

# Library instruction and information literacy 2021

Library  
instruction and  
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literacy

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## Abstract

**Purpose** – This paper presents recently published resources on library instruction and information literacy. It provides an introductory overview and a selected annotated bibliography of publications covering various library types, study populations and research contexts. The selected bibliography is useful to efficiently keep up with trends in library instruction for busy practitioners, library science students and those wishing to learn about information literacy in other contexts.

**Design/methodology/approach** – This article annotates 424 English-language periodical articles, monographs, dissertations, theses and reports on library instruction and information literacy published in 2021. The sources were selected from the EBSCO platform for Library, Information Science, and Technology Abstracts (LISTA), Education Resources Information Center (ERIC), Scopus, ProQuest Dissertations and Theses, and WorldCat, published in 2021 that included the terms “information literacy,” “library instruction,” or “information fluency” in the title, abstract or keywords. The sources were organized in Zotero. Annotations summarize the source, focusing on the findings or implications. Each source was categorized into one of seven pre-determined categories: K-12 Education, Children and Adolescents; Academic and Professional Programs; Everyday Life, Community, and the Workplace; Libraries and Health Information Literacy; Multiple Library Types; and Other Information Literacy Research and Theory.

**Findings** – The paper provides a brief description of 424 sources and highlights sources that contain unique or significant scholarly contributions.

**Originality/value** – The information may be used by librarians, researchers and anyone interested as a quick and comprehensive reference to literature on library instruction and information literacy within 2021.

**Keywords** Academic libraries, Information literacy, Public libraries, Library instruction, School libraries, Medical libraries

**Paper type** Literature review



*Reference Services Review* has published an annotated bibliography on library instruction materials every year since 1973 (Rader, 1974). Initially called “Library orientation and instruction, this resource changed its name in 1996 to “Library instruction and information literacy,” marking a shift in the profession writ large (Rader, 1996). This year’s annotated bibliography marked the 48th such bibliography and in that time this resource grew from an average of 2-3 pages to spanning over a hundred. Similarly, the introduction, once a few sentences, expanded to several pages highlighting themes across various categories. The bibliography also expanded its scope to cover literature from around the globe and narrowed its focus to materials that were about library instruction and information literacy at their core. These changes occurred due to the explosion of publications and sheer sustainability of this project while still balancing its utility to practitioners and researchers. Further refining the utility of the bibliography resulted in changing the categories from library types (academic, public, special, etc.), which was how the bibliography had been organized since its inception, to categories that transcend library silos in the 2019 edition (Withorn *et al.*, 2020).

The bibliography is intended to function as a resource list of the literature of the past year for LIS students, librarians, administrators and others interested in quickly identifying and assessing the literature on information literacy and instruction. This bibliography does not make a qualitative or analytical assessment of the literature but rather provides brief summaries so the reader can determine whether to seek out the full text of that source. Professional literature covered by this annual annotated bibliography provides librarians and researchers with insights into research on library instruction and information literacy (IL) in a variety of contexts. For example, “Everyday Life, Community, and the Workplace” covers a variety of professions, general information seeking studies and public library-based studies without restriction to one kind of library type.

## Methodology

### *Search criteria and sources*

The authors searched in research databases available through their institution, which were the EBSCO platform for Library, Information Science and Technology Abstracts (LISTA), Education Resources Information Center (ERIC), as well as Scopus, ProQuest Dissertations and Theses, and WorldCat, for English-language materials published in 2021 that included the terms “information literacy,” “library instruction” or “information fluency” in the title, abstract or keywords. The keywords were selected first and foremost to maintain consistency with past iterations of this bibliography. Keywords were also selected because of their relevance to the topic, and the authors’ intention to cast a wide net for sources rather than a complex Boolean formula. These sources were selected for their ability to search within specific metadata fields such as the abstract. The authors also searched professional journal websites that are not otherwise indexed as noted in past bibliographies, which were *In the Library with the Lead Pipe* and *Emerging Library and Information Perspectives*. Sources were identified and removed as duplicates through Zotero’s “duplicate items” and merge functions. The bibliography excluded materials three pages or less in length, book chapters, conference proceedings and reviews of previously published materials. Book chapters and conference proceedings were excluded due to their difficulty to locate and systematically access the full-text. Other than the content being about information literacy or library instruction, there were no other inclusion criteria related to the content, as such, materials did not need to be peer-reviewed or empirical research studies.

### *Analysis*

Sources were organized into the following categories: K-12 Education, Children and Adolescents; Academic and Professional Programs; Everyday Life, Community, and the

Workplace; Libraries and Health Information Literacy; Multiple Library Types; and Other Information Literacy Research and Theory (see [Table 1](#)).

In a typical annotation, a sentence describing the source's scope or methods, findings or conclusions, and a key insight or recommendation for practitioners are included. Where present and of significance the authors included sample size or specific methodology. Each annotation author determined which category applied to the source and where a category was not clear other authors were consulted for consensus.

## Findings

The bibliography consisted of 424 articles, books, reports and dissertations published in 2021 (see [Table 1](#)).

### *K-12 education, children and adolescents*

There were a similar number of studies in this category compared to the 2020 bibliography on a wide variety of topics. One theme within these publications was media literacy and the range of approaches to teaching critical media literacy skills (DiGiacomo, 2021; Nygren and Guath, 2021; Pieschl and Sivyer, 2021; Schulenkorf, 2021) and measuring them (Cuervo Sánchez *et al.*, 2021). Nygren *et al.* (2021) described one such intervention where the authors incorporated a professional fact-checking tool, InVID-WeVerify, into the curriculum of 13-18-year-olds across several European countries resulting in students successfully identifying fake news.

