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Abstract

This study with undergraduate students in the Ancell School of Business, Western Connecticut State University, evaluated the knowledge of students using library resources before and after one session of library instruction in the library, and after follow-up instruction in the classroom. Survey method was used before and after the initial session of library instruction in the library, and after follow-up instruction session in the classroom. Significant differences were found in the students' knowledge of library resources between the pre- and post- surveys in the library session and in the library usage experience after the follow-up instruction session in the classroom. The study also enhanced librarians' techniques for teaching the millennial generation to effectively use library resources.

Introduction

Each generation is unique, often requiring different methods of providing effective library instruction. Over the past several years teaching the millennial generation has become a challenge. With the increase in off campus access to resources, we were seeking improved teaching techniques to provide library instruction inside the library and also in the classroom.

A non-documented attempt at follow-up sessions with a marketing professor was what prompted us to apply for a grant. The positive results at the original follow-up instruction sessions encouraged us to study more classroom situations. Two different professors with the management department allowed time in the classroom for our actual study. Although circumstances were different from the marketing department, with the marketing classes having a project and the management departments requiring a paper, we felt it was a useful study. Follow-up instruction sessions in the classroom included answering any questions students may have had subsequent to beginning their research and often included our demonstrating databases, suggesting sources, and help with citing sources. The follow-up instruction sessions concluded with the same survey that was given in the initial library instruction session in order to measure students' knowledge of the library resources and their experience in using the library.

Education Setting

Western Connecticut State University (WCSU) located in Danbury, Connecticut is one of the four Connecticut State Universities. In the Fall 2007 semester, approximately 6,211 students were enrolled at the University. WCSU is predominantly an in-state University and nearly 90% of the student body is Connecticut residents with 146 towns and cities in Connecticut represented. It is a typical small state university offering a quality, practical education to students from diverse economic and ethnic backgrounds.

The Robert S. Young Library, The Business Library, located on the Westside campus, is also the location of the Ancell School of Business. It is organized much like a corporate library. The collection is patterned after the Baker Library's Core Collection at the Harvard Business School and consists of the best and most recent resources in business and related fields. The business collection is supportive of the curricula in the areas of accounting, finance, management, marketing, management information systems, and partial support for the Division of Justice and Law Administration. The Ruth A. Haas Library, at the main campus, also provides additional supportive materials.

Library Instruction Background

The Robert S. Young Library follows the traditional model of single session instruction, in which librarians teach students how to locate information for a particular course in a 50- to 75-minute session. Most of the sessions are taught in the library. Teaching faculty contact librarians to schedule library instruction sessions during one of their regular class periods and students are brought to the library and are usually accompanied by the faculty member. After discussing the assignment with the

faculty member, the library instruction is tailored to match the specific research needs of the class. The following areas are generally covered:

- Online catalog shared by the four Connecticut state universities and the Connecticut State Library
- Library PINS for off- campus access and for requesting materials from other CSU campuses
- Discussion of library services such as Interlibrary Loan and Reserves
- How to search for journal articles in selected databases
- Specialized databases such as Datamonitor (MarketLine), MediaMark Research (MRI), Westlaw, etc.

The advantages to offering a single session tailored to specific courses are a captive audience and students' exposure to the sources located in the library. There are also some disadvantages. Students are overwhelmed by the enormous amount of information presented in 50- to 75-minute sessions and often find it difficult to find specific information as a result. Librarians do not have the time to devote their teaching to the various library and technical skill levels of the students. Many of the students perceive the library instruction as being "irrelevant to their specific information needs" if they cannot immediately use the information. Time is too limited for students to linger in the library to explore the sources, nor is there enough time for faculty-librarian collaboration in one-time sessions. Because of the limited classroom time that faculty can devote to library sessions, any type of evaluation is often difficult.

New problems are always arising in library instruction as online databases and Internet resources are widely used among the millennial generation of students. With our 40-plus years combined experience in providing library instruction, we were seeing some very different responses to instruction. Remote access to library sources often led students away from the need for instruction. The formats of databases change, often with new searching techniques required. Students turn to search engines such as Yahoo and Google rather than investigate the sources available on the Library homepage or are totally unaware of the reputable sources offered by the Library. The millennial generation, born after 1982, is tech-savvy and educated, multicultural, and is bombarded by text messaging. Students' attention spans are much shorter. We find it more and more difficult to provide instruction in the traditional manner. Improving instruction sessions to make them more effective has become challenging.

A Connecticut State Universities Research Grant was written to evaluate various approaches to library instruction with Ancell School of Business, the Robert S. Young Library, focusing on follow-up instruction sessions in the classroom.

