

Checking Out With Caution: Improving Library Programs to Teach Evaluation and Consumption of Online Information

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On my honor as a University student, I have neither given nor received unauthorized aid on this assignment as defined by the Honor Guidelines for Thesis-Related Assignments.

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Introduction

“Fake News is truly the ENEMY OF THE PEOPLE!” (Trump 2019, n.p.)

In the wake of the 2016 US presidential election, evidence of the proliferation and misleading influence of misinformation and biased media has called into question the abilities of the average American to critically evaluate and consume information online (Buschman 2019, p. 213). Although topics like fake news remain politically charged and divisive, as seen in President Donald Trump’s frequent impassioned remarks such as the Twitter message above, their underlying social issues and implications merit universal attention. The summary of a 2016 Stanford History Education Group study focused on information evaluation skills in students asserts that “overall, young people’s ability to reason about the information on the Internet can be summed up in one word: bleak” (Wineburg, McGrew, Breakstone, & Ortega 2016, p. 4).

In seeking to address this deficiency, many experts within the field of Library and Information Science (LIS) assert the potential and civic responsibility of modern libraries to educate members of their communities on how to navigate media potentially fraught with fake news. However, efforts to affect widespread change through library services are threatened by general disinterest and declining public engagement with libraries. Based on survey results gathered by the American Library Association, “In 2018, 53% of [US] voters agree that ‘having an excellent public library is a source of pride,’ which is a significant drop from 73% in 2008” (Online Computer Library Center & American Library Association 2018, p. 10).

This paper discusses how the abundance of online information and the increasingly common reliance on digital media have exacerbated the dangers of fake news. Furthermore, I assert the potential and necessity of instilling deeper information literacy skills by using library

resources. In considering the best methods of increasing public engagement with library services in order to address these issues, I cite Stanforth's model of using Actor-Network Theory (ANT) to analyze the multileveled obstacles to effecting widespread educational improvements. In this paper, I assert the need for increased investment into educational initiatives across local and global networks of library-related actors in order to implement effective educational programs teaching modern information analysis.

Part 1: Online Consumers Lack Essential Information Literacy Skills and Fail to Engage with Helpful Library Resources

The prevalence and easy access of Internet media has led to a decreased reliance on libraries for informational resources. In response, libraries must reassert their value as curators of deeper academic skills, knowledge and research. As mentioned in the introduction, the abundance of online information often misinforms users who are unable to distinguish biased, sponsored, or fabricated content from legitimate facts, and libraries have responded by emphasizing the need to educate the public on critically analyzing information sources as they have simultaneously expanded their digital offerings.

The need to address the negative implications of Internet media for public information consumption falls to libraries as the institution most concerned with the public engagement with and use of information. Buschman summarizes the core problems and motivations to address fake news in a 2019 paper tracing the modern definition and understanding of the phenomenon: "There is arguably a widespread assault on the bases of social discourse, democratic politics and information/evidence (the bad news), but the profession has responded vigorously (the good news)." Furthermore, he refers to "an explosion of analyses of and responses to fake news in the

aftermath of the 2016 US election” seen in library publications including *Library Quarterly* and *Progressive Librarian* (Buschman 2019, p. 213). One publication further discussing the political ramifications of misleading media asserts that “the most common and specific threat of fake news is its potential to interfere with democratic processes or civic participation, on the basic assumption that an informed electorate is a prerequisite for a functioning democracy” (Sullivan 2019, p. 94-95).

Highlighting the root causes of public vulnerability to being misled by fake news, studies have shown that many users of the Internet are unable to critically evaluate digital information sources, leading to an inability to identify untrustworthy, politically biased, or downright false information which may be misconstrued as fact. For example, the 2016 Stanford study mentioned in the introduction found that elementary- through high-school students widely struggled to accurately identify sponsored content and criticize misleading information. The summary of this study calls for further assessment of the breadth and depth of these deficiencies, discussing the problematic assumptions and obstacles to recognizing vulnerabilities to fake news influences: “Many assume that because young people are fluent in social media they are equally savvy about what they find there. Our work shows the opposite” (Wineburg, McGrew, Breakstone, & Ortega 2016, p. 7).