Case studies from Benu, Nigeria (Tofi and Tamen, 2021) and Israel (Ben Amram *et al.*, 2021) explored children's information seeking behaviors and information technology competence based on self-perception and teacher questionnaires. Studies that showcased the inquiry-based library pedagogy advocated for by school librarians included an IL curriculum embedded in all disciplines in eighth grade which increased skepticism and affective components of information evaluation (Mertens *et al.*, 2021), the i-LEARN approach with kindergarteners (Lee *et al.*, 2021), and utilizing author notes in non-fiction read-alouds (Mertens and Adams, 2021).

Category	Definition	Number of 2021 publications
K-12 Education, Children and Adolescents	Materials related to school libraries, primary and secondary education curricula, and school-based studies with populations under the age of 18	35
Academic and Professional Programs	Materials related to colleges, universities and professional programs	290
Everyday Life, Community and the Workplace	Includes studies in social contexts outside of academia, including public libraries and studies with populations over the age of 18	40
Libraries and Health Information Literacy	Materials related to health information literacy, hospital and public library initiatives, and studies with healthcare workers and health consumers	29
Multiple Library Types	Collaborations among school, academic and public libraries as well as other institutions	10
Other Information Literacy Research and Theory	Materials related to research and theory with broad applications	23
Total		424

**Table 1.**  
Definitions and  
number of 2021  
publications by  
category

Standards and guidelines continued to play a significant role in the K-12 literature. Merga (2021) explored the use of school libraries in literacy policies and plans in the UK and Australia and disappointingly found few mentions of libraries as key sites of IL instruction. Tine (2021) analyzed the trio of standards used in South Carolina schools (South Carolina *Standards of Learning*, the American Association of School Librarians' *Standards for Learners*, and the International Society for Technology in Education *Standards for Students*) with sample lesson plans. Another consideration for standards was the incorporation of social-emotional learning into existing IL frameworks (Whiting, 2021).

Additional research evaluated the IL skills of pre-service teachers (Dahlqvist, 2021), current teachers (Robinson and McNary, 2021; Rubach, and Lazarides, 2021; Schonfeld *et al.*, 2021) and the barriers they faced in teaching IL such as lack of administrative support and time (Johnson, 2021). Andersson and Danielsson (2021) argued for the inclusion of children in creating IL instruction content as an area for continued research and growth.

#### *Academic and professional programs*

For "Academic and Professional Programs," several trends emerged. At the forefront were studies that described transitions to online instruction because of the COVID-19 pandemic and empirical research into online modalities. Bennett (2021) compared student and instructor reactions to online synchronous instruction and the recordings of those same IL sessions and found no significant preference. Likewise, Yap and Manabat (2021) also found high student satisfaction with virtual IL during COVID-19. During this period, many librarians created online tutorials and other modules using a variety of instructional design techniques such as ADDIE (Ezell, 2021) and Universal Design for Learning (UDL). However, Johnson-Barlow and Lehnen (2021) found in their scoping literature review that instructional design systems were seldom named or utilized, and Roth *et al.* (2021) argued that UDL does not go far enough and should incorporate person-centered language for diversity, equity and inclusion goals. Dong (2021) presented a different perspective and proposed that rapid prototyping for COVID-19 era tutorials are essential to keep pace with changes as opposed to established instructional design theories. Other authors focused on the process and content of their tutorial creation (Franklin *et al.*, 2021; Lantz *et al.*, 2021; Mannion, 2021; Shin, 2021), creation of a video channel (Slack, 2021), archival instruction (Baldwin *et al.*, 2021) and equity considerations during the emergency (Guo and Huang, 2021; Ibacache *et al.*, 2021). Lomness *et al.* (2021) described a chemistry collaboration to create online modules in Canvas Commons that began prior to the pandemic but gained new urgency and relevance in 2020.

Conversations around the Association of College and Research Libraries (ACRL) *Framework for Information Literacy for Higher Education* continued across various disciplines. In addition to disciplinary applications, there were several pieces taking a retrospective look at the *Framework* including an interview with the two librarians who co-chaired the *Framework* committee (Lapointe *et al.*, 2021) and a survey of academic librarians on their perceptions of successes and challenges using the frames (Hsieh *et al.*, 2021). Liu *et al.* (2021) explored the "Information Has Value" frame in business education and illustrated how the frame aligned with common business objectives, such as gaining a competitive edge, making informed decisions and gathering diverse voices. The *Framework* was also applied in biochemistry (Knight *et al.*, 2021), business (Click *et al.*, 2021), social work (Johnson *et al.*, 2021), law (Fletcher, 2021), informal learning spaces (Esparza *et al.*, 2021), journalism (Bobkowski *et al.*, 2021), theater history (Sachs and Duffy, 2021), dentistry (Schvaneveldt *et al.*, 2021) and fashion studies (Thompson, 2021). Interestingly, Jarson and Hamelers (2021) introduced language from the *Framework* directly to undergraduate students as a teaching tool and found the strategy useful to encourage student reflection. Eva (2021) similarly examined student reflections on *Framework* language to check for understanding of IL concepts. Those

continuing to explore what the ACRL *Framework* means may wish to explore Fletcher's (2021) edited collection on visualization of the threshold concepts. Unfortunately, Faulkner and Ford-Baxter (2021) found that while librarians have eagerly adopted the *Framework*, when IL appeared in national disciplinary standards it was often perfunctory.

