

3-16-2010

## Information Literacy Rubrics within the Disciplines

Britt A. Fagerheim

Utah State University, [britt.fagerheim@usu.edu](mailto:britt.fagerheim@usu.edu)

Flora G. Shrode

Utah State University, [flora.shrode@usu.edu](mailto:flora.shrode@usu.edu)

Let us know how access to this document benefits you.

Follow this and additional works at: <https://pdxscholar.library.pdx.edu/comminfolit>

 Part of the [Information Literacy Commons](#)

---

### Recommended Citation

Fagerheim, B. A., & Shrode, F. G. (2010). Information Literacy Rubrics within the Disciplines. *Communications in Information Literacy*, 3 (2), 158-170. <https://doi.org/10.15760/comminfolit.2010.3.2.78>

This Research Article is brought to you for free and open access. It has been accepted for inclusion in *Communications in Information Literacy* by an authorized administrator of PDXScholar. For more information, please contact [pdxscholar@pdx.edu](mailto:pdxscholar@pdx.edu).

# INFORMATION LITERACY RUBRICS WITHIN THE DISCIPLINES

Britt A. Fagerheim  
Utah State University

Flora G. Shrode  
Utah State University

## ABSTRACT

This paper reports the results of a pilot project in which the authors developed rubrics for assessing information literacy in the disciplines and examined whether rubrics are a feasible and effective method for librarians to assess their students' information literacy skills. We developed rubrics for capstone classes in chemistry and psychology based on benchmarks appropriate for each major. We then used the rubrics to assess the research and information literacy skills the students displayed in their papers or projects.

## INTRODUCTION

This research project addresses an ongoing need at Utah State University and many other universities to assess student learning outcomes. Currently librarians at Utah State University (USU) use various assessment methods to evaluate students' information literacy skills. Librarians compare results from pre and post-tests, examine student's written products, such as bibliographies and research papers—primarily from English 1010 and 2010 classes,

and administer student evaluations in order to gauge the effectiveness of library instruction sessions. We have also begun using rubrics to evaluate students' information literacy skills. Rubrics are scoring mechanisms that instructors can use to define a range of criteria to assess student work as evidence of learning. Rubrics typically contain a defined set of benchmarks for what the student should know or be able to do.

This paper reports the process and results of a

pilot project to use rubrics to assess information literacy in the disciplines. The authors developed rubrics for capstone classes in chemistry and psychology, based on benchmarks appropriate for each major. They then tested the feasibility of using the rubrics to assess the information literacy skills students displayed in their papers or projects.

The long-term goal of the project is to determine the viability of librarians providing rubrics to academic departments and adapting them in collaboration with teaching faculty. Individual faculty members or departments could then analyze their students' work according to a tested and standard format. Ideally, creating and using the rubrics would establish a standard method of assessing citations and other elements of students' work to evaluate research skills and abilities to analyze information, which are required for academic success and life-long learning in the 21<sup>st</sup> century.

At this point in the project, the authors sought to evaluate the feasibility of librarians developing and using discipline-specific rubrics to assess students' information literacy skills as reflected in a research project for capstone courses.

## REVIEW OF LITERATURE

Applying rubrics to assessment of research skills and information literacy efforts is fairly new in academic libraries, as judged by the literature (Oakleaf, 2008). There is, however, a selection of studies reporting the use of rubrics to assess components of information literacy. Rubrics have been used to evaluate an inquiry-based first-year library instruction program (Emmons & Martin, 2002). The authors describe the process of creating a rubric to assess research essays from an introductory English class. The authors sought to review the bibliographies for the number, variety and accuracy of sources as well as the ways the students were using the cited sources in their papers. The authors created a matrix-style rubric based on the above criteria. The rubric furthers the authors' goals of quantitatively assessing the bibliographies and establishing a method for