Review of LIS literature highlights an emphasis on efforts to teach information literacy (IL) to students and members of the general public who lack sufficient education in informational analysis. The Information Literacy Competency Standards for Higher Education define IL as

a conglomerate of self-directed learning and reflective judgment of the ability to plan and pursue information searches and skills for evaluating the accuracy of information and its sources. IL means not only analysing, synthesizing, evaluating, using and disseminating the information, it is also understood as the cognitive-affective network that enables individuals to recognize their need for information and understand it, evaluate it and use it by producing new knowledge, and use it to resolve problems by making decisions (Koler-Povh & Turk 2018, p. 27).

The ineffectiveness of existing educational efforts to adequately teach these IL skills has manifested as students' inability to responsibly evaluate fake news and online misinformation.

Although this problem has been appropriately recognized on a theoretical level in LIS publications, the potential path to fully understanding and addressing it holds challenges on several levels because experts cannot agree on many aspects of the dangers posed by poor online information literacy or on the role of libraries in addressing them. Sullivan claims that "librarians are virtually unanimous in their conviction that they have a central role to play in the fight against fake news" but goes on to warn that "without dampening their conviction that librarians have a key role to play, there has been some reservation, even regret, about that role" (Sullivan 2019, p. 96). These reservations primarily arise from the political associations tied to the subject of fake news conflicting with libraries' desire to present themselves as bipartisan and apolitical. Another obstacle to unified action against public susceptibility to online misinformation lies in determining exactly how to best go about doing so. In other words, "where librarians are confident in their opposition to fake news but vague about the precise nature of the problem, solutions lack specificity" (Sullivan 2019, p. 98). As discussed above, LIS consensus points toward the values of teaching skills to critically evaluate media sources and content. However, agreeing on the appropriate level of depth at which libraries can most effectively guide citizens to develop these IL skills in order to bring about lasting changes is difficult. Sullivan discusses

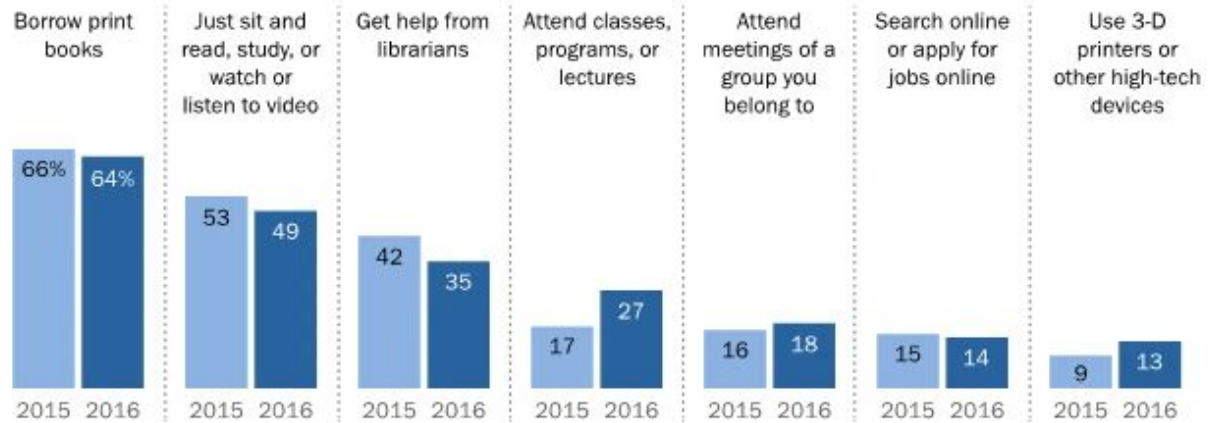
the varying levels of ideals proposed on this issue, stating that “in some cases, the goal is basic awareness of the nature of fake news, in hopes that this will guard against its influence,” however, “some set the unrealistic standard of checking and questioning everything we encounter” (Sullivan 2019, p. 98).

Even once libraries agree on courses of action and develop curricula to address online misinformation, low levels of public engagement with libraries further threaten the efficacy of those measures. In particular, libraries must improve their ability to attract members of their community to more modern offerings such as digital literacy classes and curated educational services beyond traditional library resources such as books and research journals. As shown in Figure 1 below, the activity of regular library users still reflects primarily traditional interaction with libraries as sources of physical media such as books. Although the data presents certain auspicious indicators of increased use of modern service-based library resources, such as the shown increase from 17% to 27% of users attending classes, programs, or lectures between 2015 and 2016, the overall low level of participation in library services emphasizing technical skills or digital information technology suggests that libraries can improve their promotional efforts regarding those modern offerings.

