Assessing Class and Course Libguides According to Bloom's Revised and Digital Taxonomies

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Introduction

Given the current popularity and prevalence of Springshare's Libguides, and the ability to create subsequent class or course guides, questions arise about the effectiveness of such tools. Librarians expend time and effort in creating thousands of these instructional guides. In addition, given the collaborative nature of the tool, librarians have freely shared (and copied) pages at an amazing rate. Yet, outside of page count hits, it appears that little has been done to assess the effectiveness of these pages and their relationship to student learning.

Bloom's Revised Taxonomy and Bloom's Digital Taxonomy provide such a framework. This extensive survey of 500 class/course pages from southern and southeastern land grant institution libraries, along with historically black college libraries designated as land grant institutions, attempts to assess formally these guides according to the Bloom student learning construct. The study provides a number of data points for discussion, including a percentage breakdown of pages at each taxonomical level, frequency of vocabulary used by creators, whether or not active learning is encouraged, and if student assessment/feedback is incorporated within the guides.

Literature Review

In 1956, educational psychologist Benjamin Bloom of the University of Chicago, along with a committee of prominent educators, published a report outlining a hierarchical classification of learning and learning objectives. These learning objectives are divided into three 'domains': Cognitive, Affective and Psychomotor. The committee's work suggested that within the cognitive domain, students move from the lowest levels, which encompass basic knowledge and building foundational skills, to higher levels of critical thinking, exemplified by thorough and detailed analysis, synthesis and evaluation. Within the affective domain, the lowest level was designated as 'receiving.' At this level, students passively receive information. Bloom's group theorized that no actual learning takes place in this phase. In the higher levels of the affective domain, students began to interact with information; attach value to information, compare and relate what was learned, and eventually incorporate information and knowledge into a personal characteristic.[1]

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[1] Bloom, Benjamin S. et al. Taxonomy of Educational Objectives: The Classification of Education Goals. New York: Longman, 1956.

In 2000, L. Anderson and D Krathwohl published a revised version of the earlier taxonomy[2], which suggested the original Bloom noun-based construct was one-dimensional. Their revised taxonomy presented two dimensions; separating the noun-based dimension of knowledge into four categories: factual, conceptual, procedural and metacognitive. They also redefined the cognitive learning dimension as a verb-driven process.[3]
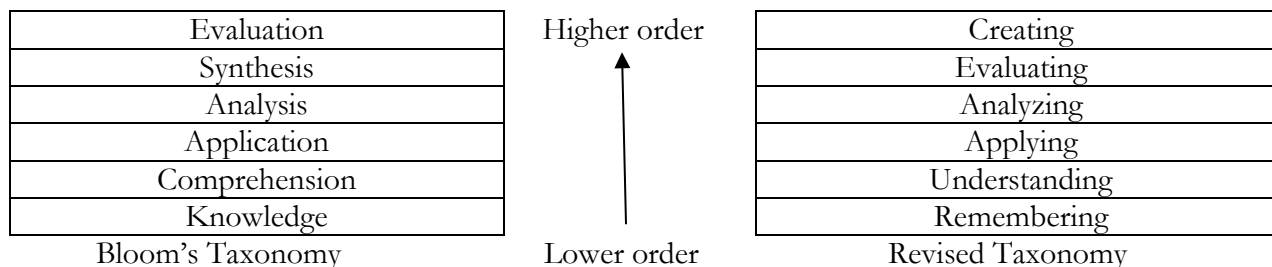
Bloom's Taxonomy		Revised Taxonomy
Evaluation	Higher order	Creating
Synthesis		Evaluating
Analysis		Analyzing
Application		Applying
Comprehension		Understanding
Knowledge		Remembering
Bloom's Taxonomy	Lower order	Revised Taxonomy

Table 1 (Bloom's original and revised taxonomy comparison)[4]

In 2009, Andrew Churches suggested the Internet and emerging technologies provided opportunities for new learning and proposed a Digital Taxonomy.[5] This 'digital' narrative of learning uses the same framework as the revised taxonomy, but incorporates vocabulary into each level encompassing vernacular appropriate to Internet and Web 2.0 technologies and creative work.

