



PERSPECTIVES ON...

• Reconsidering a Traditional Instruction Technique: Reassessing the Print Workbook

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The authors used pre- and post-testing to determine if print workbooks helped to improve information literacy skills in 175 college freshmen. The results of the study demonstrate that workbooks remain a useful tool for academic libraries lacking resources or expertise to develop and maintain online tutorials.

INTRODUCTION

Rapidly evolving technology continually poses challenges for academic librarians. In structuring library education programs, librarians sometimes feel they must choose whether or not to abandon traditional methods like the printed research methods workbook. At a meeting of the Education Committee of the Richard Stockton College Library, the question arose: "Has the printed workbook outlived its usefulness or can it still play a role in instruction in the 21st century?" The librarians hypothesized that the print workbook remains a valid and effective instructional tool and set out to test that assertion.

"Has the printed workbook outlived its usefulness or can it still play a role in instruction in the 21st century?"

At Stockton, all entering freshmen are required to take a freshman seminar although the subject matter of each seminar differs according to the faculty member teaching the class. There are, however, some commonalities among those classes emphasizing reading and discussion. Information literacy is one of the commonalities, although the way in which it is incorporated into the class is left to the discretion of the faculty member. Over thirty-five seminars are taught each fall and over 85 percent of the faculty choose to include library instruction in their class even though it is not mandated.

Even before the Freshman Seminar became a required class in 1986, the library had been using a print workbook in its instruction program. The *Research Strategies Workbook*, which is revised annually, consists of five modules designed to follow a logical progression of steps a student would take in preparing a research assignment. Although the authors have experimented with online tutorials in the past, producing an online workbook capable of replacing the print workbook did not seem an attainable goal, given the limited resources. To see an Adobe Acrobat version of the current printed workbook, go to <http://intraweb.stockton.edu/eyos/page.cfm?siteID=86&pageID=29>.

There are some advantages to print workbooks. They are portable, do not require special equipment, and are in a format

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familiar to students. They can also be retained for review for future research assignments. Finally, they can be used for a wide variety of interventions such as instructing students in skills needed to negotiate the Library's latest periodical databases, using Boolean operators or evaluating Web sites. Admittedly, print workbooks have some disadvantages as well. They are not particularly interactive or suitable for portraying images. In addition, there is a time lapse between when students submit a completed workbook and when the corrected book is returned to them.

Despite these drawbacks, the three teaching librarians use the print workbook to reach over 700 freshmen each year. Having experimented with creating and using online tutorials,¹ the authors believe that, absent the skills and resources needed to create a sophisticated online tutorial, librarians can rely on the traditional print workbook. This study shows that a print workbook significantly and demonstrably improves freshmen students' level of information literacy.

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LITERATURE REVIEW

In preparation for the study, a survey of the literature was made looking for studies on information literacy assessment, and hoping to find discussions of print workbooks. Current library professional literature is replete with articles about incorporating electronic methods into instruction programs but rarely mentions print workbooks and is silent concerning any assessment of their effectiveness. A review of the literature of the past five years concerning information literacy assessment reveals virtually no research on the effectiveness of print workbooks in teaching information literacy skills. The current published research focuses almost exclusively on online tutorials. In “From Workbook to Web,” Gina M. Castro discusses the transition from print to Web tutorials.² Nichols, Shaffer, and Shockey, for example, compare the effectiveness of online to in-class instruction.³ A study by Carolyn Gutierrez and Jianrong Wang published in 2001 in the *Journal of Academic Librarianship* comparing print and online tutorials found that, when accompanied by an in-class session, there was no significant difference in research skills performance of freshmen students assigned an online tutorial compared with those assigned a print workbook.⁴ A few articles cover student performance outcomes but do so in relation to online tutorials.

Not finding what they needed in the print literature, the authors posted questions about assessment of print workbooks on the ACRL Information Literacy ListServ (ILI-L@ala.org). However, the queries did not elicit any response, suggesting that little or no research is being done on this topic.

