Biology and the Library: Creating a Model Assignment for Information Literacy in the Life Sciences

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The Assignment and Instruction

Mini Literature Review

• Current life sciences topic
• Major written assignment

Information Literacy Lab

• Basic research and assessment skills needed for assignment
The Collaboration

Susan’s Big Idealistic Fantasy

• College-wide essay contest on environmental science topics

The Reality

• Partnering with Joe and his BIO152 students (Modern Biology II)
• Single assignment and lab-length one-shot for promoting information literacy in the sciences
Why emphasize IL in biology?

- Increased amount and accessibility of info
- Specific science communication format
- Lexical density (= content : grammar)
- Foster skills needed later
- Life sciences issues affect everyone
- Cultivate scientific literacy
Information Literacy in the Sciences
Literature Review Assignment

Course: BIO152 - Modern Biology II

• College-level, major’s course
• Previous assignments:
  • Library research, science media comparison
  • APA format required

Assignment: 3 part literature review

1. Literature search and evaluation
2. Argument synthesis and support
3. Critical assessment of research
Literature Review Topics

Choosing Topics:

- 13 issues with popular appeal and recent media
- Broad enough to be individually refined

Refining Topics:

- During IL lab after initial search
- Another important IL skill

The Sixth Mass Extinction

- Metrics
- Cause
- Taxon
- Ecotype
- Location
- Frogs
The Info Lit Lab

Activities

• Lab activity 1: scholarly & popular analysis
• Structure of a research article
• Working from a background source
• Database demos
• Lab activity 2: correcting database citations
• Google Scholar
• Database controlled vocab
• Workshop time:
  Lab activities 3 & 4: documenting research process; paraphrasing content
Other Librarian-Delivered Instruction

Libguide
- ‘Informally’ screencasted tutorials

Phone/Email/office visits
- One email question

Reference Desk?
Recipe for Effective Info Lit Instruction

• Well-designed assignment
• Concrete, immediate application; not abstract or prophylactic (Blakesley 2003)
• Faculty involvement in the session (Small, et al. 2004)
• Librarian/library visibility on assignment instructions, syllabus, and in the course (Lee 2012)
ACRL Info Lit Competency Standards for Science, Engineering, and Technology

- 2006, ACRL Science & Technology Section
- Standards similar to the Info Lit Competency Standards for Higher Ed
- Performance indicators and outcomes specific to scientific inquiry
What is a literature review?

In order to be considered by the greater scientific community, scientific research must be reviewed by other scientists and then published in a scholarly (or ‘peer-reviewed’) journal. This process is very different from the publication of information in ‘popular’ sources (e.g. books, news media, websites), which do not require formal peer review. There are many scientific journals, and they vary in discipline, scope and circulation. Scientists researching a particular topic may draw on the existing published research for insight. In turn, their newly published research is added to the body of knowledge on that topic.

As the published research on a topic increases over time, it is useful to organize this information into a single publication called a literature review. The goal of a literature is to gather, organize, explain and assess the previously published work on a topic. Like research articles, literature reviews are published in scholarly journals…

For this assignment, you will be performing a formal, but non-comprehensive, lit review on a specific, current topic in biology. You will be given class time at the library to conduct your literature search and specific instruction on searching for and evaluating research articles.
A Gap in the Standards?

Lascar & Mendelsohn (2011)

“Th[e] ability to distinguish between science, nonscience, and pseudoscience is a crucial information literacy issue; yet for all the excellent goals and objectives in the... *Information Literacy Standards for Science and Technology*, it is the one skill not addressed” (356).
Assessment for Credit in BIO152

- ‘Knowing vs. understanding’
- Argument development and support
- Paraphrasing
- Mechanics - citation formats
- Minimum length
- Plagiarism
- Time, effort and engagement
Time and Effort

“How I felt at the end of this assignment.”
Assessment

What did they cite?

• Peer-reviewed? YES!
• Original research? YES!
• Popular sources were used appropriately
• Currency: very good
• Journal overlap: very little
• Article overlap: very little
Documentation (APA 6th)

280 reference list citations
36 citations were completely correct (12.8%)

Common format problems:
- italics, punctuation, capitalization, line spacing, word spacing, hanging indent, numbered not alphabetized, centered, j abbrevs, how to handle multiple authors, confusion with MLA
Documentation (APA 6th)

- If no DOI, what to put? “Retrieved from...?”
  - Elsevier & Ebsco
  - permalinks
  - Databases: Medline, Academic Search Complete, Environment Complete, Science Direct

- Left out journal titles
- Wrong years
- Parentheticals: listed *all* authors
Challenges with documentation

Confidence: high; skills: low

(Salaway 2008; Schilling & Applegate 2012; Gross & Latham 2009)

Attitudinal measures: is it cheating?
“a lot of times I have thought [sic] I did it right but it seems like i was wrong”

(n=100)

4% very confident (can create citations w/o citation generators)

41% confident (can use citation generators and fix mistakes)

41% somewhat confident (sometimes need assistance and unsure how to fix mistakes)

14% not confident (not familiar with citing sources and frequently need help)
100-level Info Lit Assessment, Libraries Info Lit Committee, 2013

(n=336)

V.3.a: Student demonstrates an ability to select and consistently apply a citation style

35.7% approached meeting the standard (citing with several errors)

29.2% did not meet the standard (5 or more errors or not citing at all)
SCCC Academic Integrity Committee, 2011 Questionnaire

(n=1662)

“How serious do you consider paraphrasing or copying material from the Internet without citing it?”

19% not cheating
45% trivial cheating
36% serious cheating

“How serious do you consider fabricating or falsifying a bibliography?”

19% not cheating
51% trivial cheating
30% serious cheating
Next Steps

• Documentation & paraphrasing: how to help?
• Lab report concept

Standard IV.5.a-c: “Maintains a journal or log of activities related to the information seeking, evaluating, and communicating process. Reflects on past successes, failures, and alternative strategies. Applies devised improvements to subsequent projects.”

• Open access, free, WWW-based resources
• More assessable outcomes
• Broader or more deeply integrated implementation
• Tertiary>>primary source assignment: “Science Seekers”
• Science-media comparison critical thinking question


http://libguides.sunysuffolk.edu/WoodNapolitano