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AARON BOWEN

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ARTICLE

LibGuides and Web-Based Library Guides in Comparison: Is There a Pedagogical Advantage?

AARON BOWEN

Meriam Library, California State University, Chico, California, USA

This study investigates whether the platform used to deliver a tutorial matters in online information literacy instruction and assesses the overall quality of an information literacy tutorial assignment given to an undergraduate survey class. The study asks whether there is any pedagogical advantage between information literacy tutorials created in the LibGuides library guide creation software and tutorials created as Web pages. This research question is relevant to current studies of online information literacy tutorials, particularly given the increasingly dominant but under-researched position of LibGuides in the academic library world for delivering guides and tutorials. Two separate groups of students completed LibGuides and Web page versions of the same information literacy tutorial assignment in a university undergraduate communication course. Survey results of these 89 students indicated that both the LibGuides and Web page platforms deliver online instruction content effectively and achieve learning objectives almost equally well. Results also indicated content areas within the assignment that could be strengthened.

KEYWORDS *information literacy, LibGuides, Web page tutorials, online instruction, online tutorials, undergraduate students, pedagogy*

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Address correspondence to Aaron Bowen, Reference/Subject Librarian, Meriam Library, California State University, Chico, CA95929-0295. E-mail: asbowen@csuchico.edu

INTRODUCTION

Inspired by increasing interest among librarians from the 1970s onward in helping patrons become information literate, many university libraries now include pathfinders, guides, tutorials on using library services, and other information literacy (IL) tools on their Web sites. These tutorials are often created in-house and can be either general or discipline-specific. They frequently begin as scanned copies of paper guides.

The creation of these online IL instruction materials requires a certain degree of technological skill on the part of the librarian. It is not feasible for a library to give the assignment of digitizing and maintaining a variety of discipline-specific materials to one librarian, or to rely on the library Webmaster to handle the assignment. There has been an ongoing need among librarians to be able to create online guides while avoiding the learning curves associated with Web-based technologies.

This need is often filled by LibGuides, the primary proprietary guide-creation platform within the library world released by Springshare in 2007 (<http://springshare.com/>). Individual LibGuides pages are flexible in allowing libraries to include their own branding on guides' headers and in allowing librarians to customize content. They do, however, follow a uniform architecture, consisting of standardized header features: tabs, drop-down menus at the top of the screen, and either one, two, or three columns for content display.¹ In contrast, with enough time and skill devoted to its design, an HTML or XML-based Web page can look however the librarian wants it to.

These two methods of designing Web-based library guides parallel each other in the contemporary library world. Does one method have any pedagogical advantage over the other, or do both methods achieve approximately the same results when instructing students on library use? To answer this question, two different versions of the same IL assignment were given to 25 sections of an undergraduate communication course at California State University Chico (CSU Chico) during the fall of 2012. One version of the assignment was created in LibGuides, and the other consisted of a series of Web pages.

For this study, the literature on LibGuides, online IL tutorials, and the methodologies used to assess them was reviewed. Following these summaries is a presentation of the methodology used in this study and the results of a tutorial assessment survey. This article concludes with a discussion of those results, including a comparison of the survey results gathered using the two tutorial platforms, a discussion of the strengths and weaknesses of the tutorial assignment itself as well as a plan for strengthening it, and a discussion of future research directions.

71

LITERATURE REVIEW

72 While librarians have recognized the value of contemporary IL for decades,
73 universities have more recently recognized a need to take an active role
74 in IL initiatives in their curricula, and they have placed library faculty at
75 the center of these initiatives. IL intervention enables students to become
76 lifelong learners, strengthens university curricula, and helps universities meet
77 accreditation standards. The increased centrality of IL to university education
78 has led to bodies of literature on diverse aspects of IL instruction, particularly
79 regarding online instruction.

80 IL Definitions and Standards

81 The emergence of IL in university education has created broad initiatives to
82 define and standardize the concept. These initiatives include, among others,
83 the ACRL Information Literacy Competency Standards for Higher Education
84 (2000).

85 The ACRL standards (2000, para. 1) define IL as “a set of abilities to
86 ‘recognize when information is needed and have the ability to locate, eval-
87 uate, and use effectively the needed information.’” These standards further
88 present IL as enabling a person to do the following:

- 89 • Determine the extent of the information needed;
- 90 • Access the needed information effectively and efficiently;
- 91 • Evaluate information and its sources critically;
- 92 • Incorporate selected information into one’s knowledge base;
- 93 • Use information effectively to accomplish a specific purpose; and
- 94 • Understand the economic, legal, and social issues surrounding the use
95 of information, and access and use information ethically and legally.
96 (para. 2)

97 While there are individual differences between the definitions and standards
98 set forth in the other initiatives, they all generally embody the same points
99 as those presented by ACRL.

100 These initiatives have informed many of the online IL tutorials that came
101 into existence during the 2000s. Bradley Brazzeal (2006), for example, dis-
102 cussed applying initiatives to online research guides in general. Ada Emmett
103 and Judith Emde (2007) specifically analyzed the application of the ACRL
104 standards to IL assessment.