To inform such potential improvements, past research has developed frameworks for defining and understanding the different social facets of general community engagement with libraries. A 2013 study of public libraries in the United Kingdom modeled elements of library interactions with patrons “that were grounded in the reality and perceptions of the community and the participants including the library rather than only from an institutional perspective” (Sung & Hepworth 2013, p. 11). By collecting data through “semi-structured interviews, direct

Traditional activities – borrowing books or reading – dominate library use, but people are also attending classes or other programs

% of U.S. library users ages 16 and older who say they did the following at libraries in the past 12 months



Note: 48% of those ages 16 and older used libraries or bookmobiles in the past 12 months.

Source: Survey conducted March 7-April 4, 2016.

"Libraries 2016"

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Figure 1: A summary of survey findings on frequencies of various library user activities, indicating a relative lack of adoption of non-traditional services (Horrigan 2016, n. p.).

observation and document analysis” aimed at both information service providers and users, this study codified traits by which users assess libraries, such as “belonging”, “communication”, and “relevance” (Sung & Hepworth 2013, p. 3-4). As another example, a 2019 literature review of 130 academic resources “provides solid insights into findings on library value based on social value and financial ROI”, which includes identifying “three umbrella categories of social value”: “support for personal advancement”, “support for vulnerable populations”, and “support for community development” (Sternstrom, Cole, & Hanson 2019, p. 356). In addition to quantitative conclusions regarding the monetary value provided by libraries, these qualitative analyses of what contributes to a library’s community standing, approval, and public engagement provide

useful frameworks for concrete study of how libraries can encourage greater utilization of their services and affect positive change in their surrounding societies.

Part II: Actor-Network Theory Can Inform Better Implementation of Digital Library Educational Services

In her 2006 article “Using Actor-Network Theory to Analyze E-Government Implementation in Developing Countries”, Carolyn Stanforth discusses core themes of the sociotechnical analytical framework of Actor-Network Theory (ANT) in relation to the challenges of instituting public sector reform related to information and communications technologies (ICT). Stanforth’s findings assert the value of using ANT to explain and address organizational failings in developing ICT infrastructure and applications. I apply this framework to the subject of effective engagement with library-based digital literacy education in order to consider the importance of facilitating communication between both global and local networks of actors within the library system.

Stanforth’s application of ANT starts with its core idea that heterogeneous networks of human and nonhuman actors constantly interact and reshape each other based on both technological and nontechnical (such as political or cultural) elements of civilization. In her words, “Actors define the relationships between each other by intermediaries: an actor authors an intermediary and often inscribes social meaning into it. Intermediaries both describe their networks and compose them by giving them form” (2006, p. 38-39). Because no piece of technology or item of public policy exists in a vacuum, effectively addressing sociotechnical problems requires consideration of the network of actors involved in those issues, as well as the interactions that guide the network.

One key theoretical principle of ANT is the translation model of power, which argues for more effectively enabling collective actions such as public policy changes by considering “a successful command as resulting from the actions of a chain of agents, each of whom translates or shapes it according to their own objectives.” This model contrasts with the notion that power or social influence results from a centralized authority that exerts power over others. Stanforth criticizes this notion as less effective in enacting development across organizational structures and says, “In such a diffusion model of power, a successful command moves under an impetus given to it by a central source. ANT theorists contend that social scientists must necessarily shift away from this model to understand power as a consequence and not as a cause of collective action” (Stanforth 2006, p. 39). As an example, Stanforth discusses the case study of research efforts in 1986 to develop sustainable scallop fishing strategies in Saint Brieuc Bay in France. In this study, researchers modeled the interactions between global and local networks of actors -- the overseers making policies within which to work and the actual workers, respectively -- and “managed to establish themselves as an obligatory point of passage (OPP) to control all transactions between the global and the local network” (Stanforth 2006, p. 40). After applying this model of adapting heterogeneous networks to work more effectively by reframing actions to translate through a unified front, researchers led the creation of concrete pillars that succeeded in protecting vulnerable scallops to ensure a sustainable population in the bay. By considering the mechanisms of interaction between actors within a network based on their individual roles, organizations can more effectively implement policy changes and address sociotechnical issues.

