THE TRADITIONAL RESEARCH PAPER IS BEST

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To understand the research paper and its contemporary significance, we must acknowledge how the Internet makes the process of research and of writing research much more complex. A vast majority of Internet users use the web and social media multiple times per day. Long gone are the days when one major function of the research paper was to bring students into contact with libraries. Today's students need to also know how to navigate the Internet—a vast digital source of information whose system architecture affects the work of teaching and research.

Typically, a first-year college student's research paper assignment might require 5–10 sources, whereas advanced students are probably asked to cite no more than 30 sources. These figures may stem from research concerns that emerged during an entirely different technological history. This number makes sense if we consider the physical labor involved in visiting the library, communicating with a librarian, finding the card catalog, writing down serial numbers, walking up several flights of stairs, locating the correct stack, browsing the stack, and using a step stool to reach the source in question—rinse and repeat. These spatio-temporal aspects of composing a research paper most likely affected source selection. For example, some textbook writers used to complain about how research papers often lacked primary sources and relied on questionable secondary materials despite physical libraries' numerous resources.

The number of sources a paper should include remains an essential guideline that defines the research paper, which affects how students prioritize their efforts. Most college students will not have to worry about physically setting foot in a library building

to meet the research paper's quantitative source requirement. In fact, finding the number of sources is the easiest part for student writers, because a broad search will take less than one full second to retrieve millions and millions of sources on any given subject.

Of course, finding sources may be easy, but strategically incorporating them into an argument may seem impossible to today's writers. How could any teacher reasonably expect a student to come up with a thesis when they are seconds away from an uncountable selection of sources and communities of knowledge? What incentive does any researcher have to make new ideas in the data deluge? When almost anything that can be conceived is searchable via the Internet, what is the researcher really responsible for? Verifying data? Deliberating about its significance? Informing their social media networks?

Unfortunately, the labor involved in researching and using the Internet for research tends to be ignored. Instructors may underestimate the nuances of popular databases and overestimate students' frequent use of databases as competency. However, Internet research really is a lot of work. Researching "the research paper" via Google, Google News, and Google Scholar retrieves almost 19,000,000 results. Unaccompanied by quotes, the number of results exceeds one billion. Without awareness of the importance of Boolean logic, or operators that affect the scale of results, a researcher may find herself drowning in data. When plugged into proprietary databases available to most college and university students such as Proquest, JSTOR, ScienceDirect, and Academic Search Complete, the research paper displays several thousands of sources per database.

Consuming data dumps, whether by the dozens, hundreds, or thousands, would take decades to read, summarize, annotate, interpret, and analyze. These processes do not include the creative task of evaluating the patterns between data or learning more about the backgrounds, values, and beliefs of their authors—all of which were easy to take for granted when working with a limited number of print sources. Therefore, the 21st-century politics of research is defined by the problem of scope. There is simply too much information.

Although traditional research papers undoubtedly address the problem of how to evaluate and integrate sources, a contemporary first-year college writing student will probably be sensitive to her limitations as a single writer. What kind of *original* contribution can teachers reasonably expect the average high school or college

student to create that they can't instantly access via the Internet? It hardly seems appropriate, or fair, to ask any student, regardless of classification, to wade through oceanic swaths of online data for the purposes of making an original contribution, as a single author, to some public policy debate or academic discipline.

Moreover, there are few incentives to ethically conduct research when the paper is taught as a bureaucratic necessity of the high school or college experience. I could wax poetic about the joys of discovery and the wonderment of wandering aimlessly through scholarly work, but the research paper does not tend to encourage this openness. Students may believe that if they include a certain number of sources of a particular kind, and use the instructor's preferred documentation style, that their research paper will be successful. Too often this simplistic approach is mistaken for laziness. But, most people cannot handle the chore of deciphering the data deluge. Plagiarism, then, becomes a major effect of the Internet's causal effect on teaching and learning the research paper.

Thousands, if not millions, of students will use Google and Wikipedia as first steps towards plagiarizing work—plunging into an abyss of boredom or cultivating their curiosity about a subject. Their teachers will obediently, and sometimes zealously, police plagiarism with the assistance of Google's robust search engines and Turnitin. Both the student and teacher will use social media to talk about their frustrations and joys in real-time. The student's plagiarism will most certainly deserve a status update, some likes, and perhaps some comments. The teacher's boring instruction and the difficulty of the assignment will end up discussed in text messages, and who knows which social media platforms or blogs. At worst, the student will complain about it to RateMyProfessor. com or in the teacher's evaluations. These examples illustrate that the Internet and mobile technologies extend the reach of the research paper far beyond classrooms and institutions. In fact, Research 2.0 converges with offline human activity, extending its causal force across several media, very much affecting real life.

