purely in terms of information.

Create: The ability to generate information by adapting, applying, designing or inventing information in ICT environments.

Communicate: The ability to communicate information properly in its context of use for ICT environments. This includes the ability to gear electronic information for a particular audience and to communicate knowledge in the appropriate venue. (ets.org/Media/ests/ICT_Literacy/pdf/ict_literacy_task_matrix.pdf)

Second, typical definitions of digital literacy conflate interaction with information with *epistemic* engagement with information. Digital literacy involves interacting with information, and interacting with information is about assessing its truth (or validity), credibility, reliability and so on. Digital literacy is constructed in what we might call «truth-centric» ways, and as some kind of defence against being manipulated, improperly persuaded, or duped. It is invested with values and orientations associated with liberal and «critical» conceptions of media awareness and the like.

Third, most definitions construct digital literacy as an «It» – as some kind of a «thing:» a capacity or ability, a skill (or set of skills), or «master competency» (composed of more specific competencies and dispositions). It is something you «have,» or lack, and anyone who lacks it «needs» to get it. Accounts differ about what is actually «in» this thing. Some accounts include respect for property rights as a necessary facet. Others do not. Some accounts insist on «Internet safety» while others are satisfied with the ability to discriminate credibility of (re)sources. Such differences aside, the assumption is that when people have this «thing» they can handle information effectively and use it to consume and produce information in all kinds of settings and roles – as private citizens, workers, parents, teachers, learners.

As has been claimed for conventional literacy, digital literacy is seen to have causal efficacy, to generate outcomes in the world. For example, a digitally literate population will function better in a knowledge economy and be better equipped to promote their best interests and those of others who depend upon them. When one «has» digital literacy good things can happen; when one lacks digital literacy one is vulnerable and undesirable things can happen.

Critique of «digital literacy»

There are three strong grounds for rejecting mainstream approaches to conceptualizing and defining digital literacy.

First, outside of a purely technical definition of information (as «anything transmitted in a signal that is not noise»), text-mediated interactions like communicating and relating cannot be reduced to transmitting and receiving information. To define digital literacy purely or predominantly in terms of interacting with *information* distorts social practice and human intent (cf., Schrage 2001).

Second, we dispute a truthcentric stance toward information in the digisphere, and the way the ideals of «credibility» and «validity» are rendered in terms of conventional norms of epistemic authority that we associate with academic veracity. We are not saying these are not important. Rather, we are saying that defining digital literacy in such delimiting ways by fiat needs to be seen for what it is: namely, an artificial and arbitrary con- striction, with deep modernist trappings. Much of what many people are doing with

information on the Internet does not bespeak concerns for truth or about being manipulated or duped. Instead, information increasingly becomes a resource for participation in affinity practices where concerns about «truth» and manipulation risks are replaced by concerns for social relations and participation. For example, a blogger cited by Dana Cammack (2005) invited her readers to post «memories» of time spent with her that were complete fabrications. The resulting list of invented memories was clearly much more about signaling current friendships and alliances than about «truth» or «reality.»

Third, conceiving digital literacy as some kind of «thing» – an «It» – is misguided, and open to the critique sociocultural theorists have advanced against the prevailing tendency to conceive conventional (alphabetic/print) literacy as an autonomous entity. According to what sociocultural theorists call the «autonomous» model of literacy (Street 1984), literacy consists in a skill, tool, technique, or set of (mainly cognitive) competencies that can be applied in diverse contexts and put of a range of uses and applications. Western alphabetic literacy is seen to comprise mastery of letters and phonemes such that one can encode and decode print. Armed with this «capacity,» people apply a «neutral» technology in different ways and for different purposes. Within this model «literacy» refers to abstracted «skills» or «techniques» – mastery of the technology of alphabetic text/print – and learners are taught to encode and decode as preparation for reading and writing in diverse settings.