assessing the students' papers and baseline data. Rubrics were also used to assess projects from a required freshman course with a significant information literacy component (Knight, 2006). Knight created a rubric in order to evaluate the annotated bibliographies created by students in an introductory English class and found that a rubric can be useful for assessing students' information literacy competencies. Knight also found, however, that the creation and application of rubrics can be time-consuming and that rubrics are not ideal for assessing all types of criteria. Diller and Phelps (2008) assessed elements of e-portfolios using rubrics. Librarians participated in a university-wide assessment of students' e-portfolios, using rubrics that were created by a university committee to evaluate the students' e-portfolio materials according to a set of outcomes. The authors reported the results of using the rubric to assess the communication and information literacy outcomes within the e-portfolios. They found that the reliability tests confirm the value of using rubrics to assess student work. Rubrics were successfully used to assess the outcomes of a for-credit library course (Choinski, Mark, & Murphey, 2003). The authors describe the process of using a rubric to evaluate students' reflection papers. A rubric used by the course instructor to assess students' papers assessed the students' reflection papers for outcomes tied to the Association of College and Research Libraries (2000) Information Literacy Competency Standards for Higher Education. The authors found that several rubric items needed to be revised, but that the process was not difficult and that use of rubrics was an effective assessment method for their instruction program. D'Angelo (2001) described using a rubric as one element to assess the learning outcomes of a course in Integrative Studies. The rubric was used to score student essays according to specified information competencies. The authors conclude that the use of a pre- and post-assessment tool and the rubric yielded a large amount of useful data. Lastly, Oakleaf (2007) examined the reliability and validity of rubrics in support of evidence based decision-making. Participants, including librarians, used a rubric to evaluate an

information literacy tutorial and their scores were used to identify whether participants attained the designation of expert rubric users. The majority of participants did not attain the rank of expert rubric user, and Oakleaf identifies the likely issues they encountered. She notes, however, that these issues should be able to be overcome with additional training.

## METHODOLOGY

The authors developed rubrics for capstone classes in two departments: Chemistry and Psychology. The goal was for the rubrics to guide the assessment of the research and information literacy skills the students displayed in their papers, projects, or portfolios, as judged by benchmarks appropriate for their major.

### *Chemistry*

The authors began by collecting existing benchmarks. For the chemistry benchmarks, the American Chemistry Society (ACS) Division of Chemical Information document "Chemical Information Retrieval," the Special Libraries Association (SLA) Chemistry Division Ad Hoc Committee on Information Literacy's (2007) Information Competencies for Chemistry Undergraduates: the Elements of Information Literacy, and the Information Literacy Competency Standards for Higher Education from the Association of College and Research Libraries (2000) were instrumental in providing current benchmarks for chemistry graduates. Based on the above resources, the authors outlined the following benchmarks:

Students must show evidence of being able to:

1. Effectively search chemical literature and retrieve background information relevant to the purpose.
2. Use Chemical Abstracts and other databases to find empirical sources and complete a comprehensive subject search. Understand the importance of the peer review process.
3. Understand what a cited reference search is and how it can be useful for

research.

4. Evaluate websites and other information resources.
5. Read, digest and synthesize the information that is found.
6. Follow appropriate protocol to cite information sources and acknowledge copyright.

The authors then decided on the specific measurable objectives tied to each benchmark. For this task, they consulted Moskal's (2003) recommendations for writing goals and objectives:

1. The statement of goals and accompanying objectives should provide a clear focus for both instruction and assessment.
2. Both goals and objectives should reflect knowledge and information that is worthwhile for students to learn.
3. The relationship between a given goal and the objectives that describe that goal should be apparent.
4. All of the important aspects of the given goal should be reflected through the objectives.
5. Objectives should describe measurable student outcomes.
6. Goals and objectives should be used to guide the selection of an appropriate assessment activity.

The authors consulted a rubric previously developed by Utah State University (USU) librarians to assess a sophomore English class in addition to the rubrics listed in the literature review and to write observable criteria corresponding to each objective. The authors also gained insight into creating rubrics from a presentation for faculty at Utah State University in which the presenter recommended that rubric creators:

1. Determine the criteria.
2. Try to keep the criteria simple and concise.
3. Think about what the reviewers will

look for to grade the work, and focus on what is most important (Larsen, 2008).