The Research Paper 2.0

The entire Internet user experience is embedded in knowledge economies, which impact how people learn. For example, Internet users' attention is managed and directed by large private corporations like Apple, Microsoft, Facebook, Amazon, and their partnerships and affiliations with the handful of multinational

conglomerates that produce and own the media. The data collection practices and design of these companies' websites direct users' attention, which affects their research skills. The same Internet users will also participate in the development of revolutionary open-source, collaborative archives like Wikipedia, which models an unprecedented effort in collective intelligence.

By virtue of accessing and using the Internet, its users *are researchers*. As a landscape of big data, the Internet's primary purpose is to facilitate research and its subsequent acts of storing, producing, and retrieving huge amounts of information (as it was when it was conceived at CERN). Unfortunately, the Internet's global multidisciplinary, multi-sector, and multi-generational history and culture are largely unknown by most contemporary students—even though they interact with it every single day. Thus, the research paper in contemporary web settings should be designed to directly address any of the technological politics of blended learning and emerging technologies.

At best, research papers 2.0 will encourage students and instructors to reflect on how the Internet and its complex networked features mediate their research and writing process. Specifically, research 2.0 might include a much stronger emphasis on collaborative and professional writing. Students may organize online writing groups via Google+ or LinkedIn based on their topical interests to provide evidence of their ability to lead and contribute to a team. They might also contribute to crowdsourced, annotated bibliographies of paper mill websites to help the school's integrity office, or participate in one of the Wikipedia edit-a-thons sponsored by Art + Feminism. Research 2.0—be it delivered through a paper, ePortfolio, Wikipedia, or Prezi—might include ethical evaluations of research scandals, the legality of citizen surveillance footage of police brutality, and a comparative analysis of big data websites like Data.gov or WikiLeaks.com. But not all of its topics need to be digitally themed, but it can and should use digital technologies and resources to refresh what the research paper can do in the 21st century.

One of research paper 2.0's primary objectives should be bringing students into contact with research communities that synergize online experiences with offline social events. Towards this end, Wikipedia is an ideal space for (and subject of) research in 2.0 because it has been a subject associated with research writing conduct for over a decade. Most students' experience with Wikipedia and academic writing is that its use is strictly forbidden.

When it is cited as a source in a research paper, teachers are annoyed or infuriated because they can't understand why students don't *know better*. Regardless of how much suspicion surrounds the veracity of Wikipedians' knowledge, every Internet user consults this information resource. Furthermore, students and teachers would have a much different experience with Wikipedia, and research, if students understood the site from the perspective of its editors. Thus, the Wiki Education Foundation, an affiliate of the Wikimedia Foundation—the non-profit organization that runs Wikipedia among several other projects—has made strong attempts to connect Wikipedia to educational institutions through their Wikiedu.org platform.

Due to technological, and thus pedagogical limitations, the traditional research paper is incapable of translating the affordances of research writing to online environments. Therefore, research 2.0 should respond to the significance of human interaction with the Internet and the politics of big data. We live in a superabundance of learning spaces, and thus, infinite possibilities for research. However, few educational institutions and disciplines are cultivating the technical, scientific, and artistic competencies necessary for editing, navigating, and managing the Internet's infinite retrieval mechanisms. When students are taught how to recognize that they have the power to diversify Internet content with high-quality research, the research paper 2.0 could play a major role in balancing the dynamics of knowledge production between traditional institutions and emerging media.

Further Reading

To learn more about how the purpose and genre of the American research paper has changed since the late 19th century, see John Scott Clark's *A Briefer Practical Rhetoric*. Also important is Robert Morell Schmitz's *Preparing the Research Paper, A Handbook for Undergraduates*. Additionally, Cecile Williams and Allan Stevenson's *A Research Manual* and Florence Hilbish's *The Research Paper* show that the research paper continued to be the central subject of writing manuals and textbooks throughout the mid-20th century.

For more information about the popularity of the research paper assignment, as well as teacher training in the genre, see James E. Ford and Dennis R. Perry's *Research Paper Instruction in the Undergraduate Writing Program*, and *Rethinking the Research Paper*, written by Bruce Ballenger. Robert Davis and Mark Shadle's *Building*

a Mystery: Alternative Research Writing and the Academic Act of Seeking also discusses non-traditional approaches to research writing.

Researchers Tere Vaden and Juha Suoranta have critically evaluated some of the ways in which educators ought to make sense of the politics of making information in Web 2.0 contexts in their book *Wikiworld*. In addition, for information on how researchers are measuring data and its volume, the following studies may be useful: "UC San Diego Experts Calculate How Much Information Americans Consume"; J.E. Short, R.E. Bohn, & C. Baru's study, "How much information"; and Martin Hilbert's "How to Measure 'How Much Information?' Theoretical, Methodological, and Statistical Challenges for the Social Sciences."

Keywords

big data, Boolean logic, data deluge, traditional research paper, web 2.0

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