The other central tenet of ANT that Stanforth discusses is the network analysis model, which espouses the need to connect heterogeneous elements of sociotechnical systems and avoid

viewing technical or nontechnical entities as separately acting agents. As she describes this idea, “It is the degree and form of mobilization of the networks and the way in which they are connected that determines the success of a project in reaching its set goals” (2006, p. 41).

Stanforth provides more concrete examples of these networks in the subject of e-government:

The actors in the global network were heterogeneous: there were the institutional actors and a number of influential individuals, but, in addition, there were, for example, geopolitical forces (the interest of political leaders), technology diffusions, and civil society movements (antiwar protests). At the local network level, too, the actors were heterogeneous: for example, private sector contractors, public sector officers, investments in computer hardware and software, design documents, and reports (Stanforth 2006, p. 41).

ANT asserts that each of these components must be considered as linked pieces in a chain of actors forming a system in order to best understand how to design, criticize, and apply that system to sociotechnical problems.

With these principles in mind, Stanforth asserts the value of ANT through case studies of e-government development efforts, which entail implementing ICT infrastructure and applications to support public sector reform. She examines the inherently political nature of any efforts to modify these technical networks as well as their multileveled structure of connecting broad overseeing ideas with concrete local actions. On the usefulness of the ANT framework, Stanforth states that “Application of this theory has helped identify that e-government implementation in developing countries involves networks at both the global (the sponsorship) and the local (the implementation) levels. It has shown clearly that a withdrawal of support by both networks can only result in crisis and a disaggregating, failed project, whereas it is through the active and mobilized support of both networks that project goals can be successfully met.” (2006, p. 52).

Stanforth's presentation of ANT and examination of e-government implementation can serve as a model for analyzing the sociotechnical network of the modern libraries and their engagement with local communities, ultimately informing better implementation of educational efforts to combat online misinformation. In his 2019 literature review "Libraries and Fake News: What's the Problem? What's the Plan?", Matthew C. Sullivan summarizes the breadth of avenues through which to consider the problems of online misinformation and potential effective library-based remedies. He discusses issues ranging from symptomatic loss of trust in news sources to theoretical obstacles in fixing critical thinking deficiencies. Sullivan's primary focus for solutions is on LIS research publications, in which he recognizes "a disconnect between problems and solutions. At one level, the complexity of the problem can lead to solutions that do not address the issue at hand. . . . At another level, solutions miss the problem entirely. . . . Perhaps the greatest disconnect occurs when the solutions offered are precluded by the nature of the problem to be solved" (Sullivan 2019, p. 102-103). In addition, lower-level attempts by librarians to educate media consumers face problems of implementation. According to Sullivan, "Few librarians are able to implement incremental instruction among students, much less the public at large" (2019, p. 101). Performing, presenting, and applying research and programs that can effectively address the proliferation of fake news requires an understanding of how many levels of connected networks of actors can interact and cooperate.

Furthermore, the collection and synthesis of published discourses and results of existing efforts to address information literacy problems becomes more informative and useful when focused through a framework such as ANT. Figure 2 summarizes principles guiding the progression of research undergone in the creation of this paper through phases of problem

definition and iteratively gathering research related to information literacy as discussed through both large and small scales. In the development of this paper, ANT principles provided lenses for synthesizing research leading to the assertion that effective implementation of library-based information literacy programs require increased cooperation between networks operating locally and globally.