105 IL Assessment

106 Lorrie Knight (2002) offered a compelling summary of why IL assessment is
107 of value to libraries and universities: It supports a university's ability to be ac-
108 countable for student learning (thus fulfilling its accreditation requirements),
109 and it demonstrates that the library has developed a metric for measuring
110 IL among students, that the library is functionally instructing these students
111 on the principles of IL, and that the library is able to improve its instruction
112 as needed. Debra Gilchrist and Anne Zald (2008) presented a methodology
113 for applying these principles to a university's IL instruction in a practical and
114 replicable manner.

115 Andrew Walsh (2009) wrote an extensive review of different methods
116 used in assessing IL tutorials' efficacy in teaching students to be information
117 literate. He found that many assessment methods drawing from constructivist
118 pedagogy involve multiple choice questionnaires or short answer quizzes,
119 though other methods included having students create portfolios, write es-
120 says, analyze bibliographies, or participate in simulation activities. Beyond
121 these assessment mechanisms, Walsh mentioned two studies in which li-
122 brarians observed students as they completed library search tasks and ten
123 studies that incorporated self-assessment into the data gathered from stu-
124 dents. Walsh did not treat these methodologies as mutually exclusive to
125 each other, reflecting the fact that some methodologies were combined in
126 individual studies.

127 Walsh did not address the most common construction of such assess-
128 ment: the pretest/posttest construction, whereby students take a short quiz
129 before beginning an IL tutorial and then retake the quiz after the tutorial to
130 see if their research abilities improved. Carol McCulley (2009) and Kornelia
131 Tancheva, Camille Andrews, and Gail Steinhart (2007) examined this con-
132 struction. Both studies reviewed different assessment strategies, and de-
133 scribed mixing these strategies together to forge an understanding of what
134 their respective IL instruction programs do and where they need adjustment
135 to further student learning. McCulley employed pre- and posttests, engaged
136 in informal classroom observations and discussions with students, and in-
137 cluded performance assessments such as short classroom presentations and
138 annotated bibliographies in her assessment. Tancheva and colleagues did
139 much the same thing, using pre- and posttests, focus groups, and Web-based
140 surveys. Both articles measured knowledge-based and affective methods to
141 assess student learning: measurements of whether or not a student learned
142 and retained assignment content, and whether or not a student believed
143 the assignment achieved its objectives. Tancheva and colleagues also used a
144 third measure to assess gaps between instructor and student perceptions of
145 IL comprehension. Judy Bell (2011) offered an in-depth examination of affec-
146 tive student assessment. These measures form the basis of the methodology
147 used in this research project.

148 While the bulk of the literature on IL discusses assessment, follow-
149 ing the lead of Nancy Dewald (1999) in particular, a smaller but still sig-
150 nificant number of articles have discussed assessment of online tutorials,
151 specifically via university-developed tutorials (Tooman and Sibthorpe 2012;
152 Friehs and Craig 2008; Ivanitskaya et al. 2008; Zoellner, Samson, and Hines
153 2008).

154 Four studies (Su and Kuo 2010; Somoza-Fernández and Abadal 2009;
155 Yang 2009; Lindsay et al. 2006) offered comparisons of different tutorials.
156 Nancy Noe and Barbara Bishop (2005) assessed Auburn University's imple-
157 mentation of the Texas Information Literacy Tutorial (TILT), and Irvin Katz
158 (2007) evaluated iSkills, the forerunner of iCritical Thinking, a product of
159 the Educational Testing Service. Furthermore, there exists a non-institution-
160 specific inventory called Project SAILS, which some libraries have employed
161 to assess their IL tutorials (Rumble and Noe 2009). Yvonne Mery, Jill Newby,
162 and Ke Peng (2011) created an in-house instrument based upon SAILS, while
163 Cara Bradley and Leeanne Romane (2007) adapted SAILS to evaluate their
164 local implementation of TILT.

165 The IL tutorial assignment evaluated in this study was based upon el-
166 ements of the ACRL Standards. In terms of assessment, this study drew
167 on existing IL assessment models operating on both the knowledge-based
168 and affective measurement logics described by McCulley and Tancheva
169 and colleagues. The knowledge-based questions were modeled on those
170 developed by Mery and colleagues and were evaluated by three librar-
171 ians for validity. The questions corresponded to different ACRL (2000)
172 standards.

173 LibGuides

174 As noted previously, barriers to placing library guides online (requiring cer-
175 tain technical and Web design skills, maintaining the currency and relevance
176 of online guides, and employing generic tutorials such as TILT) have led
177 to the desire for more efficient methods of placing library guides online.
178 LibGuides has emerged during the past four years to offer librarians a sim-
179 ple, fast, and easy-to-use platform for creating online learning content. As of
180 now, over 60,000 librarians have used LibGuides to create online learning
181 content (Springshare 2013). LibGuides has become the primary proprietary
182 platform for guide creation within the library world (a position aided by the
183 lack of direct competitors). Donald Moses and Jennifer Richard (2008) noted
184 SubjectsPlus as a competitor, and Oregon State University developed Library
185 à la Carte, but being open source, these two platforms have substantially
186 different dynamics from LibGuides in terms of how a library would host and
187 maintain them. No other proprietary products have entered the market to
188 compete with LibGuides.