Literature Review

Whether sessions are called library instruction, bibliographic instruction, or information literacy, librarians intend to reach the major goals of showing students library resources, the organization of the resources, and how to evaluate and use these resources effectively in their research. In the past three decades we have seen dramatic changes in library technology and the effects on library users. With all the "instant clicking" such as "IM," "Facebook," and "Flickring," the millennial generation tends to feel bored easily while sitting in library instruction sessions.

For decades, colleagues have done a wide range of research on library instruction. The Association of College & Research Libraries Research & Scholarship Committee published in December 2007 an exhaustive list of literature on library instruction.[1] However, most of the research focuses on single sessions lasting from 50 minutes to an hour. Some are for freshmen information literacy and others are aimed at various subject areas.

Today, many researchers discovered that, "recent generations of college students have a learning style with identifiable characteristics and library instruction efforts must adapt to these learning styles."[2] The research on the millennial generation by Howe and Strauss showed this generation prefers team-working and cares more about the world. [3] "Library educators must develop their curriculum to include real world activities and perspective, be customizable and flexible, incorporate regular feedback, use technology, provide trusted guidance, include the opportunity for social and interactive learning, be visual and kinesthetic, and include communication that is real, raw, relevant and relational in order to meet effectively the needs of them."[4] And "to adequately address the needs of student learners, a user-centered approach must be adopted." [5] Teaching tips are created by Kipnis and Childs for Generation X & Y.[6] There are a few researchers who specifically break the one session instruction into a few shorter segments with the collaboration of faculty and seem to have achieved better learning outcomes. One of the examples of this is the research done by Gandhi Smiti in "Faculty-Librarian collaboration to assess the effectiveness of a five-session library instruction model"[7] where both librarians and faculty take turns teaching the components of library resources instruction. This works well with the millennial generation who "can deal with lots of information but prefer it packaged in short, focused segments."[8]

More research on outcome-focused instruction utilized pre- and post-tests or surveys. The results are often significant. However, few have studied follow-up instruction sessions in the classroom after the single long session at the beginning of the semester.

Methodology

Survey Design

The survey method was used in this study. The survey was designed to evaluate the general knowledge and experience of students using library sources before and after one session of library instruction in the library, and again after the follow-up instruction session in the classroom. The primary requirement for the classes selected were those that had a research paper due and a need for library instruction in the classroom. The initial instruction in the library started on the third week of the 16-week semester, in both Fall 2007 and Spring 2008. These sessions lasted 50-75 minutes. The content of the instruction included general information in using the Robert S. Young Library and its sources, such as the library catalog, and document delivery, and company and industry information databases. The follow-up instruction sessions in the classrooms were around the 10th week of the semester, giving enough time for the students to choose their topic and to do the research. These follow-up instruction sessions lasted about 20 minutes and usually included answering questions, demonstrating specific databases and ways of citing information. The surveys were administered and were collected both before and after the library instruction in the library, and the same survey was administered and collected after the follow-up instructions in classrooms.

The survey can be divided into 4 categories. Category One included 4 questions collecting background information. Category Two included 10 questions evaluating the students' knowledge of using library resources. These 10 questions were further divided into 2 parts. The first part included three questions for article searching skills. The second part included seven questions for knowledge on company, industry and related information. Category Three included three questions about library catalog knowledge, and the last category had two questions on library usage experience. Each category was compared three times: before the instruction, after the instruction, and after the follow-up instruction. The choices for each question followed the Likert scale: very knowledgeable, knowledgeable, competent, and less knowledgeable. After coding the value categories from 1 to 4, with 1 representing less knowledgeable and 4 representing very knowledgeable, an ordinal variables average score can be computed to indicate the level of knowledge. All the data was evaluated. Comparisons were made between the pre-instruction and post-instruction sessions, and between the post-instruction and the follow-up instruction sessions. The indicator variables are the four category averages, the total average and each question scores. A t-test was used to examine two null hypotheses: (1) that there was no difference between the pre-instruction and post-instruction sessions; and (2) that there was no difference between the post-instruction and follow-up instruction sessions. Our focus is on the second hypothesis. Due to the slight variations of student samples in the three sets of data, we

used independent samples t-test. The statistical analysis was carried out in Statistical Package for the Social Sciences (SPSS).

Survey Population and Sample

The classes surveyed were upper-division undergraduate students in the Management Department at the Ancell School of Business. There were a total of 102 undergraduate students in five classes of Operations Management participating in the survey. Sixty-six percent of the students who participated in the survey in the initial library sessions with a pre- and post-survey were juniors. Thirty-four percent of the students who participated in the pre- and post- surveys in the library were seniors. There were 62 students participating in the follow-up instruction sessions survey in the classrooms. Seventy percent of the students were juniors and thirty percent were seniors.

