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Op-Ed Contributor

Searching for Dummies

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TALK of decline was old news in academia even in 1898, when traditionalists blasted Harvard for ending its Greek entrance requirement. But today there's a new twist in the story: Are search engines making today's students dumber?

In December, the National Center for Education Statistics published a report on adult literacy revealing that the number of college graduates able to interpret complex texts proficiently had dropped since 1992 from 40 percent to 31 percent. As Mark S. Schneider, the center's commissioner of education statistics, put it, "What's disturbing is that the assessment is not designed to test your understanding of Proust, but to test your ability to read labels."

The Higher Education Supplement of The Times of London reports that a British survey also finds that the ability of undergraduates to read critically and write cogently has fallen significantly since 1992. Students are not just more poorly prepared, a majority of queried faculty members believe, but less teachable.

While some blame reality television, MP3 players, cellphones or the multitasking that juggles them all, the big change has been the Web. Beginning in the early 1990's, schools, libraries and governments embraced the Internet as the long promised portal to information access for all. And at the heart of their hopes for a cultural and educational breakthrough were superbly efficient search engines like Google and those of its rivals Yahoo and MSN. The new search engines not only find more, they are more likely to present usable information on the first screen.

Google modestly declares its mission "to organize the world's information and make it universally accessible and useful." But convenience may be part of the problem. In the Web's early days, the most serious search engine was AltaVista. To use it well, a searcher had to learn how to construct a search statement, like, say, "Engelbert Humperdinck and not Las Vegas" for the opera composer rather than the contemporary singer. It took practice to produce usable results. Now, thanks to brilliant programming, a simple query usually produces a first page that's at least adequate — "satisficing," as the economist Herbert Simon called it.

The efficiency of today's search engines arises from their ability to analyze links among Web sites. Google led in ranking sites by how often they are linked to other highly ranked sites. It did so using an elaborate variation of a concept familiar in natural science, citation analysis. Instead of looking at which papers are cited most often in the most influential journals, it measures how often Web pages are linked to highly ranked sites — ranked by links to themselves.

Citation analysis has been attacked in library circles for inflating the ratings (and indirectly the subscription prices) of certain journals. Search engines have the opposite problem: dispersion rather than concentration of interest. Despite constant tweaking, their formulas display irrelevant or mediocre sites on a par with truly expert ones.

Curious about the academic field of world history? A neophyte would find little help entering "world history" in Google. When I tried, the only article on the world history movement, from the open-source Wikipedia project, didn't appear until the fifth screen and was brief and eccentric, erroneously dating the field from the 1980's. (In fairness to Wikipedia, that entry has since been corrected and improved; moreover, the paid-access Encyclopaedia Britannica site has no specific article at all.) Only on the seventh screen did I find the World History Network site, financed by the National Endowment for the Humanities, and it is not yet a good portal for beginners.

Many students seem to lack the skills to structure their searches so they can find useful information quickly. In 2002, graduate students at Tel Aviv University were asked to find on the Web, with no time limit, a picture of the Mona Lisa; the complete text of either "Robinson Crusoe" or "David Copperfield"; and a recipe for apple pie accompanied by a photograph. Only 15 percent succeeded at all three assignments.

Today, Google may have expedited such tasks, but the malaise remains. In the February newsletter of the American Historical Association, the reference librarian Lynn D. Lampert notes the prevalence of "ill-conceived (or often nonexistent) student research practices." As another university librarian, Pamela Martin, observed, "Google's simplicity and impressive search prowess trick students into thinking they are good all-around searchers, and when they fail in library searches, they are ashamed as well as confused."

Higher education is fighting back. Librarians are teaching "information literacy" and establishing alternative Web indexes. Graduate students, in the front lines as teaching assistants, are starting to discuss joining Wikipedia rather than fighting it, as many instructors still, quixotically, do.

Can better information in the classroom produce the literate, numerate society the Web once promised? There are two ways to proceed. More owners of free high-quality content should learn the tradecraft of tweaking their sites to improve search engine rankings. And Google can do more to educate users about the power — and frequent advisability — of its advanced search options. It would be a shame if brilliant technology were to end up threatening the kind of intellect that produced it.

Edward Tenner, the author most recently of "Our Own Devices: How Technology Remakes Humanity," is working on a book about positive unintended consequences.