

## WEB CRED OR WEB CRUD?

Helping your students assess website credibility

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Teaching college-level science, or any discipline, in the Internet era has new challenges for both faculty and students. Used properly, the Internet is a highly efficient means of hunting and gathering information. Search engines, websites such as PubMed, and online access to university library resources make it relatively easy to conduct authoritative academic searches from the home computer. However, many students enter college more familiar with blogging and sites such as CNN, YouTube, Facebook, and Wikipedia. These sites offer personal viewpoints, entertainment, news, and a mixture of real and questionable information. When asked to complete assignments by providing reliable, scholarly information, students are often unprepared to select credible Internet sources.



Students are more likely to successfully complete these assignments if they receive information literacy instruction aimed at evaluating Internet sources. Over several semesters of teaching human biology and freshman seminar courses at IUPUI, we have developed a Web Credibility Assessment Instrument, “Web Cred.” Web Cred is designed as an evaluation process that college students can apply to websites when looking for valid sources of information for their assignments.

The Web Cred exercise requires students to analyze websites based on the following criteria:

- **Purpose:** Is the site’s stated purpose fulfilled?
- **Authority:** What are the credentials or expertise of the site’s authors or owners?
- **Scope:** Did the website provide accurate information related to the purpose?
- **Audience:** Is the intended user a college student, research expert, general reader, etc.?
- **Format:** Is the site’s overall design and arrangement well-written and easy to use?
- **Miscellaneous:** Are the “bells and whistles” (e.g., video content) helpful or distracting?

Students evaluate a website against each criterion by answering 3–4 related questions. For example, under **Authority** students are asked to consider:

1. Do the authors hold academic degrees from noted universities; are they affiliated with prestigious organizations or on a board of directors?

2. Is the information unbiased, fair, and objective?
3. Are the references up-to-date?

For the Web Cred exercise, students are instructed to compare two websites dealing with the same topic but ending with different domains (.gov, .edu, .org, .com). Online dictionaries, encyclopedias, and Wikipedia may not be used. Students start by picking their search word, which is either course-specific or of personal interest to the student. For example, in the human biology course, the search words must be either clinical conditions or nutritional supplements (nutriceuticals). Students enter their word into any search engine, find two websites, evaluate each site, and submit their results. The results are reported using a five-point Likert Scale system (the common “check-the-box” answer format) with 1 representing the lowest score (not credible, poor quality, ...) and 5 the best (well-designed, credible, ...). If the question is not applicable to the site, it earns a 0.

When we use this exercise in a freshman seminar, we provide the students with several pre-selected websites that span the credibility spectrum. Groups of three or four students evaluate the websites, discuss each criterion and then present their judgments and reasoning to the class. Once every group has reported, we let the students analyze the results and compare credibility rankings.

Overall, we have been very satisfied with the student response to this exercise and feel it has the potential to help them perform better on college-level research and composition assignments. It promotes critical thinking and is a life skill they can apply anytime they are looking for information over the Internet.

Although this exercise began as a teaching tool, we decided to take it a step further by examining the data that students generate. We looked at the results from two viewpoints: Is there a consistent correlation between the site’s top-level domain (.com, .edu, .gov, .net, and .org) and the site’s perceived credibility? And, how do students use what they learn in the exercise to assess credibility?

To study the first question we first compared the total scores for each website turned in by the spring 2008 human biology class. No .net sites were evaluated by the students. Spring 2008 results indicated the following degrees of credibility from most credible to least credible: .gov, .org, .com, and .edu. It should be noted that .com precedes .edu in a median calculation, despite many students’ expressed doubts about the reliability of a .com (see below). However, the point difference

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between the .com and .edu medians is small and is based on 32 evaluations submitted for .com sites and only five evaluations submitted for .edu's. More data collection and statistical analysis is required to test the domain/credibility hypothesis. We will also be evaluating the data from the freshman seminars, where the search is based on personal interests rather than health.

To answer the second question, we asked the human biology students in the fall semester of 2007 what impact they thought the exercise would have on their health-related Internet searching in the future. Of the 341 students in the class, 190 had elected to do the extra-credit Web Cred exercise, and 135 of those responded to the assessment question "Having completed the Web Cred exercise, which two of the criteria that you used might you use when you are looking for good health-related websites?" This is how they responded:

- Sixty percent felt that a credible website should have authors who have academic credentials or the site should be hosted by a well-known organization, such as the March of Dimes.
- Thirty-eight percent said having up-to-date references or a recent site update made a site credible.
- Twenty-six percent would select a site based on the domain. Most preferred .gov, .edu, or .org sites and said they were less likely to choose or trust a .com site.
- Twenty percent would choose a site based on design, ease of use, and the presence of a search bar or site map.
- Nineteen percent focused on the site's scope and depth of content.
- Several students felt that advertising and pop-ups were very negative features, although others felt that ads sponsored by organizations like the American Diabetes Association were desirable.

Fifty-three of these students also completed a survey assessing their perception of the effect the exercise had on their critical thinking skills. All of the respondents felt it had increased their critical thinking skills; sixty-eight percent felt it required them to synthesize new and complex interpretations; ninety-one percent thought it made them critique the data and assess the soundness of the conclusions presented; and ninety-three percent felt the exercise asked them to apply concepts to practical problems and new situations.

As a classroom exercise, Web Cred is versatile, can be used in a wide range of courses, and is a straightforward process that students can follow on their own.

Although it has been an optional exercise in human biology, it may be required this fall—perhaps a lesson in evaluating web credibility is more likely to be remembered and used than the order of the cranial nerves?

*Editor's Note:* Corinne Ulbricht teaches Embryology, Human Biology, and Introductory Principles of Genetics at Indiana University-Purdue University, Indianapolis. She is also actively involved in first-year seminars for science majors. Edward Gonzalez is an UIPUI science librarian who teaches information literacy and library competency in first-year seminars. He is also the director of a summer research program designed to increase minority participation in science and engineering.

## PRACTICE ANATOMY LAB (PAL) 2.0: A COMPREHENSIVE AND ENGAGING "OUT-OF- THE-BOX" ANSWER TO DIGITAL TECHNOLOGY IN THE ANATOMY LAB

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Today's students are the first generation of a quickly developing "online society." They understand digital faster and easier than paper, but many teachers are unprepared to effectively use digital technology to help students deal with information overload and learn in a style that is efficient and effective for today's technology-savvy students. We've seen online commerce successfully mastered in recent years, but have been slow to completely assimilate technology into Human Anatomy labs and classes. Practice Anatomy Lab 2.0 (PAL), developed by Pearson/Benjamin Cummings, finally provides the vehicle for integrating interactive digital technology into learning anatomy, giving students an accessible and meaningful digital learning experience.

PAL enables students and teachers to effectively bridge the gap between traditional study methods and digital teaching and learning. To help students create a link between digital and "real" labs, I have broken my labs into three groups, two with "real," hands-on lab materials, and the third using the computer technology. This has enabled me, and our lab instructors, to see where and how students' knowledge falls short and where their knowledge excels compared to using only real human specimens. Additionally, I have found that PAL is compatible with student lifestyles, effectively helping them with time management and information flow.

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