This autonomous model resonates with the different accounts of digital literacy described above. «Digital literacy» consists in so many lists of abstracted skills and techniques that a proficient person can «do.» Once they «have» these «skills» they can use them purposefully at work, at home, at school, etc., and function «competently.» Courses are created to teach learners these tools/techniques/skills, and certify them when they are finished. (This logic is almost the exact reverse of what young people do when they set about learning how to play an online game and become part of an online gaming community.)

Sociocultural critique of the autonomous model of literacy does not deny that social practices of reading and writing involve elements of skill and technique. Clearly, they do. The point is, however, that these «skills» and «techniques» take on very different forms when embedded in different social practices involving different purposes and where different kinds of meaning are at stake. Moreover, the skills and techniques of decoding and encoding do not help very much on their own with explicating «reading» and «writing». This is because reading and writing are always «reading and writing *with meaning*» and this meaning is not primarily, or even *substantially*, a function of some «skill» or «technique» that might be called «comprehension.» It is predominantly a function of social practice, social context, and Discourse (Gee 2004).

From a sociocultural perspective, there is not just *literacy*. Rather, there are very many qualitatively different social practices of reading and writing, and many different conceptions of what is involved in reading and writing. There are very many cultural *ways* in which people read and write. Individuals move in and out of multiple ways of reading

and writing. In other words, there are very many *literacies*. This is what Brian Street (1984: 1) means when he says that the word «literacy» should be understood as «a shorthand for the social practices and conceptions of reading and writing.» Writing a doctoral thesis is a radically different practice from writing a shopping list. The element they seem to have in common – encoding text – is the least important consideration. To think of these practices as different manifestations of some «thing» called literacy is like thinking of building a bridge and building a warehouse as different manifestations of mixing cement.

The same applies to «Internet searching.» To think of online searching to do a scholarly literature review and searching online for a recipe to mix a margarita as different manifestations of keying words into a search engine is to miss almost all of what is important to different social practices of online searching.

This argument has crucial implications for «digital literacy.» It means we should think of «digital literacy» not as something unitary, and certainly not as some finite «competency» or «skill» – or even as a *set* of competencies or skills. Rather, it means we should think of «digital literacy» as shorthand for the myriad social practices and conceptions of engaging in meaning making mediated by texts that are produced, received, distributed, exchanged etc., via digital codification. Digital literacy is really digital *literacies*. Indeed, each of the «things» that is named from an «It» perspective as a discrete «skill» splinters into multiple social practices. There are many different social practices and conceptions of searching, of navigating links, of evaluating credibility of sources, of «posting,» and so on. These vary according to how people «identify» themselves: that is, according to the values they have, the social groups they relate to, the affinities they invest in and attach themselves to, the purposes they see themselves pursuing, the kinds of images they seek to project, and so on.

Digital literacies in everyday life

In this section we illustrate our argument by brief reference to weblogging and fan fiction writing. It will soon become apparent that even digital literacies falling under one name, like «blogging» or «fanfiction,» are profoundly multiple. The names do not each refer to a unitary digital literacy. The social practices of any two bloggers may seem as different from each other as writing an academic paper is from emailing a parent, spouse or sibling.

(a) Weblogs/blogging

A weblog – or «blog» – is «a website that is up-dated frequently, with new material posted at the top of the page» (Blood 2002: 12). Blogs began in the early 1990s as websites that listed annotated hyperlinks to other websites containing interesting, curious, hilarious or

otherwise noteworthy content recommended by the publisher of the weblog. Early blog publishers – «bloggers» – tended to be computing «insiders» because some knowledge of webpage and hyperlink coding was needed to post material to the Internet. Since 1999, however, easily-used weblog publishing tools and readily available web hosting have spawned a new mass generation of bloggers that is *much* more diverse than the original blogging generation. On 7 October, 2005, the weblog search engine Technorati.com claimed to be searching 19 million weblogs worldwide. Many bloggers use weblogs as a medium more like regularly updated journals than indices of hyperlinks, and postings can document anything and everything from what the blogger had for lunch that day; movie and music reviews; descriptions of shopping trips; through to latest illustrations completed by the blogger for offline texts; and the like. Posts may combine photographs and other graphics along with text, hypertext and audio. Weblogs are largely interest-driven and many weblogging practices are primarily concerned with creating social alliances (Blood 2002). Some bloggers update several times a day, while others may update every few days, once a week, or even less regularly.