As in 2020, critical pedagogy and critical IL continued to be a theme in the literature about academic library instruction. Open pedagogy and student-created open educational resources in journalism were detailed in Younger *et al.* (2021) as having transformational effects on education. Other open pedagogy projects included one utilizing government documents (Hallam *et al.*, 2021) and one implemented by biology instructors and librarians using Wikipedia editing to introduce students to the peer-review process (Thomas *et al.*, 2021). Sweet (2021) argued that the ACRL *Framework* language should be revised to better incorporate social justice concepts on the heels of #metoo and the 2020 uprisings for racial justice. Ridley and Pawlick-Potts (2021) provided a working definition of algorithmic literacy and urged libraries to incorporate algorithmic literacy into IL work while Damasceno (2021) described algorithmic thinking as a form of multiliteracy. O'Hara (2021) went further in describing an activity to teach algorithmic literacy where students compared and critically analyzed search results. Other critical forms of pedagogy included a feminist ethics of care (Morin, 2021), deconstructing deficit thinking (Heinbach *et al.*, 2021), critical discourse analysis (Dandar and Lacey, 2021), culturally responsive teaching (Cowden *et al.*, 2021) and contemplative pedagogy (Duffy *et al.*, 2021; Gibson and Regan, 2021). Finally, Hicks and Sinkinson (2021) challenged the prevailing acceptance of active learning strategies that emphasized inclusion through participation while failing to address the systemic and structural inequalities that may impede student participation.

The last major theme for academic and professional programs was IL program management and coordination. Brooks *et al.* (2021) identified four leadership traits of IL librarians (communication, risk-taking, self-confidence, team-building) with suggestions on how to cultivate these qualities throughout a career, and Baer (2021a, b) explored evolving educational roles of librarians and their self-perception as educators. Nowicki (2021) presented a case study of San Diego State University's approach to developing a long-term online learning plan and shared how online learning objects were stored and mapped. Researchers described using new online tools or methods to address staffing concerns and expand (or maintain) instructional reach such as implementing Credo's information literacy modules (Holda and Hayes, 2021), digital badges (Pothier, 2021), using TeachMeet for virtual instruction (Charles, 2021), adopting SideCar learning for tutorials (Chan, 2021) and training peer instructors (Brady, 2021). Likewise, librarians prioritized faculty development models as ways to expand meaningful IL instruction (Dale and Craft, 2021; Folk and Hammons, 2021). As an ever-present consideration for IL coordinators, this category included examples and strategies for assessment such as student satisfaction surveys (Wagner *et al.*, 2021), standardized IL outcomes tests (Graves *et al.*, 2021), analyzing citations patterns (Richards, 2021), and GPA and retention correlative research (Espe *et al.*, 2021; Rowe *et al.*, 2021; Wright, 2021).

### *Everyday life, community and the workplace*

The category "Everyday Life, Community, and the Workplace" had several studies on the information-seeking behaviors and practices of various populations and professions. One study of active coplayers found that interest-based IL had the potential to transform formal IL interventions to include intrinsic motivation in the teaching process (Hirsh, 2021). Widén *et al.* (2021) noted the methodological challenges of workplace IL studies, few of which measured IL outcomes and instead relied on perceptions, information needs and awareness. These methodological difficulties were present in unique studies on agricultural workers around the

world (Das, 2021; Fikadu and Gibere, 2021; Sharma and Mandel, 2021; Zimu-Biyela, 2021), insurance agents (Inskip and Donaldson, 2021) and Polish government officials (Osiński, 2021).

Another theme within this category was studies of the public and information evaluation. Two timely areas were exploration of our understanding of COVID-19 and health information (Kamada, 2021; Khanina *et al.*, 2021; Lloyd and Hicks, 2021) and fake news and media literacy (Bryanov and Vziatysheva, 2021; de Vicente Domínguez *et al.*, 2021; Jaeger and Taylor, 2021; Jones-Jang *et al.*, 2021; Maertens *et al.*, 2021). Juneström (2021) combined these two themes and analyzed sets of fact-checks related to the COVID-19 pandemic on three different fact-checking websites: PolitiFact, FactCheck and snopes.com, with the aim of identifying the unique building blocks of fact-checking, concluding that fact-checking is its own media genre.

#### *Libraries and health information literacy*

“Libraries and Health Information Literacy” spanned a breadth of health information literacy topics. A highlight in the studies analyzing the ongoing global pandemic was an empirical study where participants ( $n = 109$ ) shared the sources used for seeking health information and then analyzed those sources for credibility (Zimmerman, 2021). Zimmerman (2021) discovered that participants used sources with greater credibility than a prior 2019 study and used more sources overall. Starcevic *et al.* (2021) looked at the health information seeking “reassurance” behaviors during COVID-19 and proposed a public health crisis model of cyberchondria to be avoided. Other health information-seeking contexts beyond COVID-19 were explored in this category including online information on depression (Gu *et al.*, 2021), patients with organ transplants (Holderried *et al.*, 2021), HIV + populations (Menard and Misquith, 2021) and coping with cancer (Petersen *et al.*, 2021).

Health literacy behaviors of medical professionals were investigated this year. For example, Rosenblum *et al.* (2021) found that dentists preferred highly credible resources such as scholarly journal articles when compared to dental hygienists. Researchers assessed information evaluation behaviors of nurses for COVID-19 information (Aharon *et al.*, 2021) and for adherence to evidence-based IL practices in critical care settings (Farokhzadian *et al.*, 2021). Kampa and Balzer (2021) investigated the algorithmic literacy of medical students through a survey and observed a significant disparity between students’ estimation of knowledge versus correct answers, even for simple distinctions between algorithm types. New resident doctors in Pakistan demonstrated an understanding of plagiarism but lacked knowledge of citation practices (Khan *et al.*, 2021). Perhaps related to inadequate information literacy knowledge of medical professionals was a study that found less than half of LIS programs included any course on health literacy and those that did rarely covered all components (Garwood and Poole, 2021).