189 LibGuides combines the popularity of modular IL instruction with the
 190 desire to create, adapt, or reuse tutorials (or elements of tutorials) with
 191 ease, just as librarians would do with TILT. LibGuides also offers substantial
 192 technical advantages over Web-based tutorials. It is, for example, easier to
 193 embed instruction videos in LibGuides and share content between LibGuides
 194 than it is to perform these tasks with Web pages.

195 Despite its popularity, there is sparse research on how university stu-
 196 dents use LibGuides and what benefits it affords them. Jacqueline Solis and
 197 Ellen Hampton (2009) mentioned LibGuides in passing, as if acknowledging
 198 that no research on the product had been conducted at that time. Since then,
 199 a flurry of articles have been published describing the implementation and
 200 use of LibGuides in libraries (Mokia and Rolen 2012; Gerberi, Hawthorne,
 201 and Larsen 2012; Roberts and Hunter 2011; Adebonojo 2010; Daly 2010;
 202 Glassman and Sorensen 2010; Gonzalez and Westbrook 2010; McMullin and
 203 Hutton 2010; Miner and Alexander 2010), but these articles offer little to no
 204 assessment of the value derived from these guides.² Amy Gustavson, Angela
 205 Whitehurst, and David Hisle (2011) began filling this gap in the literature by
 206 measuring students' responses to an IL tutorial presented in modular fash-
 207 ion via LibGuides. Karen Neves and Sarah Jane Dooley (2011) further filled
 208 this gap by examining the correlation between medical topics taught over
 209 the course of a semester and topics presented on their library's LibGuides.
 210 Sarah Anne Murphy and Elizabeth Black (2013) and Aaron Bowen (2012)
 211 presented data on students' reactions to LibGuides embedded in learning
 212 management system environments.

213 While there is a significant body of literature assessing IL presented in
 214 Web-based tutorials, the field is still open for assessment regarding IL pre-
 215 sented in LibGuides tutorials. Even accounting for the technical advantages
 216 possessed by LibGuides, it is unclear whether LibGuides offers any peda-
 217 gogical advantage over Web pages (or vice versa), or if both platforms are
 218 approximately equal in terms of presenting IL tutorials. Only two studies have
 219 compared learning outcomes between platforms, both of which predate the
 220 introduction of LibGuides (Tempelman-Kluit 2006; Salisbury and Ellis 2003).
 221 Julie Robinson and Don Kim (2010) compared LibGuides to three sets of
 222 guides created individually by different librarians, but they did not discuss
 223 pedagogies or learning outcomes. As such, a comparison of pedagogical
 224 value between LibGuides and Web pages is a new area of research.

225 METHODOLOGY

226 During the fall 2012 semester, CSU Chico served over 16,000 students,
 227 93 percent of whom were undergraduates (CSU Chico 2013). This student
 228 population is served by the Meriam Library, a library of 1.25 million volumes
 229 with access to over 130 article databases.

230 The university's College of Communication and Education is divided
231 into two departments: Communication Design and Communication Arts and
232 Sciences. Communication Arts and Sciences further divides itself into two
233 programs: Communication Studies and Communication Sciences and Disor-
234 ders. CSU Chico's Communication Studies program offers a broad survey
235 course called Small Group Communication (Communication 132), which at-
236 tracts substantial numbers of first-year students. When this research was
237 conducted during the fall 2012 semester, there were 812 students enrolled
238 in the 25 sections of Communication 132.

239 As part of their coursework in Communication 132, students are re-
240 quired to participate in the Chico Great Debate, a day-long series of debates
241 involving CSU Chico students and members of the public. The topic of the
242 debate changes every semester, but it is always a controversial topic, and
243 the preparation for the debate always involves a significant amount of library
244 research.

245 The Communication 132 Library Assignment

246 Part of students' coursework in Communication 132 is tied into the Great
247 Debate. The Communication 132 IL tutorial assignment introduces students
248 to the concepts of IL. Before the library licensed LibGuides, the library as-
249 signment existed as a series of Web pages arranged in a linear progression.
250 The six sections of the assignment involve the following tasks, drawn from
251 the ACRL (2000) IL standards:

- 252 • Section one: Students identify keywords and main concepts in their pre-
253 sentation topic and arrange these keywords using Boolean operators.
- 254 • Section two: Students consider the process of distinguishing a scholarly
255 work from a non-scholarly one and evaluating information for quality.
- 256 • Section three: Students search Academic Search for scholarly articles on
257 their topic.
- 258 • Section four: Students search the library catalog for books on their topic.
- 259 • Section five: Students search for newspaper articles on their topic.
- 260 • Section six: Students prepare an annotated bibliography.

261 The Communication 132 instructors include a link to the page of instructions
262 for the assignment in their course materials (see Figure 1). This instruction
263 page leads first to a worksheet that students fill out as they progress through
264 the assignment and then successively through each of the assignment's six
265 sections.

