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How much or little is our model of literacy changing, and given that answer, how might we change what we do in school?

A Brief Meditation on Technology

When I began teaching in the 1970s, I didn't see how (very) much digital technology would change our lives, nor did I see how it would alter our literacy practices. As my friends and family can attest, I like the new practices made possible by this technology— email, blogging, and text messaging particularly. At the same time, I also like older practices informed by very different technology, especially domestic practices like quilting and needlepointing.[1] Watching me quilt, my husband has pointed out more than once that machines could do "my" quilting more quickly and perhaps more accurately, and I predictably reply, "It's about craft." Still, I understand his perspective. The technology we choose has much to do with our intent. If the goal is efficiency and speed, a machine *is* better; if the intent is craft, aesthetics, and the pleasure of creation, a needle is better. It's not either/or; it's all of the above, from which we select to serve a particular purpose.

A Lesson on Literacy and Technology:
What Students Can Teach Us

I often ask students about their literacy practices. One such assignment is divided into two parts: first, students identify an object that represents their definition of literacy; and second, they write a "one-pager" explaining how that object embodies their notion of literacy. Students respond in kind, bringing in all types of objects from soccer balls to science books, explaining the value of sports literacy or the ways they acquired science literacy. Most students bring in objects connected to the literacy of reading and writing, and most of those represent a very positive view of literacy. Frequently, students write about their parents reading to them each night, those memories now linked to items such as old pajamas and well-worn books. Years later, students write about how that reading practice both provided a foundation for reading and made them feel loved. Still, other students express a more cynical view of literacy, especially school-based literacy, like the young woman who brought in a pan-pizza box to show how she had been "bribed" to read--and rewarded for doing so with free pizza. In her one pager, she asked why she had to be bribed to read if reading were so wonderful. A good question, I thought.

But the one object that has stuck with me

> *All children need a laptop. Not a computer, but a human laptop. Moms, dads, grannies and grandpas, aunts, uncles—someone to hold them, read to them, teach them. Loved ones who will embrace them and pass on the experience, rituals and knowledge of a hundred previous generations. Loved ones who will pass to the next generation their expectations of them, their hopes, and their dreams.*
>
> *Colin Powell*

through the years was at first glance an odd choice: a geography book. On closer inspection, it was an older geography book, with a copyright date of 1960. In explaining how this object represented literacy, the student, Martin, connected two important points. His first point was about specific time and relevance. The book, his grandfather's, had been useful to the

grandfather in the early 60s. It was now, as the student pointed out, some thirty years later, and at this point in time one wouldn't want to rely on the geographical information in that book. In the intervening thirty years, the world had changed while the book had not. But the student's second point was what really spoke to me; like the first point, it addressed time and relevance, but it also connected those to literacy. If we do not adapt to and incorporate into our literacy new tools and practices and understandings, Martin said, our literacy won't be able to help us any more than that geography book does now.

A Lesson on Literacy and Technology:
What Teachers Can Learn

In the spring of 2007, I taught a special topics course called "The Digital Revolution and Convergence Culture." Its audience was current teachers and graduate students, its purpose to explore how digital technologies and the web are changing how we write, how we read, and how we will teach reading and writing in the school of the not-too-distant future. At our first class meeting, I used a quick survey as an ice-breaker, asking the students to respond simply to the following literacy activities, either saying yes, they did use that tool or engage in that practice, or no, they did not. The list was short:

_____Word processing?
_____Email?
_____Instant messaging?
_____Cell phone (used for calling only)?
_____Text messaging?
_____Blogging?
_____MySpace?
_____Facebook?
_____YouTube (posted a clip)?

After completing our survey, we talked about our responses. Not only had no one posted a clip on YouTube, but some of us didn't know what YouTube was. Only one student in the class, in fact the oldest student in the class, had blogged. Everyone had a cell, but almost no one used it for text-messaging.

I then asked the students to consider three more questions that called for them to make a judgment:

- *On a scale of 1-10, how much digital technology do you think you know?*
- *On the same scale, how comfortable are you with digital technology?*
- *On the same scale, how literate are you?*

Then we discussed the results of the survey. Almost to a person, the students had walked into the class believing that with their college degrees, their reading practices, and their writing expertise, they were not only literate, but highly literate. The results of the survey seems to call that belief into question simply: by taking the form of reflective questions and inviting respondents to move from recording specific practices to making more general observations. Furthermore, the survey challenged students to locate their literacy in the context of experience and practice, which is another way to think of expertise.

From this vantage point, expertise isn't a function of formal schooling or certification, but of practice, social activity, and reflection. Admittedly, this is a new way of thinking about expertise, one that librarians too struggle with. At a recent conference of the American Library Association, for example, George M. Needham, vice president for member services of the Online Computer Library Center, provided this analysis: The librarian as information priest is as dead as Elvis . . . . The whole "gestalt" of the academic library has been set up like a church . . .with various parts of a reading room acting like "the stations of the cross," all leading up to the "altar of the reference desk," where "you make supplication and if you are found worthy, you will be helped." Libraries now, he says, need to adapt (qtd. in Jasik).

And when asked how librarians might work with these new library patrons, Needham suggested the use of new literacy practices, such as using Instant Messaging, or IMing, and text messaging, or texting, when communicating with them. Moreover, for my students, what this survey and the discussion of it suggested is that in the context of literacies fostered by digital technologies, these highly educated students-who-are-also-teachers weren't very literate at all.

The Literacy of New Composing Practices

The *New York Times* recently interviewed writers about their composing practices. In particular, the authors were asked about whether or not they used digital technologies as a part of their writing process. It turns out that many authors do, and that these technologies serve many purposes, from acting as a check on a nearly finished project to acting as a means of invention or a way of planning a text before drafting.

