

Browsers and Burrowers

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Browsers and Burrowers, Harry E. Pence, SUNY Oneonta, Oneonta, NY

When I was in college, I was trained to be a burrower, to find a good information source and then drill down until I had mined as much information from it as possible. If this first source was inadequate for the task at hand, I would find another one and repeat the process. I sometimes did try to synthesize multiple sources into a comprehensive picture but that procedure was usually reserved for major projects, like a dissertation or a review article. Research methods have changed a lot since I was in college.

Now, students doing research can go to Google and find thousands of pages about almost any topic. Their problem is to choose the best source from a bewildering array of sources. My own personal experience and comments from colleagues suggest today's students respond to this problem by browsing quickly from web page to web page, scanning for relevant facts, and trying to integrate material from several different sources. They rarely burrow deep into a resource; they have become skimmers. This observation is supported by research studies like ["Information Behaviour of the Researcher of the Future,"](#) which reports that students "power browse" their way through digital content, reading online material in ways that are much different from the past. At the same time, this study also finds that young people have a poor understanding of their information needs, are increasingly looking for "the answer" rather than a particular format, like a research monograph or a journal article, and find it difficult to develop effective search strategies.

Some commentators, like [David Carr](#), have suggested that Google is making us stupid. On the contrary, the stupid response is to try to pretend that nothing has changed, and we still live in the information environment of the last century. Google is not making us stupid; it is just providing a better way to search for information. The information environment today is dramatically different from that in which I was trained, and the old habits are no longer effective as they once were. As much as some people might like to wish that this was still the 1950s, that is no longer true. Many users, regardless of age, have responded to this situation by becoming browsers.

It would be tempting to view this as a competition between burrowers and browsers, where only one side is right. That would be a mistake. Students need to learn both approaches, because both are useful, but in different circumstances. An in-depth research project clearly requires a literature search that digs as deeply as possible. On the other hand, in some cases a general overview is more than adequate or perhaps it is better to form knowledge recursively by integrating the contents of a large number of sources. Here browsing is the best approach. Students must be able to be either browsers or burrowers as the situation dictates. The challenge for teachers today is to help students to recognize when and how to use each technique.

Some educators argue that there is a need to return to the old standards. Instruction should develop critical thinking skills and should focus on how to evaluate information sources for bias, how to read carefully for content, how to organize a convincing argument based on sound evidence, and how to analyze a presentation for accuracy and persuasiveness. Of course, this also presumes that students must learn grammar, spelling, and punctuation. This will not be easy, since the typical college freshman probably spent hundreds, or even thousands, of hours searching the WWW and sending text messages with the compact language that is typical of Instant Messages and cell phone texting. These experiences teach techniques that are the antithesis of the traditional way of working.

It is important to recognize that these traditional skills are just as necessary today as they were several decades ago, but they are no longer sufficient. Information overload may have become a cliché, but it is still a real problem that students need to learn address. One way to respond to the changed information environment is by using a set of software tools that are roughly lumped together under the heading of social networking. These are built upon the idea that no single person can master all of the needed content, but a group of individuals who have similar interests can work together to find and share information. This idea is not new, but the computer makes this kind of social network more efficient and faster. These networks may consist of only a few people, like the exchanges that occur on social tagging sites, like Del.icio.us or Connotea, or they may involve thousands of people, like Wikipedia. Students need to learn how to use both kinds of social networks to access, store, and search for data.

The current changes are not just due to the increased quantity of information. Perhaps even more important are the fundamental changes that result when information is stored using electrons instead of paper. As [David Weinberg](#) points out, the traditional way to organize paper copies is to create some sort of hierarchy, like the Library of Congress Classification system familiar to library users. The number of electronic resources is growing too fast for the catalogers to keep hierarchies up-to-date. It is easier to put all the data into a single collection, attach appropriate tags and cross-links on the individual documents, and allow a computer to do the sorting. Free software programs, like Del.icio.us, Connotea, Diigo, and others are available to organize information using social tagging, but choosing the right terms is not intuitive and some would argue that a better solution is yet to be found. Students need to be taught these new skills with increasing levels of sophistication in classes at every educational level.

Wikipedia is a good example that displays the characteristics that are typical of the new information environment. Information on Wikipedia is not fixed, as it would be in books or journals, but fluid, changing with each new edit. This is strength, not a weakness, because in many disciplines the changes are so rapid that it is impossible for the conventional cycle of submission, review, and publication to keep up. In 2008, [Panagiotis Louridas and Diomidis Spinellis](#) reported that even though Wikipedia now consists of 2.6 million articles, most of which have been revised frequently, the ratio of defined to undefined terms is remaining constant. That is, Wikipedia continues to grow organically at a relatively constant rate, just like the information environment. Wikipedia responds very rapidly to new topics, and controversial edits are reviewed and evaluated with equal speed. No hardcopy reference based on conventional technology can match that rate of change.

Some, especially academics, are uncomfortable because the accuracy of statements is being negotiated in public in real time or because decisions about accuracy are not being made by "experts" who are certified by some designated institution or group. Knowledge has always been negotiated, but in the past the discussion was limited to a few recognized experts who decided what was acceptable. Is it better to have these important discussions in a closed, private forum, or in public, where any reader can read and evaluate the opposing arguments? Wikipedia is probably not absolutely accurate, but unlike most reference sources, it is self-correcting. Wikipedia may be different from the standards of the past, but it is typical of the sources that are becoming increasingly prevalent today. It provides an excellent opportunity for teachers to teach students to recognize and compensate for bias, whether it is in online or print sources.

Society is increasingly moving towards a Wikipedia-like information environment. The accuracy of statements is being negotiated online, and the discussion of what is correct is open to anyone with a computer. This means that there is no longer a fixed narrative; change is the only constant. Education, which has traditionally been concerned with content, must now teach more about the importance of connections. Knowledge no longer consists of just what is in a person's mind, her books or her journals,

but rather is the collective wisdom of a group of individuals (“nodes”) who share their knowledge over the network. [Brown and Adler](#) put it well when they say, “The most profound impact of the Internet is its ability to support and expand the various aspects of social learning.” Know-who is becoming just as important as know-what. Perhaps it is time to think of school as just another node where students can both observe as well as participate in a learning network.

The key is probably to shift part of the teaching emphasis from content to connections. Many professionals are already beginning to do this. They use Google and Wikipedia to immediately answer their content questions on the WWW. It seems probable that this will become more common and the tools will become more powerful in the future. Like cataloging, creating professional networks is not simple. Students who already use social programs, like FaceBook or MySpace, may be more accepting of personal networks, but that doesn’t insure that they have the skill to form and maintain professional networks.

It will be difficult to find time in the already crowded curriculum to teach students the skills they need to cope with the environment in which they will live and work. What can be left out to teach more about connections? The problem for curriculum designers will be to distinguish between the basic core knowledge an individual requires and the information that can best be obtained in real time over the network. In the future, classroom testing may well assume that students have continuous access to factual information. Then the purpose of the test is to assess whether they can create coherent and convincing explanations, using online data sources which they have evaluated for accuracy. This combination of skills, which sounds very much like critical thinking, may become the basis for curricular design in the future.