266 Following CSU Chico's acquisition of LibGuides in 2009, the assignment
267 was updated and put into LibGuides form (see Figure 2). The objectives
268 of the assignment and much of its content remained the same, with the

Meriam Library
CSU, Chico

CALIFORNIA STATE UNIVERSITY, CHICO

CMST 132 Library Assignment

The purpose of this assignment is to help you find credible, high-quality sources using the Meriam Library that will be of value in giving Great Debate presentations, and to prepare a three-source list of references.

The first component of this assignment you will see is the assignment worksheet, which is at the bottom of this page following these instructions. Past the assignment worksheet, you will proceed through a series of webpages comprising the seven sections of the assignment. You must print out the assignment worksheet, and then fill it out as you proceed through the assignment's pages.

Assignment objectives:

The assignment objectives are to:

- Identify keyword(s) or main concept(s) in your Great [Debate topic](#).
- Search library resources to find relevant information while avoiding irrelevant or less useful information.
- Use the library catalog to find a book's call number, and then use the call number to locate the book in the Meriam Library.
- Write citations for the articles and book you find over the course of the assignment using the American Psychological Association (APA) citation style. The APA citation style is used by many [academic](#) fields, not just psychology.

The assignment is divided into seven sections:

- *Section one:* Developing your search. This section will allow you to identify one or more keywords or main concepts in your presentation topic and arrange these keywords in search strings using the words AND and OR.
- *Section two:* Understanding the process of distinguishing a scholarly work from a non-scholarly one, and of evaluating information for quality. This section is divided into two parts.
- *Section three:* Searching the Academic Search database for scholarly articles about your topic.
- *Section four:* Using the library catalog to search for books about your topic.
- *Section five:* Searching for a newspaper article. Though they are non-scholarly, newspaper articles can offer useful information about your topic.
- *Section six:* Preparing an Annotated Bibliography. This section will allow you to properly cite the sources you find and organize them in an annotated bibliography. You will also write an annotation (a short paragraph

FIGURE 1 Screenshot of a section of the Web page version of the assignment. (Color figure available online).

269 worksheet and its six sections. The most significant adjustment was to the
270 architecture of the assignment's onscreen presentation: Rather than existing
271 as a series of Web pages, the assignment's sections became a set of tabs at
272 the top of the screen.

273 The primary purpose of the current research is to evaluate the extent to
274 which an assignment presented in LibGuides holds any pedagogical advan-
275 tage over the same assignment presented in Web page form. To this end, the

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FIGURE 2 Screenshot of a section of the LibGuides version of the assignment. (Color figure available online).

original Web page version of the assignment was brought back and updated to reflect the current LibGuides version of the assignment. Each version of the assignment had a unique URL. A link to one of the two assignment platforms was included in the student coursework for all 25 sections of the course. The LibGuides version was seen by students in twelve sections of the course identified via randomly generated numbers between 1 and 25. The Web page version was seen by students in the remaining thirteen sections. In terms of instructional content, the assignment was identical between the two platforms.

Experimental Setup

For the purpose of conducting the current research, a seventh section was added to each version of the assignment, presenting students with a

sixteen-question survey on the students' IL knowledge and their reactions to the assignment. More precisely, two duplicate versions of the survey, asking the same questions, were added to the respective versions of the assignment.

Drawing from the knowledge-based and affective measurement logistics described by McCulley and Tancheva and colleagues, the survey began with six knowledge-based questions corresponding to each of the first six sections of the assignment. This set of questions was followed by five affective questions and then five demographic questions. Drafts of all eleven non-demographic survey questions and their responses were reviewed by three librarians. Over the course of several reviews, consensus developed as to which questions corresponded to different ACRL (2000) standards and which answer constituted the "best answer" to a question.

The first page of the survey consisted of a statement mandated by CSU Chico's Institutional Review Board that the survey was optional and had no effect on students' assignment grade. As students were not required to respond to the survey, many students decided to forego it. The survey completed by students who had the LibGuides version of the assignment received 53 responses, and the survey completed by students who had the Web page version received 36 responses. The 89 combined survey responses represented 11 percent of the total course enrollment.

Forty-seven of the 53 students who completed the survey from the LibGuides version of the assignment responded to the demographic questions, with the exception of the question on gender, which received 45 responses. Of these 45, twelve were male (27 percent), and 33 were female (73 percent). Of the 47 who responded to the other questions, 94 percent were 18–20 years old, 79 percent were first-year students, and 91 percent were not communication majors.

Thirty-two of the 36 students who completed the survey from the Web page version of the assignment responded to the demographic questions. Of these 32, seven were male (22 percent), and 25 (78 percent) were female. All respondents were 18–20 years old, and all but one were first-year students. Twenty-five (78 percent) were not majoring in communication.

Of the 79 total respondents to the survey's demographic questions using both platforms, nineteen (24.1 percent) were male, 58 (73.4 percent) were female, two (2.5 percent) did not indicate a sex, and 76 (96 percent) were 18–20 years old. Also of these 79, 68 (86 percent) were first-year students. Furthermore, only six (8 percent) of the 79 were majoring in communication, and none were minoring in communication.

RESULTS

Knowledge-Based Survey Questions

The six knowledge-based questions were modeled on those developed by Mery and colleagues, who created an in-house instrument based on Project SAILS. The percent correct for each question is shown in Table 1.

