The Readability of Information Literacy Content on Academic Library Web Sites

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This article reports on a study addressing the readability of content on academic libraries' Web sites, specifically content intended to improve users' information literacy skills. Results call for recognition of readability as an evaluative component of text in order to better meet the needs of diverse user populations.

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Introduction

Library resources and services are increasingly delivered through Web-based interfaces. There are times, in fact, when academic libraries are only able to reach their off-campus, distance learning, or otherwise asynchronous users through electronic means. Partly due to this reason, librarians have begun to post large amounts of instructional materials, research guides, and tutorials on the Web to meet information literacy goals. As demonstrated in numerous articles in library and information science (LIS), librarians also recognize the value of testing usability and accessibility of Web site content, analyzing Web site transactional logs, and generating output metrics about the use of digital resources.

One aspect of Web-based content evaluation that is often overlooked, however, is the readability of the text-based content itself. Readability, the comprehensibility of text, is an important factor to evaluate if libraries want to ensure that their Web-based content meets the information needs of the widest range of users as possible. A comprehensive evaluative review of readability could address whether the content presented on the library's Web site is written in a style that assumes "one size fits all," and whether that "size" is effective for all users. It could address whether the content will meet the needs of a diverse user base, which may include students from special populations, such as those first-generation students who may have lower reading proficiencies than others, or English as a Second Language (ESL) students.

According to a National Education Longitudinal Study begun in 1988, 28% of twelfth-graders in 1992 were first-generation students (the first in their families to attend college). Of these students, 22% entered postsecondary education between 1992 and 2000, with a total of 15% taking one or more remedial courses.[1] Another study using data from the National Center for Education Statistics (NCES) Postsecondary Education Quick Information System (PEQIS) found that, in 2000, 11% of entering freshman across all types of Title IV degree-granting institutions took remedial reading courses.[2] This national data provide evidence that academic libraries may have a relatively small but noteworthy percentage of first-generation students and students taking remedial courses in the populations they serve. Any services directed at these students should not assume they have the same level of academic preparedness as others. In fact, they may require services targeted to their needs.

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The library's commitment to meet the needs of these special populations is assumed when there is an institutional-level commitment to ensure equal access to higher education. Many large, urban universities espouse the value of serving diverse, underserved and/or underprivileged communities. For example, the University of Wisconsin-Milwaukee states that part of its core mission is to "serve the needs of women, minority, disadvantaged, disabled and non-traditional students and seek racial and ethnic diversification of the student body and the professional faculty and staff."[3] Under a heading of "Access to Learning," Portland State University notes that it provides "access and opportunity to learners from regional, national, and international communities in their pursuit of lifelong learning and diverse educational goals."[4] The University of Memphis states that one of its goals is to "foster equitable access and promote and support intercultural and international understanding, diversity, inclusion and communication" and "ensure that practices are in place that provide financial assistance and physical and academic access to diverse groups of people."[5] Theoretically then, this type of institutional commitment to educational access means that academic libraries serving these campuses are likely to have a noteworthy percentage of first-generation college students among their user populations.

Problem Statement

Zakaluk and Samuels assert that "students make optimal learning gains when instructional text matches their reading achievement level."[6] Regarding the education and learning abilities of new undergraduate students from special populations, academic libraries need to be aware of and cope with varying grade-reading levels, difficulties with reading comprehension, and in some cases physical, mental, and learning disabilities with which some students approach online and other library instructional content.[7] No study, however, has evaluated the readability of academic libraries' Web-based content from the perspective of special populations who may have difficulties with reading. This study addresses the gap by examining the readability of Web-based library content intended to improve undergraduates' information literacy skills. This study also explores the expert opinions of non-library academic professionals about readability and its importance to first-generation students. Study results will remind librarians about special populations and illustrate the need to provide an accessible set of online guidance for all students. As classroom instructors deal with different learning styles and expectations, librarians should do the same within and outside the classroom. Clearly, they should review Web-based information literacy content to better serve special populations, including first-generation students, a sometimes vulnerable and neglected population within many campus communities.

Readability Formulas

Readability formulas attempt to measure and predict the comprehension difficulty of English-language text, with most formulas using the difficulty of words (frequency, familiarity, and length), and the difficulty of sentences (complexity and length) as factors.[8]

Readability formulas were first devised by educators in the early 1920s who wanted an objective, predictive way to measure the reading difficulty of textbooks for students. They provided numerical scores to indicate reading difficulty and were later used to designate grade reading levels. Since then, the formulas have grown in popularity with educators, writers, and publishers, and have expanded from their early focus on vocabulary diversity, word difficulty, and sentence length, to include other factors such as "text structure, organization, coherence, and cohesion."[9]

This study uses three readability formulas to test readability mechanically: the Flesch Reading Ease (FRE) formula, the Simple Measure of Gobbledygook (SMOG) formula, and the Flesch-Kincaid (FK) Grade Level Readability Test.

- The FRE formula, created by Rudolph Flesch in 1948, "consists of the measurement of two language elements, the average length of the sentence in words (sl) and the number of syllables per one hundred words (wl)."[10] The specific formula is: Reading Ease = 206.835 – (1.015 × sl) – (84.6 × wl). The result will be a number from 0 to 100, with the text being easier to read if the number is higher.[11]

- The SMOG formula was created by G. Harry McLaughlin in 1969 in an attempt to improve on readability formulas available at the time.[12] To use the SMOG formula, the analyst counts ten sentences in a row near the beginning of the material, ten sentences in the middle, and ten sentences near the end for a total of thirty sentences. Then, the analyst counts every word with three or more syllables in each group of sentences, and calculates the square root of the number counted, rounding it off to the nearest 10. Finally, the analyst will add 3 to the last figure to establish the "SMOG grade" per associated conversion tables, i.e. the reading grade that a person must have achieved to understand the text. The specific formula is: SMOG grade = 3 + Square Root of Polysyllable Count.[13]

- The FK formula was created by Rudolph Flesch and John P. Kincaid, and was modified by the U.S. Navy in 1976 to assist in the assignment of grade-level scores. To calculate the FK score, the analyst counts the average number of words used per sentence (ASL) and the average number of syllables per word (ASW). Then, the analyst multiplies the ASL by .39, adding it to the ASL multiplied by 11.8. The final step is to subtract 15.59 from the result. The specific FK formula is: FK Reading Age = (0.39 × ASL) + (11.8 × ASW) –15.59.[14]

There has been criticism of readability formulas (addressed later in this article), but Harrison compared formulas against pooled teacher judgments to find that the FRE scores differed from teacher judgments only by 1 year, and the SMOG differed by about 2 years.[15] According to Fry, readability tests in general have "the strength of a large research base with many formal validity studies showing high correlations with reading comprehension, oral reading errors, readership (numbers of readers and amount of reading), and even physical observations such as eye movements and subvocalization."[16]

Literature Review

Although librarians have used readability scores in their selection and evaluation of library materials through time, the readability of library content itself has not been addressed frequently in the LIS literature. When these topics have been explored, they have been used mostly to assess the library profession's own internal scholarly output. Richardson used a computerized FRE formula to analyze the readability of fifteen major national journals in library science to determine if there was a relationship between readability and readership. In his study, Richardson found that as readability increased, circulation statistics increased in a proportionate amount for the journals.[17]

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Metoyer-Duran examined the readability of papers that the LIS journal *College & Research Libraries* accepted, rejected, and published during 1990 and 1991, discovering that the published and accepted papers had higher grade-level scores (i.e., were more difficult to read) than were those of rejected texts. To accomplish the measurement of readability, Metoyer-