#### *Multiple library types*

Studies included in “Multiple Library Types” overlapped in areas where they addressed IL or had broader applications. In previous bibliographies, this category frequently included K-16 collaborations and public library collaborations. Against the backdrop of the COVID-19 pandemic, this category featured some collaborations with health literacy or medical libraries. For example, Naccarella and Horwood (2021) explored public libraries as a site of health literacy in Australia, and Shehata (2021) explored the health literacy competencies of undergraduates generally. In a large ( $n = 23,105$ ), quantitative study, Farmer and Phamle (2021) assessed the high school to college transition through GPA and whether students had access to a high school librarian, finding a statistically significant link. Researchers connected the AASL *Standards* and ACRL *Framework* to bridge the same gap between high school and college (Fuchs and Ball, 2021).

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*Other IL research and theory*

Finally, “Other IL Research and Theory” provided a broad array of scholarship on IL. Many of the sources in this category provided a meta-look at the state of IL through literature reviews. Notably, Li *et al.* (2021) conducted a scientometric study of the diffusion of IL across disciplines. Other literature reviews on IL focused on recent English literature (Nisha, and Varghese, 2021), publications in particular journals such as *The Journal of Media and Information Literacy* (Novikov, 2021) and *Communications in Information Literacy* (Pattar and Patel, 2021), LIS research on fake news (Sahoo *et al.*, 2021), IL and digital literacy (Park *et al.*, 2021) or IL in subject indexes (Ul Haq *et al.*, 2021; Zimmerman, 2021).

The final theme in this area was the call to action for librarians due to the rise of conspiratorial thinking and specifically QAnon. Fontanin (2021) argued that each librarian will have to find their own way to combat misinformation. Beene and Greer (2021) believed that the current state of IL instruction was insufficient for conspiratorial thinking and recommended connecting rather than combatting through counterpoints. Hannah (2021) concurred with Beene and Greer through the example and analysis of QAnon information visualization. Ma (2021) offered a differing perspective on the issue of mis/disinformation by proposing application of non-individualistic conceptions of information.

Rader, H.B. (1974), “Library orientation and instruction — 1973: an annotated review of the literature”, *Reference Services Review*, Vol. 2 No. 1, pp. 91-93.

Rader, H.B. (1996), “Library instruction and information literacy – 1995”, *Reference Services Review*, Vol. 24 No. 4, pp. 77-96.

Withorn, T., Kimmitt, J.K., Caffrey, C., Andora, A., Springfield, C., Ospina, D., Clarke, M., Martinez, G., Castaneda, A., Haas, A. and Vermeer, W. (2020), “Library instruction and information literacy 2019”, *Reference Services Review*, Vol. 48 No. 4, pp. 601-682.

*K-12*

Al-Qallaf, C.L. and Aljiran, M.A. (2021), “The teaching and learning of information literacy skills among high school students: Are we there yet?”, *International Information and Library Review*.

Survey based on the American Association of School Librarian (AASL) *Standards of foreign private high school students* ( $n = 205$ ) perceived IL skills and interviews with teachers ( $n = 4$ ) in Kuwait. Students were confident in their IL skills, and teachers expressed the importance for students to be able to evaluate information in the era of “fake news” and use information ethically by citing sources. Findings from this study aligned with previous literature, and the authors emphasized the importance of collaboration among teachers, librarians and administrators to strengthen high school students’ IL skills.

Alamettälä, T. and Sormunen, E. (2021), “Learning online research skills in lower secondary school: Long-term intervention effects, skill profiles and background factors”, *Information and Learning Science*, Vol. 122 No. 1-2, pp. 68-81.

Experimental study of ( $n = 94$ ) Finnish students to measure their retention of online research skills from 7th to 8th grade, as well as their self-efficacy beliefs, attitudes toward learning, behavioral intentions, information competence activity and gender differences among high and low performers. Students in the intervention group participated in a curriculum based on Guided Inquiry Design and performance of all students in the study was measured using an online test environment that guided students through the search, evaluation and use process. The researchers identified various learner profiles based on their performance on each subtask. Although students in the intervention group did not score higher on the assessment, IL instruction throughout secondary education and additional performance-based longitudinal research is recommended by the authors.

Andersson, L. and Danielsson M. (2021), "Children participation in the design of media and information literacy interventions: A scoping review and thematic analysis", *Journal of Media Literacy Education*, Vol. 13 No. 1, pp. 14-27.

Analyzed literature on children's involvement in the design of media and IL interventions to determine the extent of children's participation in IL interventions targeted at them. Authors found that few articles included descriptions of the design process, making it difficult to conclude if children's perspectives had been included; however, with the limited information collected, they determined that children's involvement was not seen as a necessity. Furthermore, the authors argued that initiatives that include children in the decision-making and design process may allow for interventions that better resonate with the demographic and include their concerns and interests.

Belland, B.R. and Kim, N.J. (2021), "Predicting high school students' argumentation skill using information literacy and trace data", *Journal of Educational Research*, Vol. 114 No. 3, pp. 211-221.

Examined the predictive value of IL, collaboration, time spent and number of words written in response to computer-based scaffolding prompts for determining argumentation quality among high-school environmental science students engaging with problem-based learning. The results indicated that post-activity IL scores, groups with high individual work time and word count in response to the IL stage of scaffolding were all positive predictive variables in determining argument quality. The authors identified students' abilities to search for and use information as an important influence on argument quality.

Ben Amram, S., Aharoni, N., and Bar Ilan, J. (2021), "Information literacy education in primary schools: A case study", *Journal of Librarianship and Information Science*, Vol. 53 No. 2, pp. 349-364.

Qualitative study ( $n = 18$ ) compared experiences of instructors at two primary schools in Israel, where one adopted the national information and communications technology program, and the other did not. Neither school implemented a formal Information Competence and Technology (ICT)/IL curriculum, and instructors developed their own lesson plans and activities. Recommended sustained ICT/IL professional development for instructors and pursuit of a national standardized IL curriculum.