Stymied in their search for studies on print workbooks, the authors turned to articles on assessment for models. One of the best articles on assessment, from the perspective of a small college, is Elizabeth Carter's paper on the development of

outcome-focused assessments at the Citadel Library.⁵ The collection of articles in the ACRL publication *Assessing Student Learning Outcomes for Information Literacy in*

Table 1
Pre/Post-Test Question Analysis

Question Number	Subject of Question	Learning Outcome
1	Boolean operators	S2, P2, O4
2	Limiting search	S1, P1, O4
3	Keyword vs. subject search	S2, P2, O3
4	Selecting search engine	S2, P2, O2
		S3, P2, O1
5	Scholarly journal characteristics	S1, P1, O1
		S1, P2, O4
6	Focusing topic	S1, P1, O2
7	Scholarly journals	S1, P2, O4
8	Retrieval systems	S2, P2, O5
9	Vocabulary	S1, P2, O2
		S2, P2, O5
		S1, P2, O1
10	Controlled vocabulary	S2, P2, O3
		S2, P2, O2
11	Peer review	S2, P4, O1
12	Plagiarism	S1, P2, O4
		S5, P2, O6
13	Journal citation syntax	S2, P5, O3
14	Journal citation syntax	S2, P5, O3
15	Journal citation syntax	S2, P5, O3
16	Search quality	S2, P4, O1
17	Book citation syntax	S1, P1, O3
		S2, P3, O1
18	Various formats	S2, P5, O3
19	Search quality	S2, P2, O5
20	Citation model	S5, P3, O1
21	Scholarly journal citation syntax	S2, P5, O3
22	Different user interfaces	S2, P2, O5
23	Intellectual property	S2, P4, O1
		S2, P3, O1
24	Plagiarism	S5, P1, O4
25	Fair use	S5, P2, O6
		S5, P1, O4

Outcomes are based on the *Information Literacy Competency Standards for Higher Education*, 2000, <http://www.ala.org/ala/acrl/acrlstandards/informationliteracycompetency.htm>. Abbreviations: S = Standard; P = Performance indicator; O = Outcomes.

Academic Institutions is also invaluable.⁶ *Assessment in College Library Instruction Programs* offers a number of survey and tests.⁷ The benchmark for presenting and measuring information literacy skills remains the ACRL Standards for Information Literacy.⁸

METHODOLOGY

Ten freshman classes were randomly selected for testing. Twenty-five students were enrolled in each class, yielding an initial sample of 250 students. Since the goal of the study was to find out whether a printed workbook assignment is still a valid tool for teaching research skills, it was decided that a pre/post-test, administered before and after the workbook intervention, would effectively measure improvement in information literacy skills.

The first step in the study was to identify the skills to be measured. The teaching librarians identified the standards and outcomes from the ACRL *Standards, Performance Indicators, and Outcomes of the Information Literacy Competency Standards*⁹ most appropriate for freshman students. They decided to focus on basic information literacy skills, such as the ability to identify key concepts and terms, to identify the characteristics (e.g. scholarly vs. popular) of potential resources, or to use various search systems to find information.

The second step was to devise a test that actually addressed the skills identified. This proved to be much more difficult than initially believed. The pilot project, begun in 2002, had to be extended over three years before a pre/post-test emerged that was reliable enough to provide accurate results. A prior attempt to measure learning consisted of an online multiple choice test. Unfortunately, students did not take seriously the computerized multiple choice exam, which they viewed as a game. That year the students actually did worse on the post-test than they did on the pre-test. Exhausted by the experience, the librarians brought back pencils, printed tests, and Scantron answer sheets.

Due to the size of the project, the researchers needed to grade the pre/post-tests electronically. This limited the format of the test to multiple-choice questions. Writing questions that tested the appropriate skill without giving away the correct answer proved to be a distinct challenge. The authors attempted to compose questions that would address several indicators while, at the same time, a single indicator might have several questions if it were deemed important enough. The final version of the test had twenty-five multiple choice questions (for analysis of the test questions and the standards measured, see Table 1). In constructing the test, the authors had input from several campus groups. The Director of the Stockton Institute on the Study of College Teaching, Dr. Sonia Gonsalves, was particularly helpful by patiently reading multiple drafts and offering advice.

Once the final version of the pre/post-test was in place, the workbook was re-examined to make sure that it corresponded

to the skills being tested. The pre-test was administered to the students in the ten freshman seminars prior to an in-class library orientation session. The three teaching librarians involved gave identical presentations of approximately forty minutes duration on basic library research skills and introduced the library workbook. The students had one week to complete their workbooks and turn them in at the Information Desk in the Library. The librarians corrected the workbook and returned it to the faculty member prior to administering the post-test. The post-test was administered as soon as it was convenient for the faculty member, usually within two weeks of returning the corrected workbooks.