TABLE 1 Percent Correct for Each of the Knowledge-Based Survey Questions

Question	Percent correct LibGuides version	Number of students LibGuides version (total)	Percent correct Web page version	Number of students Web page version (total)
1. For your Great Debate research, you are considering researching the effects of the current economy in the U.S. on higher education. Choose the search string that you think would best locate resources on this subject.	39.2%	51	25.7%	35
2. You are searching for information on the economic impact of wind energy, and you need to find accurate, unbiased information. Which of the following Web sites would be the best resource?	72.0%	50	80.0%	35
3. Where would you look to find scholarly journal articles for your Great Debate research?	83.7%	49	77.1%	35
4. How are books arranged in the library?	78.4%	51	91.4%	35
5. When researching the border fence along the U.S. and Mexican border, which source would provide the most reliable current information?	31.9%	47	17.1%	35
6. Read the citation that follows. What conclusion can you come to?	73.9%	46	67.6%	34

331 The first of these six questions was designed to measure the student's
 332 knowledge of the beginning of the research process, specifically, the stu-
 333 dent's knowledge of forming a search string. It corresponds to the "Deter-
 334 mine the extent of information needed ability" in the ACRL (2000) standards.
 335 The question read,

336 For your Great Debate research, you are considering researching the
 337 effects of the current economy in the U.S. on higher education. Choose
 338 the search string that you think would best locate resources on this
 339 subject:

- 340 • Effects and current and economy and higher and education and USA;
- 341 • Effects current economy higher education United States;
- 342 • The effects of the current economy on higher education in the United
- 343 States;
- 344 • Effects and higher education and United States [best response].

In terms of which string would best locate resources, the second response was intended to be rejected as the best way to locate resources due to its lack of Boolean operators. Also to be rejected was the third response because of its use of natural language. Of the remaining two responses, “Effects and higher education and United States” was intended to be the correct answer, because it is the most concise. Thirty-nine percent of the students from the LibGuides group and 26 percent of students from the Web Page group chose the correct response. The remaining students’ responses varied greatly, independent of platform use; at least six students from each group chose each of the other responses.

Responses to the next three questions garnered more uniform responses. Corresponding to the “Evaluate information and its sources critically” ability in the ACRL (2000) standards, the second survey question was designed to measure students’ abilities to evaluate information critically with regard to selecting the most authoritative source. It read,

You are searching for information on the economic impact of wind energy, and you need to find accurate, unbiased information. Which of the following Web sites would be the best resource? (You can view each link to get a better idea of the type of content each page produces):

- The *Wikipedia* page on wind power (http://en.wikipedia.org/wiki/Wind_power);
- The U.S. Department of Energy homepage (<http://www.eere.energy.gov/>) [best response];
- The General Electric page on wind turbines (<http://www.ge-energy.com/wind>);
- The *Wall Street Journal* editorial page (<http://online.wsj.com/public/page/news-opinion-commentary.html>).

The U.S. Department of Energy homepage was correctly picked by most students using both platforms as having the most accurate and unbiased information. Students were generally able to identify the answer based upon their completion and comprehension of section two of the assignment, regardless of which version they saw.

The third, fourth, and fifth questions all correspond to the “Access the needed information effectively and efficiently” tenet of the ACRL (2000) standards. The third question concerned a student’s ability to select the best source for finding a journal article:

Where would you look to find scholarly journal articles for your Great Debate research?

- 384 • A library database such as Academic Search [best response];
- 385 • Education.gov;
- 386 • The library catalog;
- 387 • LibraryArticles.org.

388 Most students answered this question correctly as well, regardless of plat-
389 form.

390 Question four assessed a student's knowledge of how books are orga-
391 nized in the Meriam Library:

392 How are books arranged in the library?

- 393 • By call number [best response];
- 394 • By author;
- 395 • Alphabetically by title;
- 396 • By most current year.

397 The LibGuides version of the survey received a lower proportion of
398 correct responses (78 percent) than the Web page version (91 percent).

399 The phrasing of question five appeared to challenge students,
400 obscuring the measurement of pedagogical advantage. The question
401 read,

402 When researching the border fence along the U.S. and Mexican border,
403 which source would provide the most reliable *current* information?

- 404 • *Wikipedia*, an online encyclopedia;
- 405 • *The Journal of International Relations*, a scholarly journal;
- 406 • *The U.S.-Mexican Border in the Twentieth Century*, a book in the Meriam
407 Library catalog;
- 408 • *The New York Times*, a newspaper [best response].

409 Only 32 percent of students using the LibGuides version answered correctly,
410 while 17 percent of the students using the Web page version chose the
411 correct response.

412 Question six revealed broad consensus on the correct response from
413 both versions of the assignment. Corresponding to both the "Incorporate
414 selected information into one's knowledge base" and the "Understand the
415 economic, legal, and social issues surrounding the use of information, and
416 access and use information ethically and legally" abilities in the ACRL (2000)
417 standards, this question was designed to assess student recognition of a
418 citation. The question read,

419 Read the citation that follows. What conclusion can you come to?
 420 Morio, H., & Buchholz, C. (2009). How anonymous are you online? Ex-
 421 amining online social behaviors from a cross-cultural perspective. *AI &*
 422 *Society*, 23(2), 297–307. doi:10.1007/s00146-007-0143-0

- 423 • This is a primary source;
- 424 • This is a scholarly article [best response];
- 425 • This is a book chapter;
- 426 • This is a letter to an editor.

