

# Student Research and the Internet

To help students understand the art of research and the reliability of sources in the age of online information, we should teach them about the nature of 'truth'.



In an assignment for term paper proposals in the fall 2004 semester of a class I teach at Georgia Tech, I wrote: “Identify a few initial information sources you will examine to begin to research the issue.

List at least one book and one

Web site.” After I handed out the assignment, a student raised his hand and asked: “Excuse me, professor? Where would I find a book?” Raising an eyebrow, I thought, surely he’s joking? “Um, in the library?” I said.

The class groaned.

The class was Georgia Tech’s CS 4001: Computers, Society, and Professionalism. It is taken mainly by computer science seniors and is a requirement for graduation. The assignment required the students to research an issue relating to computing and society. Next term’s class might consider, say, what is happening to students’ ideas about research, reliability, and truth in the age of the Internet.

Sloppy research is nothing new. For students of my generation (undergrad 1983–87), a rush job on a research paper might have penetrated the library only as far as the reference section, grab an encyclopedia article or two and summarize. Today, a rush job goes no further than the first few Google hits.

But to me, something is different. Even the

strong students appear a bit confused about where to find information and which source(s) to trust. For example, one student emailed me to say he was worried; most of the sources he was finding on his topic seemed “old” to him. Would that be OK, he asked, assuming at least some of his sources were from this year? Talking with him further, I determined that for him old meant “three or four years old.” I tried to explain that “recent” and “relevant” are not synonyms, and that I could think of things more than 100 years old that would be important to his topic. With the barrage of the latest information available online, it’s not surprising that students begin to equate newness with value and credibility.

This is not meant to disparage today’s students. Quite the opposite. Writing college research papers 20 years ago, I had a limited source of materials—the contents of my university’s library—to choose from. An ambitious student might go as far as to make use of an interlibrary loan. (Personally, I almost never bothered, even though my roommate worked in the interlibrary loan office.) Library materials are vetted by trained professionals. However, just because it’s in print, and a librarian bought it, doesn’t mean it’s true, of course. But on the whole, the quality of the materials available in a library is pretty good.

Contrast this situation with the amount of infor-

mation available to today's paper-writing student. The quantity has increased exponentially, and the range of subjects and quality of the information has increased in both directions. In addition to all the dusty old books (should one be willing to venture beyond one's dorm room), consider all the digital libraries, academic Web sites, organization sites, hobbyist sites, and blogs that have taken root on the Web over the past 10 years. The volume of information is staggering, and the range of its quality unprecedented. Together with mountains of trash, we might also now access up-to-the-minute scientific information, eyewitness accounts moments after an event takes place, and the personal thoughts of famous artists, authors, sports figures, and cranks of every stripe on their blogs. Moreover, this cascade is

The debate over the nature of truth is controversial. Does objective reality exist? Is it knowable? Many sociologists and philosophers argue that it is only through our subjective perceptions that we can know anything and that social agreement is the only truth. But even a traditional objectivist who believes the real world exists and is knowable has to acknowledge that the process of something becoming accepted as fact is social; an idea is not much of a fact if only one lonely person believes it.

Peer review is the institutionalization of the process of creating facts. A publication that makes it through review has been vetted by multiple authorities in the field. Online we see accelerated variations of this process, in both formal and informal settings. An idea might gain a degree of acceptance by being

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not inert; for example, you can ask questions and often get answers—sometimes from primary sources. How are students to make sense of this complexity if we don't teach them to evaluate and use what they read online?

This is fundamentally a question of epistemology. Sure we can teach students how to choose effective search terms and tell the differences among a peer-reviewed journal paper, magazine article, and personal Web site. It would fit right in where we used to teach how to use the card catalog. But students won't really learn to navigate the worldwide Internet-based information space in any meaningful sense until we teach them a bit about the nature and organization of knowledge.

To understand the art of research in the realm of online digital information, one needs to understand competing theories of "truth." Sociologists of science, including Bruno Latour, argue that truth is socially constructed. A new insight begins as a hypothesis asserted by one person or by a small group. As this assertion is accepted by more and more people, it gradually begins to be accepted as fact. Social acceptance is what makes something a fact.

debated on a mailing list by a group of people with expertise in a particular area. An idea may be rejected by being critiqued or flamed. For every piece of information that shows up in a Web search, we should ask: Who asserted this? What are this person's credentials? Who had the opportunity to critique the idea? Who supports and who disagrees with it?

Even something published online in an extremely informal venue may have a degree of credibility, depending on the source of the idea and the people who have responded to it. The latest meme on Slashdot.org may be highly credible, but something that looks like a formal article but appears on a Web site of a fringe organization pushing a radical agenda may have no credibility at all. These are subtle and complicated judgments.

Peer review and the social construction of knowledge are key concepts students need to understand. However, there are other approaches to the nature of truth, and it's important for all students to understand competing theories. For example, for many, credibility is grounded in the views of a respected community leader or an authoritative text. From this point of view, objective reality exists, and the best

way to access it is to consult someone you really trust.

Discourse becomes difficult when two sides are not aware they are operating from different approaches to the nature of truth. Whichever approach is embraced, it's important to understand the variety of approaches that are most common and try to understand the specific approach of the person to whom you are speaking.

I teach controversial subject matter to students from an array of political, religious, and ethnic backgrounds. I try to make it clear that multiple views of the world are legitimate, but they have to be able to articulate the reasons for their beliefs. It's fine to say "I believe this because it's in the Bible" or "I believe this because I trust our president." On the other side of the epistemological spectrum, it's reasonable to say "I believe this because these peer-reviewed publications support it." When everyone is able to articulate the reasons for their beliefs, students from radically different world views can begin to have constructive conversations; if nothing else, they come to understand how their assumptions and world views differ.

In asking my students to cite at least one book, and also by devoting class time to talking about research methods and the reliability of sources, I try to encourage them to look beyond a summary of search engine hits. To a great extent, it has been successful. Last term they wrote about topics like the trade-offs involved in a country having a national ID card, the privacy risks of RFID tags, and whether grade schools should invest money in computers. Reading books per se may not have made much difference, but thinking seriously about information and its reliability did.

If students are to make sense of the information that increasingly surrounds them, their teachers and their parents need to start this kind of practical, epistemological education earlier, before they arrive in my class as college seniors. ■

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