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Introduction

Currently, college students are being presented with a wide array of information. This wealth of information may come from such sources as article databases, books, serials, or the often unregulated Internet. Thus, teaching college students how to evaluate information has become a crucial role for the modern instruction librarian. Unfortunately, most of these efforts seem to focus on Web evaluation with little being done to address print sources. Moreover, efforts that address print evaluation are usually limited to the typical journal evaluation model, which places too much emphasis on fallacious criteria like a source's authority or reputation, and not enough emphasis on the importance of source content.[1] Indeed, if librarians are charged with creating information literate students who can truly evaluate "information and its sources critically",[2] then librarians need to move beyond old models of information evaluation and into uncharted territory. What follows is our attempt to do exactly that:

Evolution of an Idea

Developed by Dr. Wayne Bartz, the original CRITIC Acronym is a simple methodology designed to help students remember the scientific method. To reinforce student learning of this methodology, Bartz developed an assignment that requires his students to use CRITIC to evaluate paranormal claims in the media. Together, the CRITIC Acronym and assignment are a

practical and effective way to teach students how to begin thinking scientifically about all matters.[3]

Soon after Bartz published his article on CRITIC, we were asked by Butler University's College of Business Administration to design a series of instruction sessions for their newly created MGI99 Freshman Experience. Among the requested learning objectives was an emphasis on teaching students how to critically evaluate information. Remembering the Bartz article, we thought that the original CRITIC Acronym had a role to play in this instruction but we would certainly have to link it to the information literacy standards.

The Information Literacy Version of CRITIC

Our version of CRITIC[4] is based on Standard Three of the Information Literacy Competency Standards for Higher Education, and draws on elements that are common to science and philosophy. This integration changed the original CRITIC into a step-by-step method which students can use to evaluate and select credible sources:

Claim?
Role of the claimant?
Information backing the claim?
Testing?
Independent Verification?
Conclusion?

(Note: Our last three words vary slightly from Bartz's original acronym.)

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Claim:

The student's first step is to describe what the source saying. Is the source's claim both *timely* and *relevant* to his/her particular question or thesis? Has the source presented the claim in a clear and reasonable manner, or is their evidence of motivationally biased language? If the source is overtly biased or totally unintelligible, the student may have to reconsider using it to support his/her thesis.

Role of the Claimant:

Is the author of the information clearly identifiable? If so, can his/her credibility be established? Also, based on the prior examination of the *Claim*, is there any reason to suspect bias on the part of the author? For example, could a concern for profits and sales cause the CEO of an automotive company to state that her company makes the most reliable cars in the world? Here the librarian can introduce students to motivational biases that cause claimants to mislead audiences. Such examples of bias are political, religious, philosophical, cultural, and monetary.

Information Backing the Claim:

What information does the source present to back its claim? Is it information that can be verified, or does this source rely on testimonial or anecdotal evidence? If this source presents original research, does the source explain how the author gathered his data? If the source is an article does it cite references and are they *credible*? If the source is a journal article is the journal peer reviewed? Here the librarian can introduce the role of edited publications (e.g., journals, magazines, and newspapers), and how this editorial process is a form of quality control. Finally, the librarian should stress the skeptic's rule: *extraordinary claims require extraordinary evidence.*

Consider these examples:

Example 1:
The reason that Brand X's cars are more reliable than similar cars in its class is due to the computer automated assembly line that Brand X uses.
Example 2:
The reason that Brand X's cars are more reliable than similar cars in its class is due to utilizing secret alien technology that only Brand X is privy to.

Example one presents a *reasonable* claim that could be backed up with *ordinary* evidence. On the other hand, example two presents an *incredible* claim that would require some *extraordinary* evidence to prove.

Testing:

How might we test the claim that the source is making? Here it is important to stress that claims which are not testable should not be treated seriously. For example, in December of 2002 a fringe cult called the Raelians made the claim that they had successfully cloned a human. Not only did scientists envision a way to test the Raelians claim, but they actually made the offer. However, despite this offer, the Raelians declined DNA testing of the alleged clone and its mother, thus, this claim cannot be treated seriously.[5] Instructors and librarians should make it clear that a detailed analysis or actual testing of the information may not always be possible or practical; however, instructors should still stress the importance of devising ways to test the claim. Finally, the course instructor may use this as a transition point to discussing statistical analysis, or the basic elements of experimental design.