427 Seventy-four percent of the students using the LibGuides version answered
 428 correctly, while 68 percent of the students using the Web page version
 429 answered correctly.

430 Affective Survey Questions

431 In this section, survey respondents were presented with five questions de-
 432 signed to measure their affective response to different aspects of the as-
 433 signment. The questions asked students to rate their experiences with these
 434 aspects on a four-point Likert scale. The first three questions asked students
 435 to rank the ease, clarity, and convenience with which they were able to
 436 conduct library research after having completed the assignment:

437 Having completed the 132 library assignment, please rate how easy or
 438 difficult you find the following aspects of conducting library research:

439 Having completed the 132 library assignment, please rate how clear or
 440 unclear you find the following aspects of conducting library research:

441 Having completed the 132 library assignment, please rate how convenient
 442 or inconvenient you find the following aspects of conducting library
 443 research:

444 Drawn from each of the assignment's six sections, the aspects the students
 445 were asked to rate were

- 446 • Identify keyword(s) or main concept(s) embodied in the Great Debate
- 447 topic;
- 448 • Understand the distinction between scholarly and non-scholarly works;
- 449 • Search for and find relevant scholarly articles while avoiding non-scholarly,
- 450 irrelevant, and/or less useful information;
- 451 • Use the library catalog to find a book's call number, and then use the call
- 452 number to locate the book in the Meriam Library;
- 453 • Search for and find relevant newspaper articles;

- 454 • Write an annotated bibliography, including APA citations, for the articles
 455 and books you find over the course of the assignment.

456 A response of “1” on the scale indicated that a student found the assignment
 457 very easy, very clear, or very convenient, whereas a response of “4” indicated
 458 a student found the assignment very difficult, very unclear, or very inconve-
 459 nient. Table 2 shows the average responses tended toward easy, clear, and
 460 convenient for most aspects, and the responses of the LibGuides and Web
 461 page platform users were similar.

462 The final two affective questions employed the same six assignment-
 463 based attributes but adjusted the criteria measured by the Likert scale. In the
 464 first of these questions, the scale measured the degree of increase in knowl-
 465 edge for each attribute. In the second, it measured the degree of increase in
 466 satisfaction with engaging in each attribute. The scale remained 1–4 for each
 467 question, ranging from “Very significant increase” to “No increase.”

468 The two question prompts read,

469 Rate the extent to which your knowledge of different aspects of using the
 470 Meriam Library has increased from before you completed the 132 library
 471 assignment:

472 Rate the extent to which your satisfaction with different aspects of using
 473 the Meriam Library has increased from before you completed the 132
 474 library assignment:

475 Each prompt was followed by the six assignment-based attributes. The at-
 476 tributes and average responses are presented in Table 3. Again, the responses
 477 across platforms were quite similar.

478 DISCUSSION

479 The results of the first knowledge-based question showed a need to adjust
 480 and clarify the portion of the assignment on selecting topical search terms.
 481 The existing design of the section explains Boolean operators and has stu-
 482 dents begin their research process by developing a search string. Revised
 483 content should expand upon this base to include strategies for thinking
 484 about topics within the Great Debate topic to form the basis of a research
 485 agenda, and strategies for considering potential topics before devising dis-
 486 cussion operators and search strings.

487 Despite the pedagogical need to adjust the first section of the assign-
 488 ment, the survey results indicated that regardless of the platform used, stu-
 489 dents were confused about how to formulate search strings.

TABLE 2 Average Ratings for Ease, Clarity, and Convenience of Completing the Assignment

	LibGuides version			Web page version		
	Easy	Clear	Convenient	Easy	Clear	Convenient
Identify keywords of main concept(s) embodied in the Great Debate Topic	1.9%	1.7%	1.7%	1.9%	1.8%	1.8%
Understand the distinction between scholarly and non-scholarly works	1.9%	1.9%	1.8%	1.9%	1.8%	1.8%
Search for and find relevant scholarly articles while avoiding non-scholarly, irrelevant, and/or less useful information	2.3%	1.9%	2.0%	2.2%	1.9%	2.0%
Use the library catalog to find a book's call number, and then use the call number to locate the book in the Meriam Library	2.0%	1.8%	1.8%	2.0%	1.8%	1.9%
Search for and find relevant newspaper articles	2.1%	2.0%	1.9%	2.0%	1.7%	1.8%
Write an annotated bibliography, including APA citations, for the articles and book you find over the course of the assignment	2.4%	2.0%	2.0%	2.5%	2.2%	2.4%

Note: Ratings were assigned on a scale of 1–4, with 1 being “Very Easy” and 4 being “Very Difficult”; “Very Clear” to “Very Unclear”; and “Very Convenient” to “Very Inconvenient.”