Data Analysis and Results

It is clear from Table 1 below that the instruction had significant impact on student knowledge of the library. Across all four categories of knowledge including library usage experience, post-instruction session averages are significantly higher than pre-instruction session. The actual level of significance is so much smaller than the usual 5% or 1% that it cannot be reported by the SPSS output. The overall average reflects the same pattern. This result indicates again the importance of library instruction and is consistent with previous studies on the role of library instruction.

Table 1. Pre-Instruction vs. Post-Instruction Sessions*

* t-Test for equality of means. Equal variances not assumed.							
		Mean	**n**	**T**	**Df**	**Sig.(2-tailed)**	**Mean Diff.**
Article Skill	Pre-Instruction	2.5222		-8.856	202.360	.000	-.68943
	Post-Instruction	3.2117					
Company Skill	Pre-Instruction	2.1461		-6.675	189.337	.000	-.58661
	Post-Instruction	2.7327					

Catalog Skill	Pre-Instruction	2.0637		-6.983	202.610	.000	-.59404
	Post-Instruction	2.6578					
Library Experience	Pre-Instruction	2.5212		-7.154	198.426	.000	-.36225
	Post-Instruction	2.8835					
Average	Pre-Instruction	2.6834	102	-6.472	147.930	.000	-.77937
	Post-Instruction	3.4628	103				

Table 2 compared the results between the post-instruction and follow-up instruction sessions in the classrooms. We compared the mean numbers and the significance again. The results suggested little difference between the two sessions. Across the four categories of library knowledge and library usage experience, the mean numbers of Company Skill and Library Experience are higher, but the differences were not significant. This result seemed to suggest that the follow-up session in this research sample did not provide significant help to the students in using library resources.

Table 2. Post-Instruction vs. Follow-up Sessions*

* t-Test for equality of means. Equal variances not assumed.							
		Mean	**n**	**T**	**Df**	**Sig.(2-tailed)**	**Mean Diff.**
Article Skill	Post-Instruction	3.2117		.240	129.975	.811	.02079
	Follow-up	3.1909					
Company Skill	Post-Instruction	2.7327		-.877	140.241	.382	-.09366
	Follow-up	2.8263					
Catalog Skill	Post-Instruction	2.6578		.855	138.355	.394	.08115

	Follow-up	2.5766					
Library Experience	Post-Instruction	2.8835		-.529	118.489	.598	-.03048
	Follow-up	2.9140					
Average	Post-Instruction	3.4628	103	.024	140.341	.981	.00391
	Follow-up	3.4589	62				

However, the averages could miss some important information. To examine the data a little closer, we broke down the categories into their components and compared the two groups at the component level. The results are reported in Table 3.

From Table 3, across the 15 component areas of library knowledge and library usage experience, most of the components from the follow-up groups do show an increase (slight improvement) which include: Academic Search Premier, LexisNexis, Reference USA, Gale's Ready Reference, Mergent Online, etc., but the increases are not significant enough. However, students' knowledge of DataMonitor (MarketLine) is improved significantly at 10% and the students' Library Usage Experience is also significantly enhanced at 5%.

Table 3. Post-Instruction vs. Follow-up Sessions: Details*

* t-Test for equality of means. Equal variances not assumed.						
		Mean	**t**	**Df**	**Sig.(2-tailed)**	**Mean Diff.**
Academic Search Premier	Post-Instruction	2.85	-.502	131.930	.616	-.065
	Follow-up	2.92				
Business Source Premier	Post-Instruction	2.87	.141	126.024	.888	.019
	Follow-up	2.85				
ABI / Inform	Post-Instruction	2.90	2.041	125.456	.043	.257
	Follow-up	2.65				

D&B Million Dollar	Post-Instruction	2.29	.228	128.581	.820	.033
	Follow-up	2.26				
LexisNexis	Post-Instruction	2.88	-.252	120.989	.802	-.036
	Follow-up	2.92				
RefUSA	Post-Instruction	2.43	-.583	129.591	.561	-.085
	Follow-up	2.52				
Gale's Ready Reference	Post-Instruction	2.21	-1.061	135.080	.291	-.149
	Follow-up	2.35				
DataMonitor	Post-Instruction	2.23	-1.683	126.250	.095	-.256
	Follow-up	2.48				
Mergent Online	Post-Instruction	2.12	-1.521	127.612	.131	-.225
	Follow-up	2.34				
Newspaper	Post-Instruction	2.76	-.330	114.931	.742	-.049
	Follow-up	2.81				
Consuls	Post-Instruction	2.57	-.089	133.848	.929	-.012
	Follow-up	2.58				
Interlibrary Loan	Post-Instruction	2.44	1.129	135.906	.261	.163
	Follow-up	2.27				
Request	Post-Instruction	2.62	1.149	133.641	.253	.166
	Follow-up	2.45				

Library Use Experience	Post-Instruction	3.22	-1.911	121.299	.058	-.178
	Follow-up	3.39				
Library Helpful	Post-Instruction	3.44	.863	123.257	.390	.082
	Follow-up	3.35				

Discussion

Significant differences were found in the students' knowledge of the library resources in the pre-and post-surveys. The follow-up instruction sessions in our study did have a significant impact on the students' library usage experience. The knowledge of the library resources remained about the same as the post-surveys except for some of the components.