Blogs are created and maintained for diverse purposes and as part of diverse social practices. These include, but are far from exhausted by (combinations of) the following: as personal diaries/journals; to provide alternative accounts of events and other phenomena to those of mainstream media as part of a citizen journalist practice; to critique mainstream broadcasting of news events as part of a «news watch» affinity space; to sell products or distribute corporate news as part of commercial practice; to express personal opinions as part of one's alliance with particular points-of-view or perspectives; to archive memories (e.g., photo blogs, audio blogs, video blogs); to parody other blogs and other media; to augment fanfiction writing or drawing; to archive or index profession-related materials (e.g., hyperlinks to relevant policy documents and news reports etc.); to augment hobbies and pastimes (e.g., collecting items, techno-gadgetry, genealogy studies, sport); to notify fans of popular culture events and information (like band tour dates, author readings and book events, art and design world developments), and so on. The sheer diversity of weblogs and weblogging practices cautions against conceiving blogging as a specific singular digital literacy.

(b) Fanfiction

In fanfiction – or «fanfic» to aficionados – devotees of a television show, movie, book, video game etc. write stories (or songs, poems, or create drawings) about its characters. In the main, fanfictions chronicle alternate adventures, mishaps or even alternate histories/futures for main characters, relocate main characters to a new universe altogether, fill in plot holes, or realize relationships between characters that were only hinted at, if that, on screen, and so on. Fanfiction writing practices have really come into their own as distinct, recognized social practices since the advent of serialized television shows like «Star

Trek.» This began in 1966 and rapidly gained a cult following of fan fiction writers who distributed their narratives at Star Trek fan conventions, fan club meetings, or via postal mail. Since then, fans of any number of popular media texts have generated countless volumes of fanfic writing in a range of forms and media.

The Internet has played a prominent role in the proliferation of fanfic writing and has enabled more people than ever before to actively participate in contributing and critiquing fanfic. A Google.com search in October 2005 for the term «fan fiction» returned 3,700,000 hits, which can be read as a barometer of the popularity of this practice online. Fanfic itself can be classified into a number of different types. These include, for example, «in-canon» writing, which maintains as much of the original media text as possible; «crossovers,» where characters from two different media texts (e.g., from a video game and a movie) are brought together in a new story; «(relation)shipper» narratives, that focus on establishing or exploring an intimate relationship between two characters (this includes heterosexual and homoerotic or homosexual relationships); «alternative universe» stories, where the characters from an original text are transposed into an entirely new or different «world»; and «self insert» fanfic, where the writer inserts herself as a recognizable character into the narrative.

Most fanfic writers value good quality writing, which for them includes well-developed characters, engaging and logical plotlines, and good grammar and spelling. For example, many fan-produced online guides to writing good fanfic stories warn writers of falling victim to the «Mary Sue» syndrome. «Mary Sue» (along with her male counterpart) is a character who embodies the author's all-too-charming-and-perfect alter ego, and as such, tends to dominate the entire story and squeeze the lifeblood out of it.

Online fanfic writing groups come in a variety of forms, but perhaps the most common is the searchable archive-plus-discussion board format typified by Fanfiction.net. Fanfiction.net hosts tens of thousands of fanfics, which are organized into 8 categories (i.e., Anime, Book, Movie, Cartoon, Comic, Game, Television Show, and Miscellaneous). At the start of October, 2005, for example, clicking on the sub-category entry for *Inuyasha* – a popular anime television series – takes the reader to a listing of 51,788 fanfic narratives based on this series. Clicking on any one of these listed narrative opens a fan-produced text, with many of these texts running into multiple chapters. Once a particular story has been accessed it is possible to read all of the reviews posted for this story. The stories themselves can become serialized, with chapters written over the course of a number of years and each new chapter or installment often responds to reviewer feedback and suggestions for future storyline or character developments. In this way, fanfiction writing online is often a highly collaborative act.