In order to assign the appropriate cognitive level to each course guide, a template containing relevant vocabulary for the revised and digital taxonomies was created.

	Bloom's Revised	Bloom's Digital
Remembering	Recognize, describe, list, retrieve, name, identify, refer, recite, find look, select	Locate, bullet point, highlight, bookmark, search, go, click
Understanding	Paraphrase, interpret, exemplify, classify, infer, explain, compare	Use Boolean, blog journal entry, twitter, tweet, categorize, comment, annotate, subscribe, advanced search
Applying	Implement, carry out, use, execute, run, load	Share, edit, operate, hack, upload
Analyzing	Differentiate, compare, organize, attribute, deconstruct, interrogate, outline	Structure, integrate, mash, link, tag, crack, validate reverse engineering
Evaluating	Appraise, check, defend, hypothesize, critique, experiment, judge, test, monitor	Detect, compare, blog, review, post, moderate, collaborate, network, refactor
Creating	Construct, design, plan, assemble, produce, compose, generate, publish, direct	Create (wiki, videocast, podcast), invent, devise, make, program, film, animate, blog, video blog, mix, remix

[2] Anderson, Lorin W. and David R. Krathwohl. A Taxonomy for Learning, Teaching and Assessing: a revision of Bloom's taxonomy of educational objectives. New York: Longman, 2000.

[3] Krathwohl, David R. "A Revision of Bloom's taxonomy: an overview." Theory into Practice, Volume 41, Number 4, Autumn 2002, pp. 212-218.

[4] Churches, Andrew. "Bloom's Digital Taxonomy." January 2009, http://edorigami.wikispaces.com. p. 5.

[5] Ibid. pp. 1-75

Table 2 (Vocabulary checklist)[6]

Methodology

In order to survey institutions of comparable size and educational mission, a decision was made to examine land grant institutions in the south. In order to expand the sample to represent a more diverse population, historical black colleges and universities designated with land-grant status were also included in the initial review. Selection criteria also required the libraries of those schools subscribe to Libguides or similar software. In addition, each of those libraries must have created course or class guides. In other words, guides must have been created for a specific class or course, identified by a typical course designation and number (e.g. ENGL1120, ACT202). General subject guides were not examined. Eight land grant universities, as well as two historically black colleges later given land grant status, were selected.[7]

500 class and course guides were analyzed between April 2011 and January 2012, using the revised and digital taxonomies. For institutions hosting fewer than 20 course guides, every available guide was reviewed. For those with 20 or more guides, every other guide was sampled. Given librarians often create multiple guides for their respective subject areas, no more than three guides were reviewed per each authoring librarian[8].

The 'home' page for each guide, as well as associated, supporting tab pages[9], were analyzed using quantitative and qualitative methods and coded to an Excel spreadsheet, recording course number, title of class, discipline, student level (undergraduate, graduate, other) and number of supporting tab pages. Each page was assigned a level of learning based on content and vocabulary. In addition, evidence of active learning and student learning assessment were noted. Ultimately 130 course guides 'home' pages and 370 associated guides were reviewed.