Cuervo Sánchez, S.L., Foronda Rojo, A., Rodríguez Martínez, A. and Medrano Samaniego, C. (2021), "Media and information literacy: a measurement instrument for adolescents", *Educational Review*, Vol. 73 No. 4, pp. 487-502.

The authors tested the applicability of questionnaire developed by University of the Basque Country to analyze Media and Information Literacy (MIL) in adolescents. Spanish, Colombian and Ecuadorian 13-15 year-olds ( $n = 167$ ) took questionnaires related to a wide range of MIL skills (e.g. use of technological tools, critical thinking, interpreting images, media use). Other than skills related to media access and use, which are too closely related to everyday skills to measure accurately, the questionnaire was a useful tool in measuring MIL, with potential wide application for educators and scholars looking to improve MIL education according to the authors.

Cyr, C., Brannon, B. and Connaway, L.S. (2021), "I still go ask someone I enjoy talking to': The use of digital and human sources by educational stage and context", *Library and Information Science Research*, Vol. 43 No. 1.

Examined the ways in which users at various educational stages find information. Using the Digital Visitors and Residents (V&R) framework, authors implemented a 145 open-ended question survey which determined that age is not a factor in information-seeking behavior, but rather context, situation, social factors and education stage. Data highlighted that those in lower education stages (high school and emerging) rely on human contact, whereas those in the higher education stages (established and graduate) lean heavily on digital information. Authors used data to emphasize the importance that librarians meet users where they are in their search habits by engaging them through virtual learning and reference environments.



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Dahlqvist, C. (2021), "Information-seeking behaviours of teacher students: a systematic review of qualitative methods literature", *Education for Information*, No. 37, pp. 287-313.

Examined the literature on information-seeking behaviors and information literacy of teacher students through a systematic review of 1,006 references. References were selected and assessed using the Preferred Reporting Items for Systematic reviews and Meta-Analyses (PRISMA) method. This study specifically focused on thematic analysis of qualitative and mixed-method references. Study results revealed gaps in existing research related to non-normative aspects of student teachers' information-seeking behavior and affective impacts of research behaviors.

DiGiacomo, D.K. (2021), "Digital civic learning in schools: youth perspectives and experiences", *Information and Learning Science*, Vol. 122 No. 11/12.

A mixed-method survey, utilizing both an online survey and face-to-face interviews of middle and high school students, to assess and understand the experience and perspectives of young people and the broader landscape of digital civic learning opportunities and media literacy. Findings showed that students lacked the guidance and training in digital civic learning and that students recognized the potential problem with how they create and interact with information. Authors included a call to action to educators and researchers to improve the digital civic learning landscape of K-12 contexts.

Emerson, L., Kilpin, K. and Lamond, H. (2021), *Literacy across the Divide: Information Literacy as the Key to Student Transition*, Nzcer Press, Wellington.

This book examined the role of IL in New Zealand K-12 schools with special emphasis on the transition to college environments. Chapters emphasized the importance of the teacher-librarian role, the Rauru Whakarare Evaluation Framework as a Māori-informed approach to IL, collaboration and disciplinary applications of IL.

Garzón-Artacho, E., Sola-Martínez, T., Romero-Rodríguez, J.-M. and Gómez-García, G. (2021), "Teachers' perceptions of digital competence at the lifelong learning stage", *Heliyon*, Vol. 7 No. 7.

Identified the level of digital competence development for teaching staff's continuing education using a quantitative questionnaire. Findings showed a low level of overall knowledge with the minimum set of skill sets to promote methodological tasks or strategies when teaching and discussing the creation of digital content. Authors advised not only a larger emphasis on permanent training of teachers, especially in the area of digital content, but also in the integration of emerging technological resources beyond superficial use.

Hu, J. and Yu, R. (2021), "The effects of ICT-based social media on adolescents' digital reading performance: a longitudinal study of PISA 2009, PISA 2012, PISA 2015 and PISA 2018", *Computers and Education*, Vol. 175.

Analyzed how social media affects digital reading performance of fifteen-year-old students, specifically how they access, use and evaluate, and attitude toward social media over a period of nine years using the Programme for International Student Assessment (PISA) database. Findings showed that different types of social media use resulted in varying levels of digital reading performance, more positive effects of perceived usefulness of recreational use of social media outside of school, more negative effects of academic use, as well as significantly positive effects of perceived usefulness of social media overall.

Johnson, B.T. (2021). "Inservice teachers' perceptions of barriers to information literacy instruction in poverty environments", Ed.D Thesis, University of Memphis, Memphis, TN.

Qualitative study on the barriers of IL instruction for teachers in 7–12th grades in Arkansas teaching in poverty-level communities. Using a mixed-research methodology of surveys and semi-structured interviews, the author recruited 15 teachers in Kansas. Common themes found included: (1) lack of training for teachers; (2) lack of time for planning; (3) differing administrative support; (4) access to technology (for students); (5) teacher's own beliefs about IL and computers/technology; and (6) teacher's belief in their role in IL.

Kavitha, N. and Chandrashekara, M. (2021), "Usage of school libraries by secondary school teachers in Mysore block: a study", *Library Philosophy and Practice*, Vol. 2021.

Survey of secondary school teachers in India ( $n = 276$ ) on their use of school libraries and collaboration with librarians. Found that most do not collaborate regularly with librarians but most strongly agree that collaborating with certified librarians enhances student learning. Providing entry-level library instruction is recommended.

Kim, N.J., Vicentini, C.R. and Belland, B.R. (2021), "Influence of scaffolding on information literacy and argumentation skills in virtual field trips and problem-based learning for scientific problem solving", *International Journal of Science and Mathematics Education*, Vol. 20.