RESULTS

There are 250 freshmen in the study yielding 175 useable paired samples. Pre/post-comparison of the percentage of correct responses from the ten classes in the group (175 paired samples) shows a clear improvement in the selected skills (see Table 2). The average score rose from 66.33 percent correct in the pre-test to 74.13 percent correct in the post-test. The statistical analysis shows that the results are not due to chance ($p < 0.001$) and that students' knowledge increased by an average of 7.8 points as measured by the test.

CONCLUSION

This study demonstrates that the traditional print workbook still has relevance, especially in smaller institutions where librarians may not have the programming skills or the resources to develop and maintain sophisticated online tutorials. Such a project can also be useful in planning the use of scarce resources. Middles States Commission on Higher Education *Standard 14: Assessment of Student Learning* stipulates "evidence that assessment findings are used to assist in reviewing and revising academic programs." The authors used the results to guide the channeling of efforts and resources into areas more manageable, that is, in-class presentations, program marketing efforts, online presence, and one-on-one conferences rather than the development of an electronic workbook.

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Hopefully, the findings will be of some comfort for those librarians who would like to offer the latest in instructional techniques but are unable to spend the time and money to do so.

**Table 2
Library Intervention Data**

	Pre-Test		Post-Test		Δ Mean	Δ SD
	Mean	SD	Mean	SD		
Classes completing workbook (10)	66.33%	13.81	74.13%	15.88	7.80%	2.07

APPENDIX A

ACRL Information Literacy Outcomes that Formed the Basis for the Pre/post Test and the Workbook

- 1.1.2. Develops a thesis statement and formulates questions based on the information need
- 1.1.3. Explores general information sources to increase familiarity with the topic
- 1.1.4. Defines or modifies the information need to achieve a manageable focus
- 1.1.5. Identifies key concepts and terms that describe the information need
- 1.2.2. Recognizes that knowledge can be organized into disciplines that influence the way information is accessed
- 1.2.4. Identifies the purpose and audience of potential resources (e.g., popular vs. scholarly, current vs. historical)
- 2.2.2. Identifies keywords, synonyms and related terms for the information needed
- 2.2.3. Selects controlled vocabulary specific to the discipline or information retrieval source
- 2.2.4. Constructs a search strategy using appropriate commands for the information retrieval system selected (e.g., Boolean operators, truncation, and proximity for search engines; internal organizers such as indexes for books)
- 2.2.5. Implements the search strategy in various information retrieval systems using different user interfaces and

- search engines, with different command languages, protocols, and search parameters
- 2.3.1. Uses various search systems to retrieve information in a variety of formats
- 2.3.2. Uses various classification schemes and other systems (e.g., call number systems or indexes) to locate information resources within the library or to identify specific sites for physical exploration
- 2.4.1. Assesses the quantity, quality, and relevance of the search results to determine whether alternative information retrieval systems or investigative methods should be utilized
- 2.5.3. Differentiates between the types of sources cited and understands the elements and correct syntax of a citation for a wide range of resources
- 2.5.4. Records all pertinent citation information for future reference
- 3.2.1. Examines and compares information from various sources in order to evaluate reliability, validity, accuracy, authority, timeliness, and point of view or bias
- 5.1.4. Demonstrates an understanding of intellectual property, copyright, and fair use of copyrighted material
- 5.2.6. Demonstrates an understanding of what constitutes plagiarism and does not represent work attributable to others as his/her own
- 5.3.1. Selects an appropriate documentation style and uses it consistently to cite sources

APPENDIX B

Richard Stockton College of NJ Information Literacy Test September 2005

Circle the best answer for each question.

1. Suppose you want to extract from a periodical database all articles which contain references both to “psychosis” as well as to “depression” (in the same article). Select the expression below that uses the Boolean operator you should use to link the two parts of the search statement?
 1. Psychosis ALSO Depression
 2. Psychosis OR Depression
 3. Psychosis NOR Depression
 4. Psychosis AND Depression
 5. Psychosis NOT Depression
2. You are searching a periodical database and the results list is huge. Which of the following ways can you use to refine a search and make it more specific?
Limit the search:
 1. To articles by a particular author
 2. To articles in a specific periodical title
 3. To articles printed on a certain date or year
 4. All of the above
 5. 1 and 3