Collaborative writing seems to be especially prized among adolescent female writers in particular, who often draft or rehearse written stories via role-plays and plot discussions conducted using instant messaging or blogs (cf., Black 2006; Thomas 2005). Fans

writing fiction based on a favourite movie, book, television series, or video game are not only prolonging the pleasure they obtain from these original media texts, but also actively writing themselves into the picture by appropriating characters, motivations, and settings, and shaping these within personally interesting and satisfying narratives. In short, fanfic is more than simply «writing stories.» The kind of collaborative appropriations found in fanfic practices clearly challenge the commercial media's hold over everyday textual narratives (Jenkins 1992).

What is central to «digital literacy» is marginal in digital literacies

One major implication of focusing on digital literacies as social practices of reading and writing (keying, imaging, etc.) is that «the digits» – in the sense of knowing how to «operate» bits of hardware and software – are in most cases the least part of what the social practices involve. Most of what participants bring to digital literacy practices are cultural and critical «ways of doing things» rather than «operational» techniques (Lankshear & Snyder 2001). If we look, for example, to award winning weblogs like Ernie Hsiung's *little.yellow.different* or *BoingBoing.com* it is obvious that most of what constitutes these blogs and their success are the cultural/aesthetic/literary «ways» and «experiences» their creators bring to the blogosphere. Someone like an Ernie Hsiung could very quickly and easily acquire – or *hire* – the operational facility needed to publish their point of view, «take» on life, humour and style in weblog format. The value lies in the point of view and style almost infinitely more than in the operational aspect.

Such ideas are well understood by young people who are digitally literate in the social practice sense we advocate here. Two examples from online interviews with adolescent «insiders» to online role-playing communities (Thomas 2005) affirm our point.

In the first, a 14 year old male informant speaking in role as Percirion (President of the United Federation of the Planets) provides insights into his experiences of digital literacy instruction from an «It» perspective, while a second young informant (Hobbitness) «looks» on:

President Percirion (UFP): My school is most certainly teaching us about Technology ...
We have a «Computer lab» with enough electricity flowing through it to power a small African country
Anya [researcher]: so what computer skills / knowledge are you getting at your school perc?
President Percirion (UFP): Typing ... I'm a 42-words-per-min typer
President Percirion (UFP): How to Use the Internet ... How *Not* To Use the Internet
Hobbitness: lol
Anya: but you already know ... laugh really? they're giving you rules?
President Percirion (UFP): We usually ... have free reign on the Internet
President Percirion (UFP): But there's a boundary
Anya:+++++ yes?

President Percirion (UFP): This is where the powerful Imagination kicks in
 Anya: tell tell
 President Percirion (UFP): «Inappropriate material», so to speak
 President Percirion (UFP): And we're also learning how to use various computer systems ...
 which I am sure will be out of date by the time we leave
 Anya: what various computer systems?
 President Percirion (UFP): Excel, Word, More Excel, Office
 Hobbitness: aha
 President Percirion (UFP): Powerpoint
 Hobbitness: *haha
 Anya: ahhh ok

(Data provided as personal communication by Angela Thomas, March 2005)

Percirion and Hobbitness participate in an online role-playing community, the *Gathering of the Elves*. It was created by a young girl named Elianna, who spoke at length about the purposes, motivations and processes involved in instigating the community and administering the site (sindalindewen.proboards30.com). In this second example, Elianna affirms our view about «the digits» being the least part of digital literacies.

When I expressed admiration for her achievement, [Elianna] humbly deflected my praise to the team of friends who assisted her in administering the site. She identified each friend, telling me their particular area of expertise, and what they had contributed to the site. She claimed she just thought of the idea to create the community and it was easy because her friends helped her to develop it. She didn't see anything remarkable at all in what she was doing, labelling it as «just a game», «a bit of fun». When I pointed out all of the processes she had worked through to set up the community, she dismissed it, saying «... nah, it's easy ... you just mess around for a bit and you get it ... You just have to figure out which «button» works which part lol ... and yeah, just about ... most of it you have to change back and forth, and it's like, ok, so this one changes this and that one changes that, and you just kept messing with it til you work it out» (Thomas 2005: 29).