Proposed that computer-based scaffolding would enhance problem-based learning model in a high school science program. Following testing for basic information literacy, high school students ( $n = 29$ ) in an environmental science class navigate Virtual Field Trip and Connection Log software via a system which uses prompts and questions to guide question formation and information queries. While some students preferred close personal contact with instructors, scaffolding program raised IL scores across the board, indicating that scaffolding software may be a valuable tool for IL in complex, problem-based learning environments.

Layden, S.J., Anderson, A. and Hayden, K.E. (2021), "Are librarians prepared to serve students with autism spectrum disorder? A content analysis of graduate programs", *Focus on Autism and Other Developmental Disabilities*, Vol. 36 No. 3, pp. 56-164.

Study utilized content analysis of MLS curriculum to review librarian preparation programs ( $n = 90$ ), evaluating whether they provided graduate coursework in the area of autism spectrum disorder (ASD). Findings revealed that only five courses within four programs included information about individuals with ASD. While recognizing that modern libraries provide active learning and collaborative environments ideal for students with ASD, the study highlighted a gap in formal training for school librarians.

Lee, V.J., Tecce DeCarlo, M.J., Grant, A. and Neuman, D. (2021), "A collaborative I-LEARN project with kindergarten and second-grade urban teachers and students at a university-assisted school", *Urban Education*, Vol. 56 No. 1, pp. 123-153.

Presented the results and experiences of using the I-LEARN approach for IL with kindergarten and second-grade students. The kindergarten classroom successfully recorded their research about what makes Philadelphia special using Little Bird Tales. However, the second-grade class teacher experienced digital literacy challenges in using a recording platform and only assigned teacher-directed learning activities. The authors reflected on the two distinct experiences and propose future professional development on student empowerment as part of the I-LEARN model.

Madigan, M. (2021), *Learning Centers for School Libraries*, ALA Editions, Chicago, Illinois.

Provided examples of various activities organized by different types of learning centers (i.e. maker centers, technology centers, literacy centers, library and research centers and interdisciplinary centers) and aligned them with the AASL *Standards* and other content area standards. Included handouts, worksheets and other materials that librarians can use and adapt, including some considerations for distance learning.

Merga, M.K. (2021), "The role of the library within school-level literacy policies and plans in Australia and the United Kingdom", *Journal of Librarianship and Information Science*.

Examined the importance of the library as an IL resource in Australian ( $n = 70$ ) and UK ( $n = 70$ ) grade schools. Authors found fewer mentions of libraries as IL resources in Australia (34.3%) than in the UK (74.3%). Authors recommended further research into the topic and greater consideration for what libraries can do as an IL resource.

Mertens, G.E. and Adams, B. (2021), "Where does information come from?: Visibility in author's notes for emergent information literacy", *Reading Teacher*, Vol. 75 No. 2, pp. 227-231.

Recommended that teachers read author's notes for nonfiction texts during read-alouds with elementary school children to introduce IL skills related to authority and knowledge creation. Although an author's visibility may fall on a continuum of more, less or semi-visible, teachers can ask critical questions about the author's purpose, perspective and critical stance.

Mertens, G.E., Mundorf, J., Bainter, T., Bourn, J. and Kohnen, A.M. (2021), "Wisdom begins in wonder: implementing identity-based information literacy instruction across the content areas", *Middle School Journal*, Vol. 52 No. 2, pp. 38-47.

Described the Wonder Project, a collaboratively developed IL curriculum embedded across multiple 8th grade subject areas including English Language Arts, Algebra and American History. The curriculum focused on encouraging students to see themselves as active and critical consumers of information in order to foster a sense of curiosity and skepticism with a commitment to accuracy and persistence. Outcomes showed student growth in curiosity and skepticism, with a commitment to accuracy growing more slowly; furthermore, students struggled to connect IL skills to the research required of their personal projects.

Moreno-Morilla, C., Guzmán-Simón, F. and García-Jiménez, E. (2021), "Digital and information literacy inside and outside Spanish primary education schools", *Learning, Culture and Social Interaction*, Vol. 28.

Study of ( $n = 1540$ ) primary school students ages 8-12 years old in Spain investigating new ways children interact with digital technology. Authors' research suggested the need for another literacy space connecting literacy inside school (digital competencies and print-based literacy) and outside school (digital and information literacy).

Nygren, T. and Guath, M. (2021), "Students evaluating and corroborating digital news", *Scandinavian Journal of Educational Research*, Vol 66 No. 4, pp 549-565.

Investigated upper secondary school students in Sweden on source evaluation, attitudes and self-rated IL skills using a survey and a performance test. Findings showed that determining credibility of online resources was a challenge for a majority of students, but students who seemed to have a greater appreciation for reliable news were better at evaluating and corroborating news using lateral reading skills. Adding to the greater appreciation of reliable news, students who showed a higher sense of digital civic literacy aided in more subject specific and disciplinary knowledge related to issues in news media.

Nygren, T., Guath, M., Axelsson, C.A.W. and Frau-Meigs, D. (2021), "Combatting visual fake news with a professional fact-checking tool in education in France, Romania, Spain and Sweden", *Information*, Vol. 12 No. 5.

Described a study to determine the effects on IL competency of incorporating a professional fact-checking tool, InVID-WeVerify, into the curriculum of ( $n = 373$ ) 16-18 year old students in various countries across Europe, as well as the effects of using this tool on their perspectives on digital news. Results indicated that use of this tool did improve students' performance at identifying fake news. Students' attitudes toward using digital tools to help determine the credibility of news improved, particularly among Romanian and Spanish students.

Parisi-Moreno, V., Llonch, M.N. and Selfa, M. (2021), "Information literacy instruction in early childhood education: The school museum", *Literacy*, Vol. 55 No. 2, pp. 83-90.