TABLE 3 Averages for the Questions on Knowledge of and Satisfaction with Using Library Resources

	LibGuides version		Web page version	
	Knowledge	Satisfaction	Knowledge	Satisfaction
1. Identify keyword(s) or main concept(s) embodied in the Great Debate topic	2.0%	2.1%	2.2%	2.1%
2. Understand the distinction between scholarly and popular works	2.0%	2.2%	2.1%	2.0%
3. Search for and find relevant scholarly articles while avoiding non-scholarly, irrelevant, and/or less useful information	2.1%	2.1%	2.2%	2.1%
4. Use the library catalog to find a book's call number, and then use the call number to locate the book in the Meriam Library	2.0%	2.0%	2.2%	2.2%
5. Search for and find relevant newspaper articles	2.1%	2.1%	2.2%	2.2%
6. Write an annotated bibliography, including APA citation, for the articles and book you find over the course of the assignment	2.2%	2.3%	2.2%	2.3%

Note: Ratings were assigned on a scale of 1–4, with 1 being “Very significant increase” and 4 being “No increase.”

490 The most common incorrect response to the third knowledge-based
 491 question was “the library catalog,” indicating confusion about the differences
 492 between databases and the catalog. The confusion was roughly uniform be-
 493 tween the two platforms; most students recognized the scholarly, authorita-
 494 tive resources and chose to search them (thus reinforcing section two of the
 495 assignment), but they had difficulties determining which academic resource
 496 searches what type of content. This finding parallels emerging research on
 497 discovery search systems such as EBSCO Discovery Service (Sarah Williams
 498 and Anita Foster 2011; Jody Fagan et al. 2012), which highlights the need for
 499 libraries to articulate the nuanced distinction between searching for articles
 500 in a database and for books in an online catalog.

501 The majority of the students responding to the fifth knowledge-based
 502 question seem to have overlooked the italicized word “current.” Rather, they
 503 may have followed the principles presented in section two of the assignment
 504 and selected the most authoritative resource (choosing the book on the U.S.-
 505 Mexican border because it is more specific to the topic than the *Journal of*
 506 *International Relations*, even though both are scholarly). If so, this question
 507 further reinforces the pedagogical success of section two of the assignment,
 508 especially in that the Wikipedia response attracted so little attention, even
 509 while obscuring measurement of the pedagogical success of section five
 510 across each platform.

On the Web page version of the assignment, students chose the “book” response 63 percent of the time, as compared with 40 percent on the LibGuides version. It is unclear what caused this difference between the two versions of the assignment, specifically why the book was chosen as a substantially more attractive option than the others among the students using Web page version of the assignment, whereas this question elicited more mixed results from those who saw the LibGuides version. However, it is clear that despite the librarians’ consensus on the question’s phrasing and answer choices, the question must better emphasize currency as one of the factors in selecting a response. With this issue in mind, the question might be better written with a parenthetical:

When researching the border fence along the U.S. and Mexican border, which source would provide the most reliable *current* information (i.e., within the past three months)?

Including the publication date of the book (1999) would offer additional context for deciding which source is best for current information.

The first three affective questions revealed little difference between responses from either platform. For the question on ease of conducting library research, the responses and averages are similar for both respondent groups and indicate students’ overall ease in completing the assignment, with the partial exception of sections three and six, which proved somewhat more challenging for students in each group. For the question on convenience, the averages are smaller numerically than the averages for the question on ease, demonstrating students on average found the assignment clearer than then they found it to be easy. Furthermore, despite a slightly greater variation in averages for the clarity of the newspaper question, the averages again show little variation between the students who completed the different versions of the assignments. The responses to the third question are also similar for each version of the assignment, with the exception of the averages with the final attribute, indicating a need for further explanation of annotations and APA citations in section six of the assignment.

While the responses to the first of the final two affective questions fell mostly into the “significant increase” category for both platforms, students using the LibGuides version did trend toward better success in learning the assignment’s material. It is possible that the tabular construction of the LibGuides version provided clearer visual context, with the tabs for scholarly articles, books, and newspaper articles all visibly demarcated from each other, an idea paralleled by Kate Pittsley and Sara Memmott’s findings (2012). This context may not have been as clear in the Web page version, which displayed the sections one at a time in linear fashion. In the second affective question, students expressed greater dissatisfaction with section six than with the rest of the assignment (LibGuides users’ and Web page users’ satisfaction

553 indicators are both 2.3), reinforcing the finding that the assignment's expla-
554 nation and task of creating an annotated bibliography requires adjustment
555 and clarification.

556 The almost equal performances of survey respondents on the two ver-
557 sions of the assignment show the LibGuides and Web page platform differ-
558 ences were not a significant factor in student learning. In responding to the
559 knowledge-based questions, users of both platforms were confused about
560 the same concepts, while the majority of users were in agreement on cor-
561 rect choices and concepts. In responding to the affective questions, survey
562 responses showed similarities in perceptions between the two groups.

563 As an IL tutorial, the Communication 132 assignment greatly improved
564 students' understanding of the distinction between scholarly and non-
565 scholarly sources, and their ability to search for articles and books. These
566 successes were apparent in both groups; there were minimal differences re-
567 ported in student abilities, with just slightly higher increases in IL skills and
568 satisfaction among LibGuides platform survey respondents.