A couple of factors may have influenced the results:

1. Due to the limited time in the classroom for doing the follow-up instruction, we were only able to answer questions the students asked and to demonstrate online resources when requested. Students either retained the information learned from the initial library instruction session or failed to get more information due to the time-limited follow-up sessions.
2. Some students didn't start their paper early enough to use the databases. They didn't have any questions.
3. Not all databases get an equal chance of being used, neither do students' experiences get an equal chance of being evaluated.

On the other hand, there were positive benefits from the follow-up instruction sessions in the classroom that may not be easily quantified, but observed:

- Students were more comfortable asking questions in the follow-up instruction sessions in the classroom than in the library. Classroom setting increased opportunities for students to be more interactive in learning library resources.
- Students appeared to be more comfortable coming to the library after we had given follow-up sessions. Librarians were more recognizable to the students on campus. A positive connection between students and librarians was re-enforced.
- Students get more opportunities to ask questions, some of which are even related to other classes (i.e., Finance and Marketing).

- Librarians get more direct feedback from students with the follow-up instruction session, so they could provide better service. For example, response was better when using online sources, and we found it necessary to obtain more online resources.
- Follow-up instruction session revealed that target teaching is more effective. Teaching only what students needed at the time seemed to work better. Students were more attentive.
- Follow-up session also revealed that, in addition to the basic sources, target/subject oriented classes are also needed.
- Built a rapport with faculty as we worked more with them, providing an opportunity for further instruction and research. They were looking for ways to improve the quality of their students' papers.

Conclusion

The primary objective of this study was to determine ways to improve library instruction, more specifically, how the follow-up instruction sessions in the classroom work differently from a traditional single session. The pre-and post-surveys did reveal that the primary library sessions were successful. Follow-up instruction sessions in our study had a significant impact on the students' library usage experience although not on the students' knowledge of the library resources. There were possible factors that may have influenced the results as mentioned in the discussion. The finding in this study will help us better design and implement future follow-up instruction sessions, and a more effective way to teach and interact with the millennial generation.

Endnotes

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Appendix

Library Instruction Survey (2007-2008)

Today's Date _____ (mm/dd/yyyy).

Professor's Name_____.

1. Course Name or Number_____.

2. Select One:

Freshman	Sophomore	Junior	Senior
○	○	○	○

3. Was this the first library instruction session you've attended?

Yes	No
○	○

If no, how many sessions have you attended before? _____.

4. Prior to this library session, how would you rank your knowledge of doing research in the library?

Beginner	Intermediate	Advanced
○	○	○

5. Please indicate your level of familiarity with the following databases from the Library Home Page:
 (4) Very Knowledgeable
 (3) Knowledgeable
 (2) Competent
 (1) Less Knowledgeable

a. Academic Search Premier

4	3	2	1

b. Business Source Premier

4	3	2	1

c. PROQUEST/ABI/Inform

4	3	2	1

d. Dun & Bradstreet's Million Dollar Database

4	3	2	1

e. LexisNexis Academic Universe

4	3	2	1

f. Reference USA

4	3	2	1

g. Gale's Ready Reference Shelf (Associations)

4	3	2	1

h. Datamonitor (MarketLine) Business Information Center

4	3	2	1

i. Mergent Online

4	3	2	1

j. Newspapers Full-Text (PROQUEST)

4	3	2	1

6. How do you rate yourself in using CSU's CONSULS online catalog?

Excellent	Very Good	Good	Fair
4	3	2	1

7. What is your comfort level in obtaining materials from ILLiad (Interlibrary Loan)?

Excellent	Very Good	Good	Fair
4	3	2	1

8. What is your comfort level in getting materials from the Request function of CONSULS?

Excellent	Very Good	Good	Fair
4	3	2	1

9. Your experience using the library as a whole is very positive?

Strongly Agree	Agree	Disagree	Strongly Disagree
4	3	2	1

10. The library instruction session was helpful for my class research?

Strongly Agree	Agree	Disagree	Strongly Disagree
4	3	2	1

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