The authors used the criteria Excellent, Good/Adequate, Needs Work, and Not Evident. They used the category Not Evident, with a score of zero, based on their experience with the English 1010 rubric created by USU librarians, even though some have found it most expedient to have only three categories so as to avoid “splitting hairs” (Franks, 2003). For the English 1010 rubric the authors initially included only the first three categories, but ran into the problem of whether to give a paper a score of 1 or of 0 if the element being assessed was not present. They also gathered feedback by sending copies of the draft rubric to the two faculty members whose classes would contribute papers. The two returned the rubrics with their comments about criteria that were or were not relevant and with additional benchmarks to be considered. The authors incorporated their feedback through two rounds of rubric revision (see Appendix A for the Chemistry rubric).

The first chemistry course whose projects the authors reviewed, Chemistry 4990, Undergraduate Seminar, was taught by a faculty member who had previously brought his classes to the library for instruction sessions. Based on the relationship the Chemistry librarian had developed with the faculty member, the authors approached him about running the pilot program with his capstone class. He was intrigued by the idea of using rubrics as a scoring mechanism to assess the students’ research skills. In the past, the class had done a literature search, which was separate from the topic for their final presentation. The final presentation was often tied to their own research. For the semester during which the authors were testing the rubrics, the librarians and the professor developed a lesson plan whereby the students would begin the semester by conducting a literature review on their presentation topic. Students would conduct a literature search, looking for review articles and background on their research topic, use SciFinder Scholar to

identify research relevant to their topics, and use Web of Science, if relevant, to identify recent citations to articles they chose from SciFinder. They were required to list five sources. If the students wanted to cite a freely accessible web site, they were asked to explain how they evaluated the site. Students were assigned to write a one-to-two-page paper explaining how they found their sources and why they chose the five key citations they would include in their literature review. In the library instruction session, the professor distributed copies of the rubric and reviewed it with the students. The chemistry liaison librarian demonstrated how to search the SciFinder Scholar and Web of Science databases.

The second chemistry course that participated in the pilot project was Chemistry 4890 (Chem 4890), an undergraduate biochemistry seminar. When the faculty member scheduled a library session for the semester during which the authors were working on the rubric assessment, they approached him about evaluating his students’ papers according to the chemistry information literacy rubric they were developing. The literature search assignment for Chem 4890 asked students to write a one page report outlining both their search process and their thoughts about revising their search (such as which techniques worked best in using the databases, how they refined searches to get more relevant results, and any frustrations). The students were required to use more than one library database, list all citations they investigated—with the exception of review articles, and include citations up to the present time. The faculty member would grade their reports on content, grammar, appropriateness of sources, and thoroughness and accuracy of citations. The faculty member also noted that he planned to incorporate the librarians’ rubric score into the students’ grades for the assignment.

### *Psychology*

When choosing the second department to work with for the pilot project, the authors chose psychology for two reasons. First, the professor who typically teaches the capstone course had a

long-standing relationship with the library and the authors felt that he would be amenable to working on a pilot project with his course. Secondly, the psychology librarian suggested that the research assignment for the capstone course would be suitable for a scoring rubric. When the authors spoke with the professor about the pilot program using a rubric, they learned that he was not teaching the capstone course during the upcoming semester. He introduced them to the two graduate instructors who were teaching the classes. The instructors were agreeable to working with the librarians to develop a rubric and to provide copies of their students' papers for assessment.

In creating the psychology rubric, the authors built on the benchmarks detailed in the *Undergraduate Psychology Major Learning Goals and Outcomes: A Report* (Task Force on Undergraduate Psychology Major Competencies, 2002), the Association of College and Research Libraries *Information Literacy Competency Standards for Higher Education* (Association of College and Research Libraries, 2000), and Paglia and Donahue's (2003) paper "Collaboration Works: Integrating Information Competencies into the Psychology Curricula".