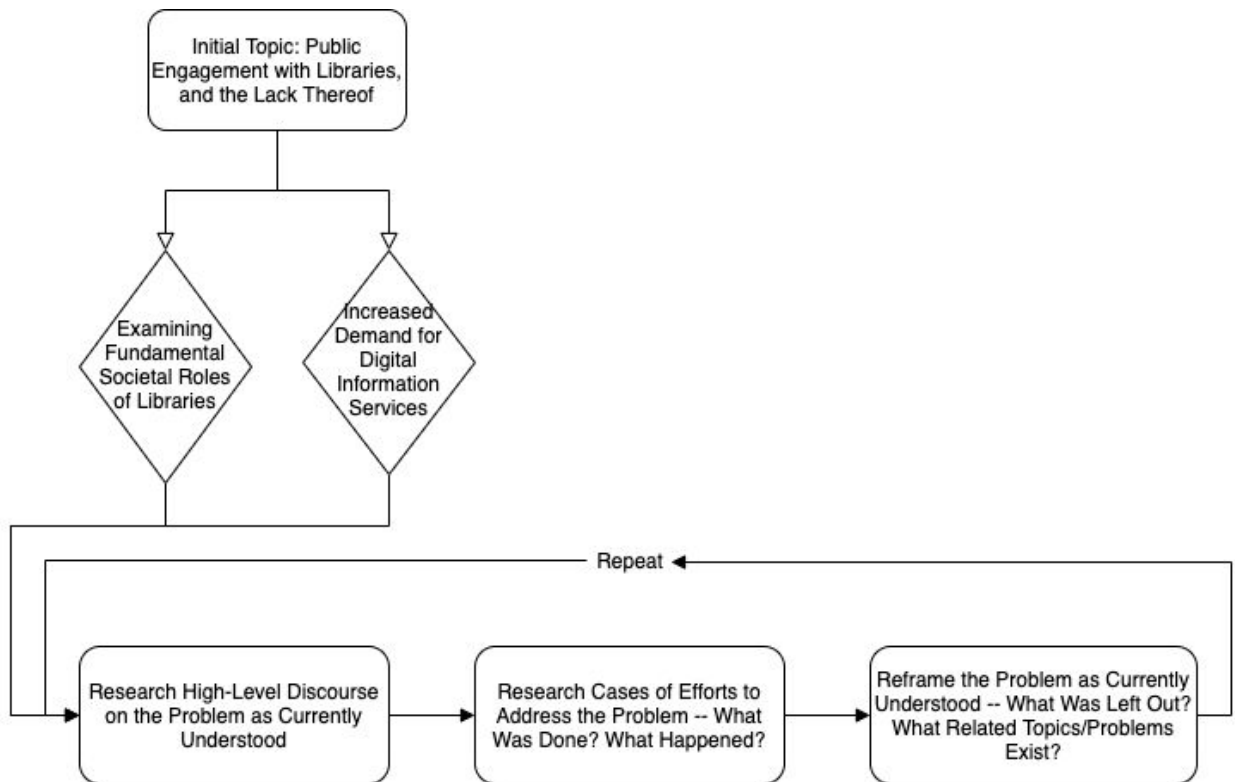


Figure 2: The iterative process of considering global and local approaches to interconnected problems stemming from the initial topic connecting libraries to information literacy (Created by author).

Part III: Systematic Support for Library-Based Educational Programs Can Lead to Increased Online Information Literacy Skills

In order to address the widespread issue of information consumers' inability to critically analyze online information, educational initiatives must extend beyond surface-level lessons or

limited moments of short-term instruction. Case studies have shown that while supplementary library instruction can help student information literacy levels, the most powerful means of effecting responsible consumption of online information requires long-term integration of good IL habits (Scott, 2016; Catalano & Philips, 2016). Enabling libraries to provide these educational services requires extensive support across academic and governmental institutions, entailing coordinated action across multiple levels of networks of actors to implement those programs.

A 2019 examination of Mexican academic libraries' efforts to implement online IL instruction demonstrates the extensiveness of factors that must be addressed in order to progress such initiatives. To summarize the responses, "The results show a limited development of information literacy instruction in general and in online instruction in particular, despite the recognition of its importance and usefulness. The main barriers to implementation that were identified were a lack of technological resources and of personnel qualified to undertake these tasks" (Fernandez-Ramos 2019, p. 242). Figure 3 below displays the frequency of reasons given by respondents who indicated that their library did not currently offer information literacy instruction. Few respondents indicated that they did not feel that IL education fell within the library's competence while many identified various lacking resources to implement desired educational programs, suggesting that the compulsion to provide library services to address poor IL is common but requires multiple levels of institutional support to accomplish.