Independent Verification:

Here the librarian can introduce the basics of scholarly research and should stress the following: can the original claim be verified in a reputable information source? Does this source support or refute the original claim? After conducting a review of the literature, what do the *experts* have to say about the claim? Moreover, are the experts truly *experts* on the topic that they are talking about, or are they presenting opinions about a topic that they are not qualified to discuss? This step may also include speaking to professors, librarians, or someone in the actual business or industry. Finally, we share with students that if numerous experts confirm the original claim, then the original claim is *probably* true. If numerous experts dispute the original claim, then the original claim is *probably* false. If the experts do not agree, then the claim that your source is making is, at best, inconclusive. Finally, sometimes the experts will conclude that there is not enough information to reach a consensus either way. In this instance, students should suspend their judgment until they can find more information.[6]

Conclusion

What is the conclusion about the source? Taking into account the first five steps of CRITIC which apply to your source, make a judgment: should this source be used in a paper or report? Remember: information evaluation can be very subjective, so it is very important to consider all of the ascertainable facts. To this end, the librarian should stress that the first five steps of CRITIC need to be looked at as a whole before students can make a final decision about their source. Also, not all information sources can be examined using

each of the five steps (e.g. stock data). If this happens to be the case, students should then consider the steps that do apply to their particular source. Finally, it should be noted that despite their best application of CRITIC, students should always be prepared for undiscovered information that may later invalidate their source.

Reinforcing CRITIC

The CRITIC Acronym can stand alone but is most effective when combined with the CRITIC Exercise.[7] The following is a brief description of this exercise: Students are divided into groups and given a pre-selected source. Using an abbreviated version of the CRITIC Acronym[8] each group is required to evaluate their source for credibility, and report to the class whether this source should be used to support the topic of a fictitious paper. To help share group findings with the entire class, each group records their results on a large sheet of paper. They can then display these results at the front of the room (e.g., on an easel, taped to board) while reporting out to the class.

Keys to Making the Exercise Work

1) To allow enough time for the exercise, students should have read the CRITIC Acronym handouts prior to class.
2) Prior to the exercise, one student from each group should be assigned the duty of group recorder, and one student from each group should be assigned the duty of group spokesperson.
3) Topics that are controversial or that have the potential for bias are best suited for this exercise, as they stand the greatest chance of generating a diversity of source content.
4) The librarian needs to monitor time throughout the in-class activity. Time management is critical for allowing groups enough time to complete their tasks and report back to the class. Also, time needs to be allotted for questions and answers or any other reinforcement activities that the librarian or instructor deems appropriate.
5) The fictitious topic needs to be widely covered by multiple sources (e.g., journals, magazines, newspapers, books, Internet sources), familiar to students, and relevant to course content.
6) The librarian or faculty member conducting the exercise should be familiar with the source content and the fictitious topic. This familiarity is critical to the instructor being able to guide the students' discovery learning.
7) Each group source should be linked to at least one learning outcome (See Appendix 1). This

outcome is then used by the librarian as the central discussion point for each source.
8) To expedite the process, information that is relevant to the topic should be highlighted in each source. This ensures that students focus on relating source content to their topic, and also ensures that groups complete the task on time.

Final Thoughts

What we have presented here is our attempt to move information evaluation beyond the old models and into relatively uncharted territory. Though our efforts are very much a work in progress, they have been met with positive feedback—especially from the faculty that we work with. So much so in fact, that many of these instructors have created their own CRITIC assignments. In one example, students are required to compare and contrast two Wall Street Journal articles using CRITIC. In another, students are required to use CRITIC to justify the choice of sources on their final project. Finally, one professor even includes questions that pertain to CRITIC on her final exam. Therefore, based on these examples, we feel assured in recommending the CRITIC Acronym and CRITIC Exercise. Taken together, both are simple and effective ways to introduce students to the basics of information literacy.

NOTES

1. For an example of a fraudulent journal article that would have passed traditional journal evaluation criteria, see: University of Nebraska. 2000. *The Sokal Hoax: the Sham That Shook the Academy*. Lincoln: University of Nebraska Press.

2. Association of College and Research Libraries (ACRL). January 18, 2000. "Standard Three of the Information Literacy Competency Standards for Higher Education."; available from http://www.ala.org/Content/NavigationMenu/ACRL/ Standards_and_Guidelines/Information_Literacy_Co mpetency_Standards_for_Higher_Education.htm; accessed 4 November 2003.

3. Wayne R. Bartz. 2002. "Teaching Skepticism via the CRITIC Acronym and the Skeptical Inquirer,. *Skeptical Inquirer* 26 (September/October): 42 – 44.