Qualitative study examined the relationship between school museums, information literacy and Early Childhood Education (ECE). Researchers argued that children, who from birth to 8 years old primarily relate to the world through objects, are more likely to develop information literacy via material sources than through written texts. Findings supported a teaching strategy that utilizes artifacts within school museums to support information literacy development in early childhood education.

Pieschl, S. and Sivyver, D. (2021), "Secondary students' epistemic thinking and year as predictors of critical source evaluation of Internet blogs", *Computers and Education*, Vol. 160.

Compared IL of Australian students ( $n = 218$ ) in year 7, 9 and 11 through an online questionnaire of four fictional Internet posts. Authors concluded that year 9 and year 11 students could differentiate between reliable and unreliable information; other hypotheses authors tested were not conclusive. Authors further suggested additional studies to link Epistemic Thinking and Source Evaluation.

Reddy, P., Sharma, B., Chaudhary, K., Lolohea, O. and Tamath, R. (2021), "Information literacy: a desideratum of the 21st century", *Online Information Review*, Vol. 46 No. 3, pp. 441-463.

Assessed the information literacy of secondary school students in Fiji with the aims of determining levels of information literacy, identifying predictors in high information literacy and evaluating the relationship between digital and information literacies in this population. A quantitative electronic survey was administered to Year 12 and Year 13 students ( $n = 2,737$ ) across 33 Fijian secondary schools. Levels of IL in this group were overall high with 81 % scoring in the average or above average ranges and researchers found a significant correlation between digital and information literacy. Predictors for high IL competency included the abilities to collaborate safely online, share files securely and accurately assess the credibility of digital information.

Robinson, D.E. and McNary, S.W. (2021), "School library instruction: does teaching experience matter?", *School Library Research*, Vol. 24.

Study of school librarians' ( $n = 198$ ) preparedness for teaching and their effectiveness in planning, implementing and reflecting on their instruction based on data from practicum observations aligned with the ALA/AASL *Standards for the Initial Preparation of School Librarians*. Although there was no significant difference between candidates with no experience and 1-3 years of experience, results indicated that the transition from novice (1-3 years) to experienced (4-9 years) teachers was the most substantive. Further research into some of the complexities of teacher preparedness and effectiveness such as mentorship and the varied roles of school librarians is recommended.

Rubach, C. and Lazarides, R. (2021), "Addressing 21st-century digital skills in schools—Development and validation of an instrument to measure teachers' basic ICT competence beliefs", *Computers in Human Behavior*, Vol 118.

Using exploratory factor analysis, study developed and validated an instrument to assess German teachers' ( $n = 372$ ) information and communications technology (ICT) beliefs about a range of skills. Researchers identified six ICT competence beliefs: information and data literacy, communication and collaboration, digital content creation, safety and security, problem solving and analyzing and reflecting. Findings provided tools for identifying the type of support needed in teacher education programs.

Schulenkorf, T., Krah, V., Dadaczynski, K. and Okan, O. (2021), "Addressing health literacy in schools in Germany: Concept analysis of the mandatory digital and media literacy school curriculum", *Frontiers in Public Health*, Vol. 9.

Conducted a concept analysis of the mandatory school curriculum of media literacy for adolescent children in primary, secondary and upper-secondary students in the state of North-Rhine-Westphalia in Germany. Authors indicated that there is a need for further development in adolescent critical thinking when using digital platforms to search for information. They adapted the current pedagogical frameworks in media literacy with the hypothesis that the new framework may increase overall digital literacy and the ability to evaluate online claims while allowing for scaffolding of instruction based on the cognitive and social development stages of adolescent students, with a potential for use in curriculum through college.

Shinohara, M. and Horoiwa, A. (2021), "Information literacy: Japan's challenge to measure skills beyond subjects", *Educational Research*, Vol. 63 No. 1, pp. 95-113.

Reported on the IL Survey for Upper Secondary Students (ILSUS) tool's development, history and recent findings from a survey of second-year upper-secondary students ( $n = 4,552$ ) in 135 courses. The authors found that about 70% of Japanese students in upper-secondary education were prepared to handle the complexity and quantity of information in a modern-day information society. Additionally, gender, the student–teacher relationship and metacognitive strategies were found to have statistically significant correlations with students' information literacy skills.

Shonfeld, M., Aharony, N. and Nadel-Kritz, N. (2021), "Teachers' perceived information literacy self-efficacy", *Journal of Librarianship and Information Science*.

Explored perceived IL self-efficacy of elementary and middle school Israeli teachers through a quantitative survey. Findings include a correlation between openness to experience, level of digital/computer skills and IL self-efficacy. Concluded with involving teachers in digital projects would enhance IL self-efficacy.

Tine, J. (2021), "The pivotal significance of attentiveness to standards and assessment in South Carolinian school libraries", *South Carolina Libraries*, Vol. 5 No. 2.

Described three sets of standards: South Carolina *Standards of Learning*, the American Association of School Librarians' *Standards for Learners* and the International Society for Technology in Education *Standards for Students*, including how they were developed and their relevance to South Carolina school libraries. Discussed South Carolina's ADEPT Performance Standards for Classroom-Based Teachers, TE21 CASE Benchmarks, and South Carolina's CTE Standards with sample lessons and assessments.

Tofi, S.T.C. and Tamen, T.T. (2021), "Information needs and seeking behaviour of children in public libraries: a case study of Benue state public library", *Library Philosophy and Practice*, Vol. 2021.