Based on these resources the authors outlined the following benchmarks. Students must show evidence of being able to:

1. Define a research topic and determine the extent of information needed.
2. Use psychology databases and web search tools effectively in order to conduct a literature search and find appropriate, peer-reviewed sources to fulfill their needs.
3. Evaluate the source, context, accuracy, quality, credibility and value of information in empirical sources; identify bias; and understand the relative value of primary versus secondary sources and empirical versus non-empirical sources.
4. Identify and acquire books, journal

articles and other media available in the library, and from alternative sources such as Interlibrary Services.

5. Read, digest and synthesize the information.
6. Access and use information ethically and legally. Identify plagiarism, and avoid it in their own work by quoting, paraphrasing and citing sources appropriately and by honoring copyright. Correctly use APA style.

The benchmarks were developed using the same process described above. The authors sent copies of the draft rubric to the two graduate instructors who reviewed the benchmarks and objectives and provided ideas and suggestions for refining the objectives (see Appendix B for the rubric).

The psychology course, PSYC 3500, covers research methods in psychology. The course goals charge students to "understand and apply the fundamentals of the scientific research process and research methods in order to produce a research proposal that is methodologically and logically sound." Students choose a research study that they theoretically would pursue and write an introduction to the study including a summary and review of the literature related to their research questions. Students must use at least fifteen sources.

## RESULTS

The chemistry papers were each scored by two librarians and the psychology papers were scored by a librarian and a library teaching assistant. All had worked with rubrics on previous library assessment projects and were familiar with scoring rubrics. Due to the nature of the assessment being a pilot project and the limited number of library staff members available to score the rubrics, the authors did not conduct a norming review specifically for this project.

After the authors received the students' projects and reviewed the rubric criteria, they realized

that not all of the criteria could be scored based on the projects that they had collected. For Chemistry 4890, they received 13 papers. The authors decided that they could not sufficiently score two of the criteria on the rubric. The first criteria, “Effectively search the chemical literature and retrieve background information relevant to the project” (which has the specific criterion to “Find chemistry-specific sources of background information such as encyclopedias, treatises, compiled works, and review articles, if relevant”) was not expected to be covered with this assignment, as it refers to finding background sources. The authors also did not score element 5, which refers to synthesizing and applying information into a more formal presentation or paper (“Read, digest and synthesize the information that is found”). Therefore, the authors scored elements 2, 3, 4, and 6, for a total possible score of 12 points. An “excellent” example of each element received the maximum score of 3 points, a “good/adequate” example received a score of 2, “needs work” received a score of 1, and “not evident” yielded a score of 0 points. The average score overall was 9.2. The rubric element with the highest average score of 2.9 was element 4, “Evaluate websites and other information resources.” The lowest scoring element overall, with an average score of 1.5, was element 3, “Augment research by pursuing both cited references in relevant papers and more recent

papers that cite those relevant papers.” This rubric element also had the widest variation. Table 1 shows the average scores for Chemistry 4890 by rubric criteria (the maximum score for each criteria is 3).

Likewise for the papers from Chemistry 4990, the authors did not assess element 5 of the rubric, “Read, digest and synthesize the information that is found.” The maximum number of points, therefore, was 15. The average for the papers (N=10) was 13. Students consistently received high scores for the rubric elements 1, 2, 3 and 4. There was one outlier, paper #4. Element 6, “Follow appropriate protocol to cite information sources and acknowledge copyright for graphs, charts, or other material from published sources,” consistently received a slightly lower score of 2 on average, compared to 3 for the other elements which were scored. Table 2 shows the average scores, by rubric criteria.

For the papers from the two psychology courses, the two scorers rated the papers (N=26) individually and then averaged the scores. The authors did not score the first element in the rubric, “Define a research topic and determine the extent of information needed,” as this criterion did not apply to the specific assignment of this capstone class. The resulting scores for each individual element fell between

TABLE 1—AVERAGE SCORES BY RUBRIC CRITERIA FOR CHEMISTRY 4890

| Rubric Criteria | 2   | 3   | 4   | 6 |
|-----------------|-----|-----|-----|---|
| Average Score   | 2.7 | 1.5 | 2.9 | 2 |

TABLE 2—AVERAGE SCORES BY RUBRIC CRITERIA FOR CHEMISTRY 4990

| Rubric Criteria | 1 | 2 | 3 | 4 | 6 |
|-----------------|---|---|---|---|---|
| Score           | 3 | 3 | 3 | 3 | 2 |

2 and 3 points. The total number of points possible was 24, and the scores for the papers ranged from 20.5 to 23.5, with an overall average of 22.2.