Some policy, pedagogy and research considerations

Our arguments suggest a range of considerations for people working in the policy, pedagogy and research areas of education. Some of these are as follows.

Policy

(i) Digital literacy should be problematized rather than taken as understood. Rather than operating from unproblematic conceptions of digital literacy as an «It,» we should view digital literacies in a larger frame that resists over-attending to operational techniques and skills and, instead, emphasizes mobilizing and building on what learners acquire and know from their wider cultural participation and affinities. Much evidence from literacy research indicates that constructions of literacy in terms of skills, content, and competen-

cies predicated on *functioning* within everyday economic, administrative, and social routines can be profoundly disabling for those deemed not to be literate.

(ii) Policy makers should resist the temptation to make *curriculum* the default setting for providing access to digital literacy. Subsidized public and home-based access to digital technologies offering opportunities for wide-ranging exploration and experimentation, as well as access to «insider» expertise and support, are likely to be more effective in both the short and the long run.

(iii) It is important to recognize a much wider range of digital literacies that just those that are tied to information. It is also important to consider digitized popular cultural artifacts and pursuits – mobile phones, MP3 players, handheld games – as fruitful *conduits* to familiarity and proficiency with a broad range of digital literacies that are valued scholastically, culturally and economically (Facer & Furlong 2001).

Pedagogy

It is important to consider the extent to which the «digits» – the operational aspects – are the least part of what is involved in most digital literacies. While the role and complexity of the operational dimension will vary from one digital literacy to another we need always to consider potential costs involved in hostaging social contexts and practices to «skill teaching,» when it would be far more effective to allow operational facility to emerge organically from immersion in uncompromised versions of social practices.

For school-based learning to provide a sound entrée to becoming digitally literate in insider or expert-like ways we recommend pedagogical approaches like that of the Knowledge Producing Schools initiative being developed on a project by project basis with schools by Chris Bigum, Leonie Rowen and associates (deakin.edu.au/education/lit/kps). See also, Lankshear & Knobel 2003).

Research

(i) In a period of deep and rapid change and innovation researchers need to seek productive balance between theory-driven and more «grounded» approaches to researching digital literacies. As new practices emerge it will not always be appropriate to try and understand them in terms of extant theory – indeed, often it will *not* be appropriate to do so. The trick is to know when to give new theory a chance to emerge from data. It is also important for researchers of digital literacies to «get out as often as possible» and investigate cultural fringes as matters of interest in their own right, and not with a view to seeking direct educational applications.

(ii) Current developments on the Internet reflected in talk about a transition from Web 1.0 to Web 2.0 mark changes in the constitution of social practices that call out to be researched carefully with an eye to understanding their implications for learning and expertise. We think that much of what is addressed in the name of digital literacy from

the «It» perspective is grounded in Web 1.0. Yet, outside of formal «curricularized» learning contexts – in such spaces as online fanfic communities, the blogosphere, participation in Wikipedia, the open source movement, online gaming communities, and the like – people are absorbing and embracing the cultural logic of Web 2.0. The experience of disjuncture on the part of learners who invest informally in «Web 2.0» when faced with «Web 1.0» within formal settings of compulsory learning is debilitating, confusing and, ultimately, destructive. Research has much to contribute to resolving such tensions within pedagogical sites.

Conclusion

Digital literacies present significant challenges to policy, pedagogy, and research in relation to education. In our view, facing and meeting these challenges begins from ensuring that digital literacy does not become the post-typographic equivalent of functional literacy from the world of print. Accordingly, we think it is important to consider supporting research that tells us more about «how kids who grow up digital think and want to learn,» and the extent to which and ways in which current educational directions and emphases may negate such ways of thinking and desires for learning.

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