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TEACHING MATTERS [PERSPECTIVES]

AN INTEGRATIVE LESSON ON SEARCHING, TRACKING CITATIONS, AND EVALUATING A SCHOLARLY ARTICLE

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This column focuses on the conceptual and practical aspects of teaching information literacy. Column co-editors Patrick Ragains and Janelle Zauha write about trends and issues that have come to our attention, but also solicit contributions to this space. Readers with ideas for Teaching Matters may contact Patrick Ragains at ragains@unr.edu, or the editors of Communications in Information Literacy at editors@comminfolit.org.

In this column I will discuss a lesson in my credit-bearing information literacy course for honors undergraduates at the University of Nevada, Reno (UNR). The lesson comes last in a unit including resource instruction, search practice, and culminating in the reading and evaluation of a scholarly work. This sequence of instruction is significant because it comes close to providing a full-circle model for information discovery. Its components can easily be adopted or modified for one-shot information literacy orientations when it is appropriate for students to learn about analyzing scholarly articles and citation tracking. Mark Emmons suggests similar assignments among other recommended information literacy activities for college and university freshmen (Emmons, 2013, pp. 38, 41).

My course, Honors 235: Research in the Information Age, is a one-credit elective in UNR's Honors Program. It is designed to introduce students to general research concepts, as well as search processes, information sources, and research management tools needed to conduct a thorough literature review for a senior thesis in their discipline. The course is taught mostly online using UNR's licensed Blackboard platform, but it has three in-class meetings: the introduction to the course, a session on Endnote Web, and the discussion exercise described below. Students receive letter grades. Librarians have taught this course since its inception in 2010.

The first lessons in the course introduce students to models of research, framing questions, the university library's website, the library catalog, a web-scale search interface (Summon™, which we have branded as OneSearch), and selected discipline-specific and multisubject databases. One of the Blackboard modules includes a video showing both Thomson-Reuters' Web of Science and Google Scholar, focusing on their ability to track citing articles (http://imedia.unr.edu/libref/235honors/wok/wok.html). The accompanying assignment requires students to search Web of Science using keywords related to their research interest and then identify the most frequently-cited articles in their search results. The objective is to alert students to the existence of citation trails and to teach them how to follow citing references.

About halfway into the semester, following the library and database instruction, students read an article by sociologist Gordon Gauchat, titled "Politicization of Science in the Public Sphere: A Study of Public Trust in the United States, 1974 to 2010" (2012). Gauchat examined responses collected over time to a question in the General Social Survey (GSS):

> I am going to name some institutions in this country. As far as the people running these institutions are concerned, would you say you have a great deal of confidence, only some confidence or hardly any confidence at all in them [the Scientific community]? (Gauchat, 2012, p.6).

I chose this piece because I thought a social science article on a timely topic would be more interesting and readable to students in a variety of majors than a scientific article. The article follows a common format, i.e., problem statement or hypothesis, background, including literature review, study design, implementation, discussion of results, and conclusions. I assigned the reading a week prior to the in-class discussion, after which, the students would complete a related online assignment.

For the first twelve minutes of the classroom session, we reviewed a search assignment which had presented some problems, largely due to students' interpretation of a complex interface. After completing that segment, I divided the class into five groups of six or seven members each and explained their task, which was also on a worksheet I gave to each group.

The assignment was stated in the following way:

> For ten minutes, discuss the questions below and answer them in writing. If necessary, search the Web and library databases. Appoint a spokesperson who will summarize your group's answers.
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> We'll spend the remaining time on group presentations. Your spokesperson will have about three minutes to discuss the following:
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> 1. Identify the author's argument (the first group to report explains this; later groups may add or state different points)
>
> 2. How would you look for other viewpoints about the issues the author discusses?