## CONCLUSION

The results of this exploratory study did not reveal the cross-section of scores that the authors had expected to see. Based on this pilot study, they cannot discern if the students did perform at the high end of information literacy skills that the authors were measuring with the rubrics or if the authors need to modify the rubrics criteria or scoring. Further study will help the authors determine if the fact that many scores seem to cluster at the high end of the scale, around 3, is a result of configuration of the rubric, the way the rubrics were used to score the projects, or the students' genuine information literacy skills.

Since the authors found less variation than expected, they might need to adjust the rubric, perhaps by reviewing the specified elements or the number of objectives, or by using a larger scale and separating the criteria into 5 scores instead of 3. For future studies, the authors will likely modify the rubric according to the specifics of each capstone assignment to reduce the instances when rubric elements were not able to be scored because they did not fit the specific assignment criteria.

The small class sizes for the capstone classes at USU make it difficult to gather a large sample of projects or papers in a short time to score against the rubric. Compared to the scores from a selection of papers from English 2010, a sophomore level English class, as reported in

the USU Merrill-Cazier Library's Assessment Report (Holliday, 2008), the range of scores was much wider, as shown in Table 3. The wider range of scores in the English classes could be due to any of several factors: the structure of the rubric, the fact that the 2010 class is an entry-level general education class, or the relatively larger number of papers being scored (N=226). Again, more research with the chemistry and psychology rubrics might determine if the difference was due to the structure of the rubrics or to differences between the skills of students in an introductory class versus a capstone class. The authors will also need to test the rubrics with other student assignments in the capstone courses or test rubrics in other disciplines which include research projects. In addition, in the next step in the project the authors will also attempt to involve faculty more closely with adapting and using the rubrics to score student projects. One of the long-term goals is to work with departments and faculty members to develop rubrics they can use to assess their students' information literacy skills over a longer time frame. While the faculty members the authors worked with on this project expressed interest in information literacy and in assessing the information literacy skills of their students, the authors did not reach the point where the faculty members or graduate students were using the rubrics themselves. The authors think rubrics offer a promising and important method to assess the information literacy skills of today's students and that this pilot program warrants further study.

## REFERENCES

American Chemistry Society Division of Chemical Information. *Chemical information*

TABLE 3—AVERAGE SCORES BY RUBRIC GOALS FOR ENGLISH 2010

|                    | Goal 2                        | Goal 3 | Goal 4 | Goal 5 | Total  |
|--------------------|-------------------------------|--------|--------|--------|--------|
| <b>Score Range</b> | <b>Percentage of Students</b> |        |        |        |        |
| Needs Improvement  | 39.40%                        | 31.90% | 28.80% | 27.40% | 41.20% |
| Good               | 46.50%                        | 57.10% | 61.10% | 46.90% | 53.10% |
| Excellent          | 14.20%                        | 11.10% | 10.20% | 25.70% | 5.80%  |
| N=226 students     |                               |        |        |        |        |



retrieval. Retrieved March 10, 2007, from <http://chemunder.chemistry.ohio-state.edu/under/programs/acsdsc4.htm>

Association of College and Research Libraries. . (2000). "Information literacy competency standards for higher education" Retrieved November 5, 2008, from <http://www.ala.org/ala/mgrps/divs/acrl/standards/informationliteracycompetency.cfm>

Choinski, E., Mark, A. E., & Murphey, M. (2003). Assessment with rubrics: An efficient and objective means of assessing student outcomes in an information resources class. *portal: Libraries & the Academy*, 3(4), 563–575.

D'Angelo, B. J. (2001). Integrating and assessing information competencies in a gateway course. *Reference Services Review*, 29 (4), 282–293.

Diller, K. and Phelps, S. (2008). Learning Outcomes, Portfolios, and Rubrics, Oh My! Authentic Assessment of an Information Literacy Program. *portal: Libraries and the Academy* 8(1), 75-89.