Reasons	Total (n = 51)	Central (n = 16)	Branch (n = 35)	p- Value
Lack of specialist personnel	31 (60.8%)	7 (43.8%)	24 (68.6%)	0.092
Lack of technical resources or infrastructure	16 (31.4%)	4 (25%)	12 (34.3%)	0.507
Lack of financial resources	15 (29.41%)	4 (25%)	11 (31.4%)	0.640
It is not a priority at my library	13 (25.5%)	7 (43.8%)	6 (17.1%)	0.043*
Lack of time	13 (25.5%)	4 (25%)	9 (25.7%)	0.957
It does not fall within the library's competence	6 (11.8%)	1 (6.3%)	5 (14.3%)	0.409

Figure 3: Survey responses from Mexican public librarians asked why their library does not offer information literacy instruction (Fernandez-Ramos 2019, p. 246).

In addition to the demonstrated need to comprehensively support library programs through several networks of policy and action, multiple case studies on efforts to teach online informational analysis skills to students have supported the effectiveness and value of these services. In a 2016 report on the results of the Association of College and Research Libraries' Assessment in Action initiative aimed at investigating the value of academic libraries, researchers examined "which factors contribute to information literacy competencies (e.g., library instruction) as well as other outcomes such as retention and graduation" (Catalano & Philips, 2016 p. 4). In the study, 456 students of varying degree levels and areas of focus took a non-subject specific version of the Beile Test of Information Literacy for Educators in addition to completing supplemental questionnaires asking "about experiences with research papers, types of library instruction received, and whether the researchers could look up other outcome data and the number of books taken out at a later date" (Catalano & Philips, 2016 p. 8). The test results found no statistically significant improvement to test scores in students who had received library

instruction on IL, but noted that “students who had instruction had higher mean scores if they had been assigned research papers over eight pages long at some point during their post-secondary education” (Catalano & Philips, 2016 p. 9). Figure 4 below presents this data on the relationship between completing research papers and IL test scores. The IL-specific library instruction examined in this study refers to participation in either a single credit library course or in single-session library seminars. While these minimal services were not shown to substantially improve students’ informational analysis skills, the positive impact of repeated research assignments supports the idea that deeper involvement in activities reinforcing information literacy can cause lasting improvements.