3. Performing a subject search in the library catalog on global warming will likely give you the same results as a keyword search.
1. True
 2. False
4. If I am looking for journal articles for a term paper topic, which of these statements reflects the BEST course of action?
1. I can use any good Web search engine like Yahoo or Google
 2. I need to use an index that searches for scholarly periodical articles
 3. I should use the library's catalog
 4. I should use an index that broadly searches for periodical articles
5. Which of the following is characteristic of scholarly journal articles?
1. Articles include descriptions of the research methods
 2. Articles are heavily supported through advertising
 3. Articles use non technical language
 4. Articles are considered secondary resources
6. The quickest way to begin to focus your topic, is to put your topic in the form of a question.
1. True
 2. False
7. Which of the following is characteristic of scholarly journals?
1. They are relatively cheap
 2. They are available for sale in the college's bookstore
 3. They are multidisciplinary
 4. They have a glossy format
 5. They are found in academic libraries
8. When choosing a periodical database to use, what is the BEST way to tell what subjects are covered by a database?
1. Do a search and check the results
 2. Ask a librarian
 3. It doesn't matter as all databases cover most journals anyway
 4. Look for a help screen describing the database
 5. Check a major journal
9. When trying a subject search using the Stockton Library's catalog, you typed in the words: "police brutality." The search did not produce any results. What do you do next?
1. Use a different terminal or computer
 2. Identify a synonym for police brutality
 3. Put quotes around the phrase "police brutality"
 4. Go to a different library
 5. Surf the Internet
10. Which of the following are advantages of a controlled vocabulary?
1. You can be sure that these terms appear in the database
 2. You, the searcher, have ultimate control over search terms
 3. You have to think of all the different possible terms your subject might be called
 4. Your search may be a very broad search

11. What is “peer review”?

1. A system of revision first carried out by the English House of Lords. In America, the Senate takes the place of the House of Lords under the Vice President.
2. A process for checking that academic articles have been examined by other experts in the field before publication
3. A process for guaranteeing that all articles are 100 percent true by having experts read them before they are published
4. A process for examining research material and checking results using a microscope

12. I can use something I find in my research in my paper without citing the source if I rewrite it in my own words.

1. True
2. False

Use the information given below to answer questions 13–15.

Ownership: FirstSearch indicates your institution owns the item. Database: SocialSciAbs Copyright: Database Producer Copyright © the H.W. Wilson Company. All rights reserved. Author(s): Bronstein, Phyllis; Black, Leora; Pfennig, Joyce. Title: Getting Academic Jobs: Are Women Equally Qualified—and Equally Successful?. Source: American Psychologist v. 41 (Mar. '86) p. 318–22 Journal Code: Am Psychol Additional Info: United States Standard No: ISSN: 0003-066X Language: English SUBJECT(S) Descriptor: Women college teachers – Professional status. Note(s): In: American Psychologist v. 41 (Mar. '86) p. 318–22; Discussion. 42:188 F '87; 43:668–9 Ag '88; 44:1549–50 D '89.