Emmons, M., & Martin, W. (2002). Engaging conversation: Evaluating the contribution of library instruction to the quality of student research. *College & Research Libraries*, 63(6), 545–560.

Franks, D. (2003). Using rubrics to assess information literacy attainment in a community college education class. In E. F. Avery (Ed.), *Assessing student learning outcomes for information literacy instruction in academic institutions*. Chicago: Association of College and Research Libraries.

Holliday, W. (2008). *Utah state university library instruction program annual report for 2007–2008*. Retrieved February 10, 2009, from Utah State University, Merrill Cazier Library Web Site: <http://library.usu.edu/instruct/instruction-annual-2008.pdf>

Knight, L. A. (2006). Using rubrics to assess information literacy. *Reference Services Review*, 34(1), 43–55.

Larsen, B. (2008). Teaching assessments elevated: How rubrics change the game. Unpublished presentation. Utah State University at Logan.

Moskal, B. M. (2003). Recommendations for developing classroom performance assessments and scoring rubrics. *Practical Assessment, Research & Evaluation*, 8(14). Retrieved April 2, 2007, from <http://pareonline.net/getvn.asp?v=8&n=14>

Oakleaf, M. (2007). Using rubrics to collect evidence for decision-making: What do librarians need to learn? *Evidence Based Library & Information Practice*, 2(3), 27–42. Retrieved January 4, 2008, from <http://ejournals.library.ualberta.ca/index.php/EBLIP/article/view/261/524>

Oakleaf, M. (2008). Dangers and opportunities: A conceptual map of information literacy assessment approaches. *portal: Libraries and the Academy*, 8(3), 233–253.

Paglia, A., & Donahue, A. (2003). Collaboration works: integrating information competencies into the psychology curricula. *Reference Services Review*, 31(4), 320–328.

Special Libraries Association Chemistry Division Ad Hoc Committee on Information Literacy. (2007). *Information competencies for chemistry undergraduates: The elements of information literacy*. Retrieved March 2, 2007, from <http://units.sla.org/division/dche/il/cheminfolit.pdf>

Task Force on Undergraduate Psychology Major Competencies. (2002, March). *Undergraduate psychology major learning goals and outcomes: A report*. Retrieved April 3, 2007, from <http://www.apa.org/ed/pcue/taskforcereport2.pdf>

## APPENDIX A—CHEMISTRY INFORMATION LITERACY ASSESSMENT RUBRIC

(ACS Division of Chemical Information; Association of College and Research Libraries, 2000; Emmons & Martin, 2002; SLA Chemistry Division Ad Hoc Committee on Information Literacy, 2007)

## 1. Effectively search the chemical literature and retrieve background information relevant to the project.

|   | Excellent =3   | Good/Adequate =2   | Needs Work =1   | Not evident = 0  |
|---|--|--|---|--|
| Find chemistry-specific sources of background information such as encyclopedias, treatises, compiled works, and review articles, if relevant. | Sources or text include reference to several chemistry-specific sources of background information. | Sources or text include reference to a few chemistry-specific sources of background information. | Minimal number of chemistry-specific sources of background information evident. | No chemistry-specific sources of background information evident. |

## 2. Use SciFinder (Chemical Abstracts) and other databases to conduct a comprehensive subject search to find research-based sources.

|   | Excellent =3   | Good/Adequate =2  | Needs Work =1  | Not evident = 0                                       |
|---|--|---|--|---|
| Find scholarly journal articles or other authoritative sources to support arguments and assertions. | Supports all arguments with cited evidence.  | Most arguments supported with cited evidence.   | Few arguments supported with cited evidence.   | Virtually no arguments supported with cited evidence. |
| Use reviewed articles (a.k.a. refereed) or authoritative sites to fulfill research needs.           | All sources from reviewed publications (peer-reviewed or editor-reviewed) or authoritative websites. | Some sources from reviewed sources (peer-reviewed or editor-reviewed) or authoritative sites, and some sources from out-of-date, biased, or questionable sources. | Many sources from out-of-date, biased, or non-professional sources, and few peer-reviewed sources. | No peer-reviewed sources used.                        |