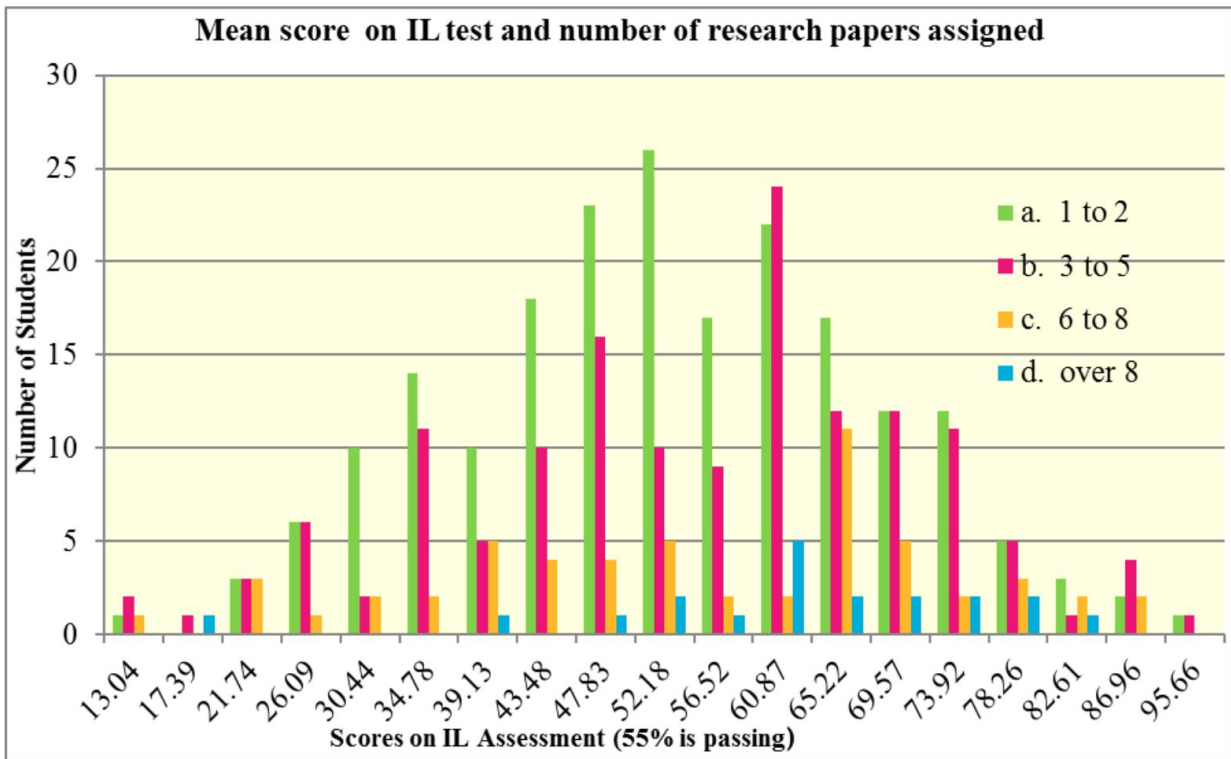


Figure 4: Information literacy test score results from case study, showing a positive correlation with the number of research papers assigned (Catalano & Philips 2016, p. 8)

Other case studies support the usefulness of more extensive library instructional efforts, as well as the value of investing time and educational resources to curate them effectively. A 2016 article in *Communications in Information Literacy* discusses how librarians at Oakland University reformed the university's online four-credit course called Introduction to Library Research and Technology in the Information Age by applying the ADDIE instructional design framework, consisting of steps of analysis, design, development, implementation, and evaluation. Instructors found that their redesign efforts helped increase student engagement with the course material as well as with each other, leading to greater fulfillment of learning objectives (Hess & Greer, 2016). As another example, the case of mandatory common courses in information literacy for PhD students instituted in Slovenia also shows the virtues of libraries emphasizing informational analysis skills in educational curricula. As part of the Slovenian implementation of the 1999 Bologna reforms, new doctoral study programs beginning in 2009 required completion of an IL class. Researchers at the University of Ljubljana conducted a study "aimed to find out if the IL course increased students' competence by examining students' citation practices in their own PhD theses and their publications. The hypothesis was that the IL course increased students' competence. The purpose of this study was to recognize the important role of the IL course at raising the level of students' IL" (Koler-Povh & Turk 2018, p. 31). Results were positive: questionnaire responses indicated that "engineering PhD students generally found the course very relevant and useful for their future work as researchers," while analysis of students' theses reference lists indicated greater mastery of information literacy skills post-Bologna reform, suggesting that the new mandatory course had a positive effect on their analytical skills. While the case of the Oakland University course redesign shows the value of low-level actors such as

instructors working to implement meaningful library programs, this Slovenian study demonstrates the effect of a high-level government-initiated reform on students' informational skills.

These positive examples of library-based information literacy education demonstrate both the breadth of actors requiring consideration in order to effectively implement them as well as the effectiveness of such comprehensive implementations with system-wide support. Ultimately, the findings of this paper support the need to connect the efforts of actors who are operating at different scopes within the multileveled networks of library systems, meaning that the interests of overseeing policymakers must align with those of library workers and instructors.

Conclusion

Because students and information consumers now enjoy easy access to an overwhelming wealth of readily available information and media through the internet, the perceived need for libraries as storehouses for information has diminished. At the same time, existing educational efforts have proven inadequate in preparing students to identify and evaluate the misleading and biased content they will inevitably encounter online (Wineburg, McGrew, Breakstone, & Ortega, 2016). As a result of these two concurrent societal trends, libraries must justify their continued value in the modern world by assuming additional responsibility in the form of teaching information literacy and critical analysis. Specifically, libraries must provide educational services and programs to guide patrons to develop those needed skills and competencies.

Fulfilling this promised value of library resources will require widespread investment and comprehensive support through both global and local networks of actors, but the payoff can be immense. The same programs that teach students and citizens to consume internet media with

discretion also instill deeper lessons in developing learning habits and scientific problem solving, as well as contributing to overall educational success and retention (Koler-Povh & Turk, 2018; Catalano & Philips, 2016). Therefore, the need to address poor information literacy deserves universal support and cooperation for the improvement of society. By contributing to the responsible and informed consumption of online information, libraries can elevate public discourse across disciplines to yield profound social benefits.

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