Today, most novelists don't venture beyond the word processor — and many still write longhand. But others are finding that sophisticated software is invaluable to the literary enterprise. While Dickens and George Eliot had only notebooks and their wits to keep their Victorian triple-deckers in order, novelists like Richard Powers, Vikram Chandra and Marisha Pessl have used everything from Excel spreadsheets to logistics programs like Microsoft Project to organize their imaginative universes. To them, computer technology isn't a threat to literature but an essential tool. "As life becomes increasingly complex, the kind of novel that tries to link the individual life with broad-canvas collective existence becomes more difficult to coordinate," Powers wrote in an email message — or rather, dictated, since he uses the voice recognition software built into the Tablet PC operating system to compose everything, including his novels. Computer programs allow novelists "to build up dense and interconnected views of the world they are recreating," he added. (np)

Technology and literacy here go hand-in-hand, with the needs of the practice informing the choice of technology. It's a good example of what Donald Leu and colleagues call *deixis*, which is the ability to use a given software for your purpose regardless of the needs it was designed to serve. Excel spreadsheets were not created to help authors design novels, for instance, but novelists are able to use that software for their own purposes. That ability, captured in the word deixis, is key to twenty-first century literacy.

Children are likewise engaged in composing practices that differ from the ones we use in print, in large part as a function of the resources the computers make available for writing. For example, in "Observing Children Writing on Screen: Exploring the Process of Multi-modal Composition," researchers from the United Kingdom document the kind of composing that elementary school students engage in when writing *on screen* in a word processor or in presentation software for an audience at another location. As they observed the children and interviewed them, researchers Cathy Burnett and Julia Myers discovered a writing process that was different from the one we know in print, in four ways specifically.

> *From the fountain pen to the word processor, writers have always embraced technology to make their task less arduous. Mark Twain was an early enthusiast of the typewriter, and his "Life on the Mississippi" is believed to be the first typewritten literary manuscript. "The machine has several virtues," he remarked of his Remington. "I believe it will print faster than I can write."*

First, during the "early stages of composition," the children worked on the design elements and on composing the words simultaneously. In doing so, they used their beginning drafting as a substitute for planning. In other words, the kids did not have a plan ahead of time, nor did they separate out form or design from the material; rather, they worked on both concurrently.

Second, the writers used a composing process that was reiterative. While we talk about composing processes being reiterative, as they are often enacted in school, such processes are often stage-bound, with pre-writing, writing, and editing functioning as discrete entities, especially for younger writers. Here, the process the kids used was genuinely recursive, with students composing a text, then stopping in the middle to return to earlier parts of the text to make changes, and then returning to go forward.

Third, the students were aware of their audiences and built in design features intentionally to shape audience response. The interviews were especially helpful on this point, with the students explaining the inclusion of certain features (like slide animation in a presentation slide) to slow their readers down so that they would pay attention to certain points.

Fourth, the students took advantage of readymade digital resources like clip art, finding that these resources enhanced their writing. At the same time, they wanted better resources; clip art, they said, wasn't enough or good enough.

Now we might say that the writing process characterized here wasn't a function of the computer at all, but of the co-authorship, and that is likely a factor. A good question, then, is the impact of co-authorship on composing processes and on whether or not students then take some of that new composing practice "back" with them when they compose alone. Another good question has to do with the difference that digital technology makes, and here the authors are helpful:

> Elsewhere, we have written of the potential for using children's reflections on the differences between on screen and paper texts to develop their own metalinguistic awareness (Burnett et al, 2004b). It may also be possible to use reflection on the process of composing on-screen texts as a starting point for considering the writing process within paper-based text production. Sensitive teaching could draw direct parallels between the kinds of changes that children make to sound and vision in order to enhance meaning and use these as the starting point for considering the kinds of changes that may be possible with words. (np)

In other words, what we learn in one writing situation—writing alone or writing in a team—and what we learn in one medium—in print or on screen--we take with us to whatever the next writing situation may be. Here are some questions for all teachers: how many writing situations should we create for students, and how do we help students reflect on the differences between those situations? Are some reflections better than others, and if so, how so? As important, how do we use these different situations to help students articulate general principles about composing in the twenty-first century?

Coming Full Circle: Twenty-first Century Literacy
Through this meditation, this set of scenarios, and these questions, I've tried to think on the page—which today is more accurately put as thinking on the screen[2]—about what it means to be literate in the twenty-first century. Although many of us still seem to be in search of a complete definition of the expression *twenty-first century literacy*, I think there is an emerging agreement on three key points.

First, being literate in this century means that we have a choice of technologies, as we always have had, although now we have more that ever before, enough so that it's difficult to keep up with them all. Because the literate person will be able to use many technologies, she or he will be able to choose among them rhetorically—that is, to choose the appropriate technology in order to communicate with a particular audience.

Second, being literate in the twenty-first century means being networked in ways we couldn't have imagined even fifty years ago; such networking will allow us to tap new resources and communicate with new audiences and in new ways. And third, this kind of literacy requires intrapersonal knowledge, articulated through various forms of reflection, which will become increasingly important as we navigate our way through technologies and media and purposes and audiences and sources of information.

Literacy is complex, composed as it is of texts, processes, knowledges, cultures, reflection, and selves; and schools, as we know, are critical in fostering certain kinds of literacies and discouraging others. To date, we've done a pretty good job of helping students acquire a twentieth-century literacy, but increasingly, we need to assist our students—and ourselves—in developing the literacy of the twenty-first century.

Notes
[1]Needlework has historically been linked to literacy: see Yancey. Portfolios, Circulation, Ecology, and the Development of Literacy.
[2]Charles Moran makes the point that while we may compose at the screen, that composition is intended for print, which is sized quite differently, thus requiring from us a sort of split-screen composing intelligence.

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