13. What is the title of the journal?

1. SocialSci Abs
2. American Psychologist
3. Getting Academic Jobs
4. HW Wilson
5. Women college teachers

14. What is the title of the article?

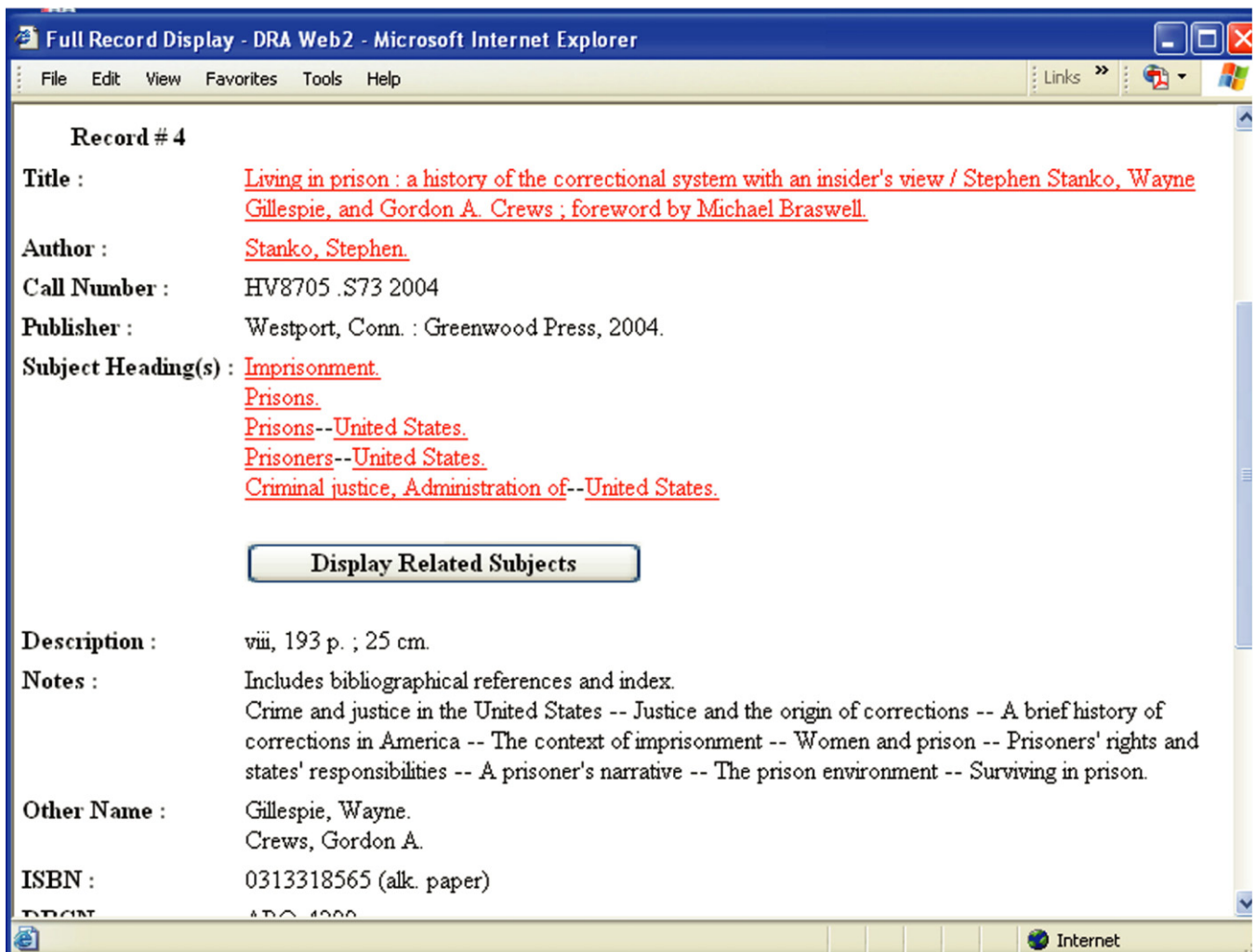
1. SocialSci Abs
2. American Psychologist
3. Getting Academic Jobs
4. HW Wilson
5. Women college teachers

15. What is the date the article was published?

1. 1986
2. 1987
3. 1988
4. 1989
5. 1941

16. Why would I use a database that is not full text?

1. I wouldn't since all the library's electronic periodicals are full text
2. A very good article in a peer-reviewed journal on your topic may not be available in a full text database
3. Stockton may have the full text journal in the periodicals room
4. If Stockton does not have the article either in print or electronically, I can order it through Interlibrary Loan
5. 2, 3, and 4



17. The above screen comes from the Library's Catalog. What is the citation above for?

1. Book
2. Periodical
3. Thesis
4. Web Site
5. Dissertation

18. Stockton Library databases such as Academic Search Premier can only be used in the Library

1. True
2. False


19. The advanced search mode on Google allows for limiting your search to a particular domain.

1. True
2. False



20. Where can you find a model of how to cite a Web page?

1. Hacker1s *A Writer's Reference*
2. Library's Web Page
3. Ready Reference Shelves in the Library
4. All of the above

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Antioxidant profile in the circulation of patients with fibroadenoma and adenocarcinoma of the breast

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21. What is the citation above for?

1. Book
2. Journal
3. Thesis
4. Government Document
5. Dissertation

22. Is using a periodical database, like Academic Search Premier (ASP), the same as using the Internet?

1. Yes, the articles are duplicated from ASP to the Internet
2. Yes, generally speaking, all databases are the same
3. No, material on ASP first appeared in published magazines and journals
4. Yes, like articles on ASP, the Internet also has consistent editorial overview

23. What of the following forms of intellectual property are covered by copyright?

1. Architecture
2. Computer programs
3. Movies
4. Songs
5. All of the above

24. Why is it necessary to cite the sources you use?

1. To avoid committing plagiarism
2. To give credit to the work of the original authors or creators
3. Because my college requires it
4. 1, 2, and 3 are correct

25. Everything on the Web is in the public domain and can be used without permission.

1. True
2. False

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