## 3. Augment research by pursuing both cited references in relevant papers and more recent papers that cite those relevant papers.

|   | Excellent =3  | Good/Adequate =2 | Needs Work =1 | Not evident = 0   |
|---|---|------------------|---------------|---|
| Use the Web of Science database or SciFinder Scholar's "get related" command to identify and locate papers citing a specific paper and/or author. | The report on literature searching explains how cited and citing references were used to discover additional useful publications. |                  |               | No mention of exploring cited and citing references to discover additional useful publications. |

APPENDIX A—CONTINUED

4. Evaluate websites and other information resources.

|  | Excellent =3   | Good/Adequate =2   | Needs Work =1   | Not evident = 0   |
|--|--|--|---|---|
| Evaluate the authority and appropriateness of a web site or other information source.          | Identifies and/or acknowledges all authors' credentials and acknowledges the purpose or bias of each source. | Identifies and/or acknowledges most authors' credentials and acknowledges the purpose or bias of most sources. | Does not identify or acknowledge authors' credentials for most sources or does not acknowledge the purpose or bias of most sources. | Does not identify or acknowledge authors' credentials or does not acknowledge the purpose or bias of sources. |
| Corroborate information found in websites with information from reviewed sources, if relevant. | Corroboration in every case.   | Corroboration in many cases.   | Corroboration in few cases.   | No evidence of corroboration.   |
| Sources published within appropriate time frame for current and/or historical reference.       | All sources published in appropriate time frame.   | Most sources published in appropriate time frame.  | Few sources published in appropriate time frame.  | All sources out of date.  |

5. Read, digest and synthesize the information that is found.

|   | Excellent =3   | Good/Adequate =2  | Needs Work =1  | Not evident = 0  |
|---|--|---|--|--|
| Select information that provides evidence for the topic.                      | All sources clearly related to topic.  | Most sources clearly related to topic.  | Many sources unrelated to topic or relevance is unclear.                                       | Virtually all sources unrelated to topic.  |
| Synthesize and integrate information by paraphrasing and quoting effectively. | All quotes and paraphrases are integrated into the text appropriately and effectively. | Most quotes and paraphrases are integrated into the text appropriately and effectively, with some placed into text without any connections drawn. | Many quotes and paraphrases placed in text without any connections drawn or comments included. | Most quotes and paraphrases placed in text without any connections drawn or comments included. |

## APPENDIX A—CONTINUED

6. Follow appropriate protocol to cite information sources and acknowledge copyright for graphs, charts, or other material from published sources.

|  | Excellent =3   | Good/Adequate =2  | Needs Work =1   | Not evident = 0                                  |
|--|--|---|---|--|
| Correctly cite sources according to the style specified by one of the journals published by the American Chemical Society (ACS). | All references cited in correct format with virtually no errors in format. | Most references are identified, with some errors in format. | Insufficient or incorrect information for many sources, with frequent errors in format. | No bibliography or list of cited sources.        |
| Correctly identify and acknowledge original source(s) of paraphrased elements.   | All paraphrased entries correctly cited.                                   | Most paraphrased entries correctly cited.                   | Some paraphrased entries correctly cited.   | No paraphrased entries correctly cited.          |
| Properly cite figures, drawings, and quotes in presentation.   | All figures, drawings, and quotes correctly cited.                         | Most figures, drawings, and quotes correctly cited.         | Some figures, drawings, and quotes correctly cited.                                     | No figures, drawings, or quotes correctly cited. |

## APPENDIX B—PSYCHOLOGY INFORMATION LITERACY ASSESSMENT RUBRIC

(Association of College and Research Libraries, 2000; Emmons & Martin, 2002; Paglia & Donahue, 2003; Task Force on Undergraduate Psychology Major Competencies, 2002)