Results

The majority (85 percent) of guides were developed for undergraduate courses, 12 percent for graduate offerings, 2.5 percent for doctoral sections, and 0.5 percent were designated as 'other.' Approximately half (52 percent) of the undergraduate guides were for freshmen courses, with the remaining 48 percent divided nearly equally among sophomore, junior and senior designations (19 percent, 13 percent and 16 percent respectively.) In terms of academic disciplines, the humanities accounted for 44 percent of guides, 42 percent for social sciences and 34 percent for applied and hard sciences.
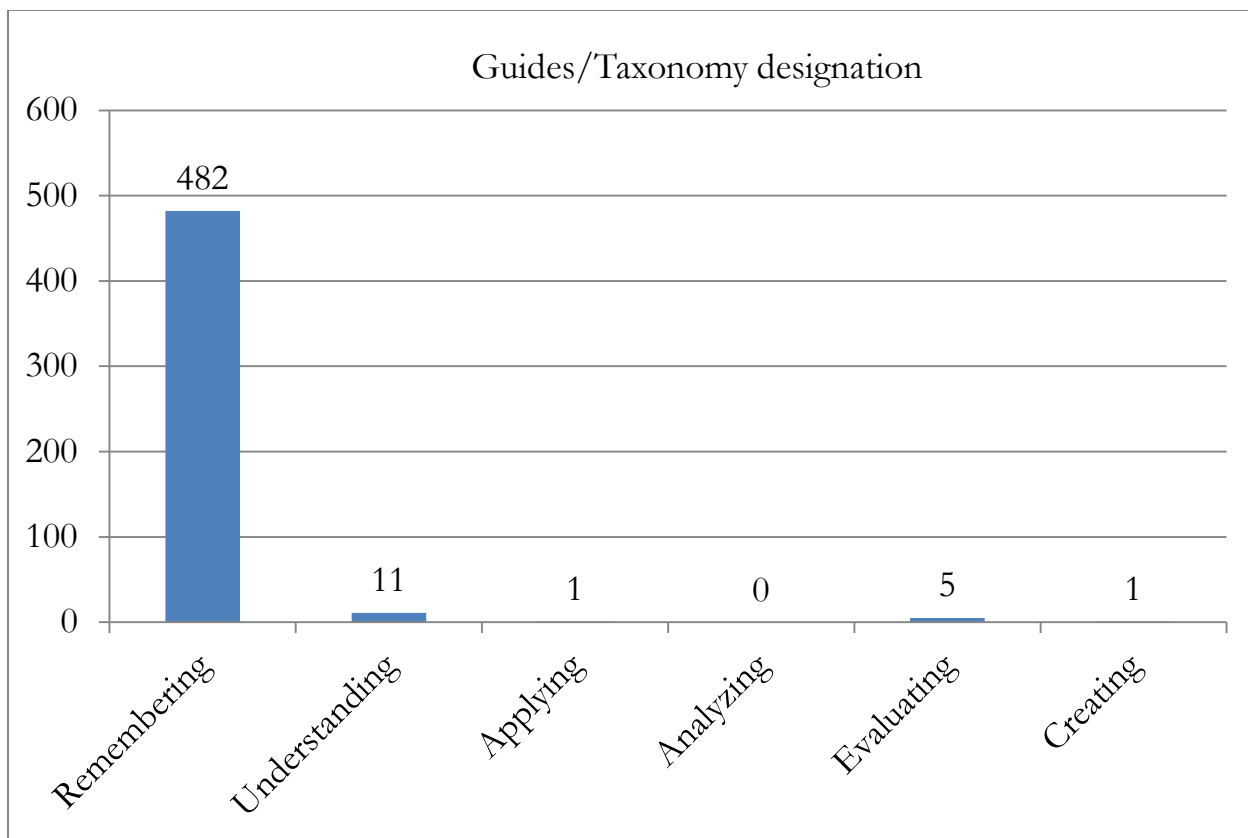
Analysis of all guides against the revised and digital taxonomies presents a stark portrait. Of the 500 guides examined, 482 guides (96.4 percent) were classified at the lowest level of cognition (remembering). Only eighteen guides (3.6 percent, all 'home' guides,) exhibited a higher level of learning. All associated, supporting tab pages register in the lowest 'remembering' level.

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[6] Bloom's Taxonomy Verbs, The Online Teacher Resource, Teachnology, Inc. http://www.teach-nology.com/worksheets/time_savers/bloom/; Churches, p. 7; Bloom's taxonomy wheel for writing, http://zaidlearn.blogspot.com/2009/07/use-blooms-taxonomy-wheel-for-writing.html

[7] Auburn University, University of Arkansas, Clemson University, University of Florida, University of Kentucky, University of North Carolina – Chapel Hill, University of Tennessee, Virginia State University, North Carolina A & T, University of South Carolina.

[8] Class guides created by the author were not analyzed as part of the sample.

