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## Every Tool Shapes the Task ... and the Brain

**N**ever accept the frequent claim about technology that “it’s only a tool.” Lots of evidence makes it clear, as Ursula Franklin says, that “every tool shapes the task.” Recent research goes further and points to tools shaping not just the task, but our brains as well.

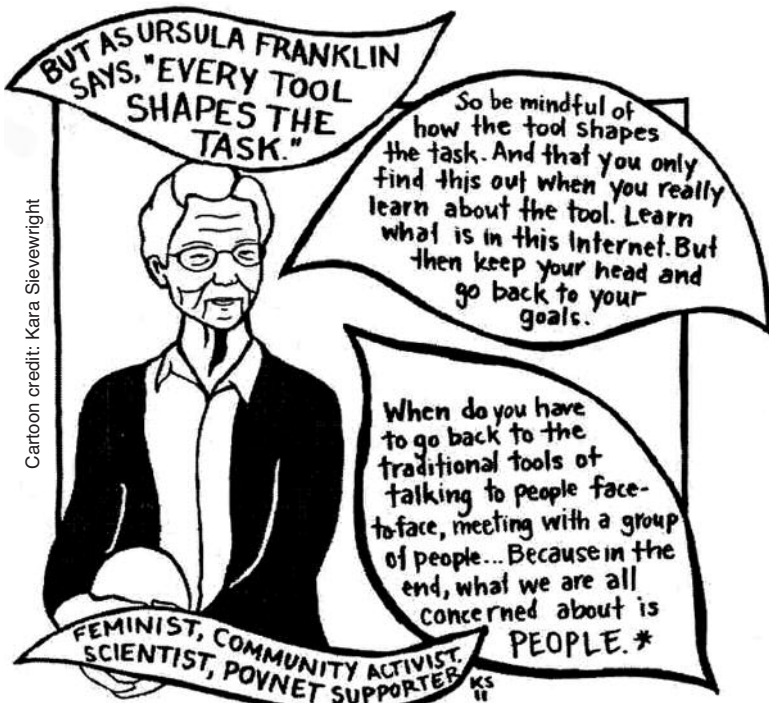
In the face of this evidence, what is a teacher to do in working with students who live in a media-intense life outside of the classroom? And what is a school system to do about creating an environment within the school: should the school be integrated with the external environment? or should the school be a cloister that provides space for personal recognition and reflection, free from digital distraction.

These are dilemmas that face teachers and schools in the rapidly shifting environment: questions of immersion or cloister as the strategy for schools.

### **The tool, the task and the brain**

Probably the most famous phrase ever spoken by a Canadian is Marshall McLuhan’s “the medium is the message.” It captured in a simple phrase a theory about social and cultural change. The

Cartoon credit: Kara Sievewright



\*FRANKLIN, URSULA M., *Every Tool Shapes the Task: Communities & the Information Highway*. Lazava Press, 1996.

general public impression was that McLuhan was a promoter of the kinds of changes that he saw taking place in the move from print to audio-visual media, including TV. In fact, according to a recent biography by Douglas Coupland, he was actually lamenting what he saw happening.

Coupland begins the biography with a quote from McLuhan that is not so well known:

The next medium, whatever it is — it may be the extension of consciousness — will include television as its content, not as its environment, and will transform television into an art form. A computer as a research and communication instrument could enhance retrieval, obsolesce mass library organization, retrieve the individual's encyclopaedic function and flip it into a private line to speedily tailored data of a saleable kind.

— McLuhan, 1962

Although it sounds like a description that many people looking around today could develop, McLuhan was writing decades before the personal computer and the World Wide Web (remember what www actually stands for? — everyone today just thinks of the “web.”) became ubiquitous.

McLuhan was also writing at a time that the conventional understanding was that the brain was essentially stable. When one reached the end of the growth cycle at about age 20, that the brain didn’t grow or change substantially.

The new understanding about the brain is succinctly described in the title of Norman Doidge’s book *The Brain That Changes Itself*. The brain is plastic, not stable. It is constantly changing itself as we interact with the environment around us — creating new pathways and letting others atrophy. The tools that we use habitually change the brain itself.