4. Due to space limitations we could not provide copies of our handouts. To view the CRITIC Acronym handout, please go to the following Web site: http://blue.butler.edu/~bmatthie/loex04.html

5. Steve Mirsky. 2003. "The Rael Thing," *Scientific American* 288 (March): 110.

6. Our guidelines for considering expert testimony were adapted from Bertrand Russell's famous maxim on expert testimony. See: Bertrand Russell. 1928. *Sceptical Essays*. New York: W. W. Norton & Company, Inc., 12-13.

7. Our idea for a source comparison activity stressing potentially biased sources was partially inspired by a similar activity which Bertrand Russell proposed. See: Bertrand Russell. 1928. *Sceptical Essays*. New York: W.W. Norton & Company, Inc., 169 - 170.

8. Due to space limitations we could not provide copies of our handouts. To view all CRITIC handouts go to the following Web site: http://blue.butler.edu/~bmatthie/loex04.html

Suggested Readings

Brooks, Jacqueline Grennon, and Brooks, Martin G. 1993. *In Search of Understanding: the Case for Constructivist Classrooms.* Alexandria, VA: Association for Supervision and Curriculum Development.

Fleming, Neil. 2001. *Teaching and Learning Styles: VARK Strategies.* Christchurch, New Zealand: Neil Fleming.

—Brad Matthies and Jonathan Helmke—

Sample Topic, Sources, Learning Outcomes, and Miscellaneous

Sample Topic

I am writing a paper that investigates Wal-Mart's Made in the USA Campaign, which Wal-Mart promoted during the early nineties. Using CRITIC, please tell me whether I should use your group's source in my paper.

Sample Sources and Learning Outcomes

1. Arnold, Stephen J, Kozinets, Robert V., & Handelman, Jay M, "Hometown. Ideology and Retailer Legitimation: The Institutional Semiotics of Wal-Mart Flyers," *Journal of Retailing* 77, no. 2 (2001), 243 (29 pp.). Database online. Available from Business Source Premier Business Source Premier (accessed March 17, 2004).

Learning outcomes: this source serves as an introduction to peer review and the importance of time management when conducting scholarly research (e.g., allowing enough time for finding, evaluating, and synthesizing scholarly articles).

2. Excerpts from the *PBS Store Wars* Web site which discuss Wal-Mart's Made in the USA Campaign. Available at: <http://www.pbs.org/storewars/stores2.html>.

Learning outcomes: despite the excellent reputation of the Public Broadcasting Service, this is an example of a Web source that does not cite where their information is coming from (Excerpt from Web site: "85% of the store's items are made overseas."). This statistic illustrates that when evaluating information for credibility, more criteria need to be considered than just the reputation of the source.

3. Excerpts from the "Forward Looking Statements" section of Wal-Mart's past
annual reports. Years sampled include: 1989, 1993, 1998, 2002, & 2003.

Learning outcomes: excerpts from these sources illustrate that Wal-Mart promoted a buy American campaign in the late eighties and early nineties, which implied the creation of more American manufacturing jobs. This example shows that despite what one source may say about a claim, other sources may serve to invalidate this claim (i.e., the other sources in this activity cast doubt on Wal-Mart's claim). Also, for many students, this example serves as their first introduction to an annual report.

4. Kernaghan, Charles. "Sweatshop Blues," *Dollars & Sense*, 222, (1999), 18 (4pp.).
Database online. Available from Business Source Premier Business Source Premier (accessed March 17, 2004). Note: included with this article are excerpts from the Dollars & Sense home page which provide background information about the magazine.

Learning outcomes: this source is used as an example of a potentially biased source. Used alone, most students choose not to call this source credible. But, after hearing about other sources that seem to back up this source's claims, many students change their minds. Thus, this source is useful in illustrating that when evaluating information for credibility, the answer is not always apparent or easy to find.

5. Zweig, J. "Expand it Again Sam," *Forbes*, 146, no. 1, (1990), 106 (1pp.), and The
Associated Press. "Retailers' Sales Gain," *New York Times*, sec. D5, February 1, 1985. Both available from LEXIS/NEXIS Academic Universe (accessed March 17, 2004).

Learning outcomes: these sources are used to stress the importance of matching sources to the research topic. Since neither is relevant to the topic, these sources should not be selected—regardless of their credibility.

Time Line (75 minute session)

Five minutes for introduction, 20 minutes for groups to complete missions, five minutes per group (25 minutes total) to report back (including instructors' comments), 15 minutes for questions and answers or reinforcing activities, ten minute safety gap. Total time: 75 minutes. Note: for 50 minute sessions simply omit the 15 minute question and answer period and reduce the safety gap to five minutes.

Equipment

One large pad of paper (27" X 34"); four markers; copies of the groups' sources; copies of the in-class exercise; and tape or an easel.

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