1. Define a research topic and determine the extent of information needed.

|   | Excellent =3   | Good/Adequate =2  | Needs Work =1   | Not evident = 0                     |
|---|--|---|---|-------------------------------------|
| Published research related to research question is retrievable. | Research question can be investigated through objective observation, is not too broad or too narrow. | Research question is somewhat too broad or too narrow, but can still be investigated through objective observation. | Research question is too broad or too narrow, and might not be able to be investigated through objective observation. | No evidence of a research question. |

APPENDIX B — CONTINUED

2. Use psychology databases and web search tools effectively in order to conduct a literature search and find appropriate, peer-reviewed sources to fulfill their needs.

|  | Excellent =3  | Good/Adequate =2   | Needs Work =1   | Not evident = 0                |
|--|---|--|---|--------------------------------|
| Utilize reviewed articles or authoritative sites to fulfill research needs.              | All sources from reviewed sources (peer-reviewed or editor-reviewed) or authoritative websites. | Some sources from reviewed sources (peer-reviewed or editor-reviewed) or authoritative sites, and some sources from out-of-date and/or biased sources. | Many sources from out of date and/or biased sources, few peer-reviewed sources. | No peer-reviewed sources used. |
| Sources published within appropriate time frame for current and/or historical reference. | All sources published in appropriate time frame.  | Most sources published in appropriate time frame.  | Few sources published in appropriate time frame.                                | All sources out of date.       |

3. Evaluate the source, context, accuracy, quality, credibility and value of information in empirical sources. Identify bias. Understand the relative value of primary versus secondary sources, and empirical versus non-empirical sources.

|  | Excellent =3   | Good/Adequate =2   | Needs Work =1  | Not evident = 0   |
|--|--|--|--|---|
| Evaluate the authority and appropriateness of an information source. | Identifies and/or acknowledges all authors' credentials and acknowledges the purpose or bias of each source. | Identifies and/or acknowledges most authors' credentials and acknowledges the purpose or bias of most sources. | Identifies or acknowledges few authors' credentials or does not acknowledge the purpose or bias of most sources. | Does not identify or acknowledge authors' credentials or does not acknowledge the purpose or bias of sources. |

4. Identify and acquire books, journal articles and other media available in the library, and from alternative sources such as Interlibrary Services.

|  | Excellent =3                                       | Good/Adequate =2   | Needs Work =1   | Not evident = 0                               |
|--|--|--|---|---|
| Use a variety of sources to explore a topic. | Sources from several types of information sources. | Sources from only one or two types of information sources. | Sources from the same format or type of information regardless of need. | Use no variety of sources to explore a topic. |

## APPENDIX B — CONTINUED

## 5. Read, digest and synthesize the information.

|   | Excellent =3   | Good/Adequate =2  | Needs Work =1  | Not evident = 0  |
|---|--|---|--|--|
| Select information that provides evidence for the topic.                      | All sources clearly related to topic.  | Most sources clearly related to topic.  | Many sources unrelated to topic or relevance is unclear.                                       | Virtually all sources unrelated to topic.  |
| Synthesize and integrate information by paraphrasing and quoting effectively. | All quotes and paraphrases are integrated into the text appropriately and effectively. | Most quotes and paraphrases are integrated into the text appropriately and effectively, with some placed into text without any connections drawn. | Many quotes and paraphrases placed in text without any connections drawn or comments included. | Most quotes and paraphrases placed in text without any connections drawn or comments included. |

## 6. Access and use information ethically and legally. Identify plagiarism, and avoid it in their own work by quoting, paraphrasing and citing sources appropriately and honoring copyright. Correctly use APA style.

|  | Excellent =3   | Good/Adequate =2  | Needs Work =1   | Not evident = 0                           |
|--|--|---|---|---|
| Correctly cite sources according to APA citation style or other style.         | All references cited in APA format with virtually no errors in format. | Most references are identified, with some errors in format. | Insufficient or incorrect information for many sources, with frequent errors in format. | No bibliography or list of cited sources. |
| Correctly identify and acknowledge original source(s) of paraphrased elements. | All paraphrased entries correctly cited.                               | Most paraphrased entries correctly cited.                   | Few paraphrased entries correctly cited.  | No paraphrased entries correctly cited.   |