The computer and the web are among those tools that lead to changes. As an illustration, news stories have recently reported on a problem developing in China: people losing their ability to write in Chinese characters. People who spend a great deal of time on computers are constantly writing Chinese characters by using the western alphabet to represent the sounds of the word in Chinese and the computer then provides the Chinese character. Because physically writing the character is a totally different process, the channels are seldom used and are lost.

The claim that a similar thing is happening to all of us is outlined by Nicholas Carr in his book *The Shallows: What the Internet is doing to our brains*. Carr characterizes the net world as one of fragmentation and interruption. Hyperlinks lead one to jump around, to not do a sustained reading, but to follow off in different directions. This has an impact on our brain because “cells that fire together wire together,” so the brain is changed by our experience.

In his book on *Writing for the Web*, Crawford Kilian says: “When one looks at Google analytics to see how long users stay on a web page, one discovers that three minutes is a long time. The nature of the web leads to the chopping up of content to meet the short attention spans that it teaches us to have.”

Twitter carries the fragmentation to an extreme. It only allows for 140 characters, so to tell a story requires chunking —

and even then, several other messages might have appeared in the mix before a second related message.

The 2010 version of the major education technology conference, ISTE, had hundreds of participants Twittering during the keynote speeches. The conference organizers had a problem with the situation. The problem, as they saw it, was not the broken attention spans of the audience, but how to get the rest of the crowd to Twitter as well.

**Try reading a book while doing a crossword puzzle: that's the intellectual environment of the Internet.**

This could be the end of the question period as the speaker responds during her talk to the tweets she sees on the screen placed in front of her while she is speaking — fragmentation of the formal talk.

The e-book is, as well, a new medium, different from the printed book, particularly as links to photos, sound, related texts can be hyperlinked throughout the book. The e-readers are the breakthrough in this medium encouraging the fragmentation of the book experience itself.

Reading of hard copy print has fallen to 4<sup>th</sup> place in the ranking of media consumed, according to a recent survey. It is behind TV, computers and radio (Carr, 87). The video game, both independent and net-linked, has become a significant medium with its own characteristics and impact on the brain.

Carr contends that “deep reading” will continue to disappear as scanning and browsing become the dominant forms of reading. “Word clouds” allow us to “explore a book in 10 seconds.” Too much, too fast means that we don’t have the time to develop or use a schema that allows us to analyze and find meaning. He puts out a challenge to make his point: “Try reading a book while doing a crossword puzzle: that’s the intellectual environment of the Internet” (Carr, 126).

This, Carr says, produces “pancake people — spread wide and thin as we connect with that vast network of information accessed by a mere touch of a button (Carr, 196).” This is the “shallows” of his book’s title. “Every tool,” he says, “imposes limitations even as it opens possibilities. The more we use it, the more we mould ourselves to its form and function” (Carr, 209).

Carr's view is shared by Oxford neuroscientist Susan Greenfield: "The mid-21<sup>st</sup> century mind might almost be infantilized, characterized by short attention spans, sensationalism, inability to empathize and a shaky sense of identity."

David Warlick sees the information experience quite differently. He suggests that Google is turning us into a question asking culture. A culture where our students learn to ask questions about the answers that they find because there are so many different and often conflicting sources and answers. As teachers we should be focusing on helping them ask questions about sources, validity and bias.

Our students live in a "net-saturated" world. It has an impact on their development in the patterns of their brains and their social relationships, as well as how they are prepared — or not — to learn in the classroom.

My favourite aphorism of McLuhan's is "I don't know who discovered water, but I'm sure it wasn't a fish." If we want to see our environment, we need to be able to step outside of it, or at least imagine a different environment. We need that kind of perspective. Some teachers have tried to develop this perspective by getting students to agree to a week of no Facebook or texting — a limited cloister to develop a outside perspective to help in reflection on the tools and communication.

We may be with Warlick in seeing our role as teachers as developing the sense of deep questions within the digital immersion. But we also should ensure that our students have some reference point outside of that immersion, a way of becoming conscious of the nature of the digital water in which they are immersed.

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## REFERENCES

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