569 Limitations and Future Directions

570 Though the survey respondents represented a broad cross section of under-
571 graduates from different majors at the beginning of their university career
572 (and more critically, were not likely to be significantly different from their
573 peers who did not complete the survey), the low response rate to the sur-
574 veys may render the results ungeneralizable to other universities. As such,
575 incorporating strategies to enhance the survey response rate, such as those
576 discussed by Florian Keusch (2012); Jerold S. Laguilles, Elizabeth A. Williams,
577 and Daniel B. Saunders (2011); Juan Sánchez-Fernández, Francisco Muñoz-
578 Leiva, and Francisco Javier Montoro-Ríos (2011); and Dirk Heerwegh (2006),
579 would benefit future assessment of the Communication 132 assignment, both
580 by improving the response rate and by extension, determining whether or
581 not the respondents are generalizable to the total student enrollment in the
582 class.

583 Following from the research design proposed by Mery and colleagues,
584 this study would further benefit from additional survey questions to draw
585 from when conducting its knowledge-based assessment. Questions could be
586 pretested with students to minimize the prospect of student error caused
587 by question design. Also, multiple semesters of data collection could bet-
588 ter support the reliability of the scores and the validity of the question
589 pool. To this end, the Meriam Library is clarifying sections of the assign-
590 ment that caused student confusion and is developing further assessment
591 questions.

592 In terms of content design and phrasing of the questions, this study will
593 help the Meriam Library improve the assignment. The sections on forming a
594 search statement and on writing an annotated bibliography in particular will

benefit from the creation of new content. Two librarians are developing a stand-alone guide to writing annotated bibliographies.

Other revisions and enhancements following from these observations include placing a site map on each page of the tutorial assignment and making the individual elements of the pages easy to find, similar to Roy Degler and colleagues' recommendations (2012). Both parts of the current section two are switching places with the current section one. With this switch, students will encounter the material about critically evaluating sources before they encounter the section on selecting a research topic and forming a search statement. The newspaper section will include selected news content relating to the Great Debate topic delivered via RSS feed. Plans are underway to design and record a series of Meriam Library-specific IL videos for the 132 assignment as well as other IL assignments at CSU Chico.

A new feature of the IL online instruction landscape, discovery software such as EBSCO Discovery Service (EDS), blurs the distinction between searching for articles and searching for books. This blurring must be addressed in current and future IL instruction, as it will only continue to gain salience within the academic library world. To this end, the Meriam Library is developing an instructional video on EDS and redesigning sections three and four of the 132 assignment to incorporate the video and other EDS-related content, a modification that will also be useful in updating other assignments and tutorials within the library.

The pool of knowledge-based questions will continue to be expanded and tested. Where testing reveals that a question is unclear or requires modification, such as with the current news question in this study, the question will be adjusted. Such adjustments will enable the librarians in the Meriam Library to design questions with increased validity and reliability as they continue to assess the Communication 132 assignment and other library assignments at CSU Chico.

CONCLUSION

LibGuides fits well and has a role to play in the ongoing quest for quality online IL instructional content, though it is not the only element that adds to the quality of an online learning experience. From a technical standpoint, it certainly enables librarians to create online learning content with more ease than with static Web pages. Web pages can be customized to fit a librarian's preferences with enough work, but LibGuides greatly reduces the technical and temporal barriers to completing that work.

From a pedagogical standpoint, LibGuides has value, though not necessarily any more so than any other platform, including static Web pages. Regardless of platform, the survey results for both student user groups are

636 positive overall. While the results suggest room for improvement in different
 637 components of the assignment, these improvements are not created by ped-
 638 agogical differences between the two platforms considered in this research.

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642 ABOUT THE AUTHOR

643 After receiving both his MLIS and a master of arts in international studies at
 644 the University of Washington, Aaron Bowen has served as the communica-
 645 tion, journalism, psychology, and child development librarian at California
 646 State University, Chico since 2007. His research interests include the delivery
 647 of online information literacy instruction, digital learning technologies, and
 648 e-book and digital textbook initiatives. He has presented extensively on and
 649 written one prior article about LibGuides (2012).

650 NOTES

651 1. Springshare has announced that LibGuides will have the option of having a header box span
 652 content in multiple columns in 2014.

653 2. In addition to discussion of the implementation and use of LibGuides, other articles have
 654 analyzed unique aspects of the product or ways of using it. Kathryn Yelinek and colleagues (2010)
 655 described the process of replacing their main library homepage with LibGuides. Tony Stankus and Martha
 656 Parker (2012) compared and analyzed nursing LibGuides from fifty schools, concluding that there is a lack
 657 of a standard design practice for LibGuides due to individual librarians' preferences (and also presumably
 658 informed by individual university environments). Alec Sonsteby and Jennifer DeJonghe (2013) conducted
 659 a usability study on LibGuides at their university, and similar to Stankus and Parker, they concluded there
 660 is currently no consensus on a standard usability design of LibGuides. Susan Metcalf (2013) described
 661 using LibGuides as a collection development tool.

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