There was a gratifying din in the small room; the majority of the students engaged with their group immediately. I reconvened the class once the discussions had run their course. Students found it easy to answer the first question. Gauchat tested Mooney's hypothesis "that conservatives have become increasingly distrustful of science" (Gauchat, 2012, p.168) looking for trends in the General Social Survey to fall into one of three frames (the cultural ascendancy thesis, which posits that trust in science has increased over time; the alienation thesis, which states that trust in science has decreased; or the politicization thesis, that trust has varied according to political orientation). He found support for the politicization thesis, since conservatives experienced the greatest decline of confidence in science from 1974 until 2010. I did not expect some of their answers to the second question. Most said they could look for other viewpoints in conservative magazines or blogs. While this was the focus of their verbal reports, I saw a wider range of answers on their completed worksheets: Four of the six groups mentioned reading sources in the author's bibliography. Since none mentioned looking for literature citing Gauchat's article, I concluded the class by showing citing reference to the article in Web of Science and Google Scholar. This showed them how to track the discussion among researchers, in contrast to finding out attitudes about science in blogs, magazines, and similar forums. We completed the lesson in slightly less than forty minutes.

The students responded to one more question on the course Blackboard site: "Are the author's conclusions warranted? Why or why not?" Twenty-eight of the thirty-three students considered Gauchat's conclusions warranted, largely due to the strength of his analysis. Five students believed the conclusions were unwarranted and driven by his political bias against conservatives.

I see several positive points about this assignment: Students read and analyzed a typical scholarly article and saw another application of tracking a citation in scholarly literature. On the negative side, some students seemed to judge the article in the same way they would judge an opinion piece that was not supported by data. Since I

was concerned that some of the students thought the author's claims for politicization of public attitudes about science were too broad, I sent a message to the class:

> Everyone,
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> Thanks for your thoughtful discussion postings about the article on the politicization of science. Many of you mentioned weaknesses, both in the study and the author's analysis. First, the question from the General Social Survey was narrowly framed: 'I am going to name some institutions in this country. As far as the people running these institutions are concerned, would you say you have a great deal of confidence, only some confidence or hardly any confidence at all in them [the scientific community]?' (Gauchat, 2012,p.172). He noted the limitations of analyzing such a question: 'Nevertheless, this study has numerous limitations. First, confidence in the scientific community is a single outcome used to assess public trust in science over time. In particular, one issue is how the public interprets the 'scientific community' and the 'people running these institutions.' Based on previous research, it is unlikely the public has uniform ideas about 'what science is' (Gauchat, 2012, p.182).
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> As many of you mentioned, more in-depth research is needed on public trust in science. That's why we looked at Google Scholar and the Web of Science to identify scholarly studies that have cited Gauchat's article. Gauchat himself noted that 'Future research should examine the politicization of public beliefs about science in more detail. The addition of the NSF's [National Science Foundation] Science Indicators' module to the GSS should spur greater sociological interest in public understanding of science as well as provide a wealth of instruments to probe these issues. Future research may be able to identify which aspects of science pose concerns for conservatives. Qualitative studies in which small groups of people discuss science, science policy, and science controversies would be particularly illuminating'(Gauchat, 2012, p.184)
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> Again, I appreciate your insightful comments. Have a great week.

These lessons took two weeks of a semester long course, but librarians delivering one-shot orientations could recommend assigning an article to read before visiting the class and then discuss it and use citation tracking during the classroom visit. I think the assignment is valuable and plan to use it next semester, with some modifications. A colleague of mine suggested assigning three articles on the same broad issue: one from the sciences, one from the humanities and another from a social science discipline. Another suggested I discuss blogs as another component of research communication, particularly since neither Web of Science nor Google Scholar covers them. Both ideas have value, although the former is more challenging since it would likely require an additional week in the course schedule. Alternatively, I might choose a different empirical article from the social sciences.

Currently there is no summative assessment of how this course has influenced what students know and do, but I am conducting a citation study of Honors theses to look for evidence. I hope engaging students in the process of analyzing scholarly literature will

lead them to apply the process in the future, whether they are conducting literature reviews for their own research or evaluating research claims reported in popular media.

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