[9] On average, each 'home' page was accompanied by 4.4 associated, supporting tab pages

Guides/Taxonomy designation

Remembering	482
Understanding	11
Applying	1
Analyzing	0
Evaluating	5
Creating	1

A majority (75 percent) of the low level 'remembering' pages consist of simple lists and links to online databases or websites. These lists include one or two sentence annotations (e.g. "ERIC is the premier education database"). A quarter of pages, those that focus on finding books or articles, provide a 'live' search box to the library's online catalog or database search widget. Words and phrases most frequently used on these pages were "Search," "Find," "Click," and "Go to."

Active Learning

The newest edition of the ALA Glossary of Library and Information Science defines 'active learning' as "The use of *learning activities* and exercises that exemplify and practice any material introduced during an *instruction session*. Examples include *concept mapping*, *cooperative learning*, group work or exercise, hands-on learning, *problem-based learning*, and *reflection*."[10] Certainly, current best practice in library and information literacy instruction suggests that active learning is student-centered and student-engaged[11]. For this study, as Bloom proposed in the original taxonomy, passively receiving information cannot result in learning. Therefore, asking students to click or move through a number of steps, or watching a video, were determined **not** to represent active learning. Given that construct, only five of 500 guides asked students to interact in a more meaningful and engaged way with information presented.

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[10] Levine-Clark, Michael and Toni M. Carter, ALA Glossary of Library and Information Science. Chicago: American Library Association, 2012.

[11] Senecal, K. S and M. J. Fratantuana. "Active learning. A useful technique for freshmen library instruction." College and Undergraduate Libraries, Volume 1, Issue 2, 1994, pp. 139-146; Jacobson, Trudi E. and Beth L. Mark. "Teaching in the information age: active learning techniques to empower students." Reference Librarian, Volumes 51-52, 1995, pp. 105-120; Cooperstein, Susan E. and Elizabeth Kocevar-Weidinger. "Beyond active learning: a constructivist approach to learning." Reference Services Review, Volume 32, Number 2, 2004, pp. 141-148.

Assessment of student learning

Only three of 130 home course guide pages contained an instrument that qualitatively assessed student learning. Two examples asked students to complete a worksheet for class and upload to a course management system for librarian review. The other contained a quiz that invited students to complete a multiple choice quiz on search strategy and Boolean logic. While 32 other pages (both home and associated) did include one- to two-question quizzes, these survey instruments universally asked if students "liked" the guide and/or whether or not they found the guide useful.

Additional Findings

One of the advantages of using Libguides is the ability to copy and share pages. This, however, may also be a major disadvantage, if not an outright obstacle, in creating pages that encourage a higher order of engagement and learning. Certainly, within each institution, the majority of associated pages are simply copied from one guide to the next. While this provides students with consistent lists and links, it does raise the question about how much and what kind of consideration is given to actual content. Likewise, each school demonstrates a certain style, look and feel for all their libguides. It cannot be determined if librarians are following the templates of early adopters or if a libguide administrator may be overseeing and/or dictating format, or both. The lack of individuality and creativity among the guides within institutions implies that librarians themselves are not considering advanced information literacy student learning outcomes.

Conclusion

If the goal of library class and course guides is to encourage student learning and engagement, this survey indicates that librarians, while providing students with important pathways and links to information, are missing valuable opportunities to involve students at higher levels of thinking and learning. The majority of pages lead students to resources pre-determined by librarians. Students are asked to 'click' and then 'do' without asking students to first engage in detailed topic development or advanced search strategy. Once in a website or database, how are students encouraged to evaluate the information found therein? Links to citation sources such as Purdue's Owl[12] take students to useful examples for their works cited page, but how do students learn how and when to paraphrase, quote and appropriately incorporate research into their work? As dedicated professionals, committed to helping students learn life-long information skills, librarians already work to assess the quality or their instruction, using the best pedagogy possible in the classroom. These findings suggest that librarians need to take the same care and consideration in what is developed for students outside of the classroom. Certainly, further study of how students are using class and course guides, and how they contribute to their overall learning, is needed.

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[12] Purdue Online Writing Lab (OWL) http://owl.english.purdue.edu/

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