Examined the information needs and information-seeking behaviors of children aged 6-11 at Benue state public library, Nigeria. Found that children's information needs vary from skill development to assignment/coursework completion, to entertainment and leisure. Children frequently sought the assistance of the children's librarian or other library staff to meet these needs. Concluded that children's ability to access information is primarily hindered by lack of search skills, lack of current materials, and unstable electrical infrastructure and recommended a state-sponsored IL outreach program to parents and children and sourcing of a backup generator.

Whiting, J. (2021), "FAKE FACT: The social-emotional underpinnings of our information literacy", *Knowledge Quest*, Vol. 50 No. 2, pp. 20-25.

Examined information literacy through the lens of the Social Emotional Learning (SEL) Framework developed by the Collaborative for Academic, Social and Emotional Learning (CASEL). Argued that SEL and IL are central to each other, and identifies intersections that make misinformation so pernicious (e.g. that a sense of agency, while emotionally healthy, can contribute to a false sense of security and confirmation bias).

Yan, S. and Yang, Y. (2021), "Education informatization 2.0 in China: Motivation, framework, and vision", *ECNU Review of Education*, Vol. 4 No. 2, pp. 410-428.

Reviewed policy documents, theoretical discussions and practice development to analyze the Education Informatization 2.0 Action Plan implemented by China's Ministry of Education in 2018 in light of accomplishments in education informatization 1.0, education modernization requirements and developments in "Wisdom Education." The authors highlighted three areas of innovation for education informatization 2.0, including innovative talent cultivation, state-of-the-art education service models and modernized education governance models. Within this realization of China's education informatization 2.0, IL played a central role in shifting from teaching the application of skills to supporting the development of computational thinking, critical thinking and innovative literacy.

*Academic*

Adekoya, C.O. (2021), "Information literacy, information use and sustainable development of higher education in Nigeria", *Information Discovery and Delivery*, Vol. 50 No. 3.

Surveyed Nigerian higher education staff ( $n = 633$ ) on their perceptions of the role of IL and the extent of information use for the sustainable development of higher education. Found that IL plays a significant role in the sustainable development of higher education and that higher education institutions use information extensively for accreditation and curriculum. The author noted that IL is essential to stimulate national development in Nigeria and achieve the United Nations' sustainable development goals by 2030.

Adigun, G.O. and Tella, A. (2021), "User education and information literacy instruction as determinant of use and satisfaction with library and information support services at National Open University Nigeria (NOUN)", *Journal of Library and Information Services in Distance Learning*, Vol. 15 No. 2, pp. 99-128.

Surveyed distance learners ( $n = 391$ ) and tutors ( $n = 31$ ) at an online university in Nigeria to determine their use of and satisfaction with library services and their IL self-efficacy. Found a significant relationship between participants' self-efficacy and library use, and that participants are mostly satisfied with library services except for some services including interlibrary loan. More robust services for distance learners, marketing of library services, embedding IL instruction into the curriculum and training for librarians are recommended.

Ahmad, Z. and Mahmood, K. (2021), "Do they perform what they perceive? Examining the IL skills of Pakistani scientists", *Library Philosophy and Practice*, Vol. 2021.

Explored how science research assistants at two Pakistan universities perceive their own IL skills and measured it against their performance in IL competencies. A self-reporting structured questionnaire established a base of how students view their IL awareness, after which students are tested on their knowledge of five ACRL *Framework*-based IL competencies. Study shows students overestimating their knowledge in all competencies, indicating need for in-depth IL training across the discipline.

Alwreikat, A. (2021), "Sharing of misinformation during COVID-19 Pandemic: Applying the theory of planned behavior with the integration of perceived severity", *Science and Technology Libraries*.

Surveyed Jordanian university students ( $n = 210$ ) on their intentions and attitudes regarding sharing misinformation on social media about COVID-19. Despite other research showing a higher perceived severity would result in more misinformation being shared within this population, the perceived severity of the pandemic had the opposite effect and resulted in less misinformation shared. The author concluded that overall, this group of students had high levels of information literacy.

Ameen, K. and Naeem, S.B. (2021), "Demographic differences in the perceived news literacy skills and sharing behavior of information professionals", *Information Discovery and Delivery*, Vol. 49 No. 1, pp. 16-28.

Explored the connections between news literacy skills and news sharing behaviors, highlighting information professionals and the demographic differences between them and their students in Pakistan. The study showed that not only were age and work experience leading factors in the use of social media for news sharing, but that age was not a significant factor in perceived news IL skills. Older people were more news literate than their younger counterparts. The authors proposed implementing the ACRL *Framework* to enhance news IL and reduce the spread of fake news and misinformation.

Andrianatos, K. (2021), "Implementation of a multimodal academic literacy resource at a South African university: A critical autoethnographic reflection", *International Journal of Mobile and Blended Learning*, Vol. 13 No. 4, pp. 83-102.

Reflections on the creation of a multimodal resource for writing, academic research and IL during the COVID-19 pandemic. The resource was developed using a multiliteracies

framework. The author reported on difficulties in adoption caused by lack of resources, perceptions of lecturers and other barriers to collaboration with recommendations to others developing such resources.

Ankamah, S., Gyesei, K. and Anaman, A.A. (2021), "The evaluation of information literacy among medical students at the College of Health Sciences, University of Ghana", *Library Philosophy and Practice*, Vol. 2021.

Surveyed medical students in Ghana ( $n = 193$ ) on how they identify, access, evaluate and use information. Found that students primarily rely on print books and electronic resources, consider ease of access, currency, accuracy and authenticity when choosing information sources, and that a lack of Internet bandwidth, cost and information overload are barriers to accessing information.

Aromona, O. (2021), "Credibility evaluation of online political information: a study of an information literacy intervention", Ph.D Thesis, University of Kansas, Lawrence, KS.

Examined effect of one-semester IL inoculation on political information with students who have taken a specific journalism course from the University of Kansas ( $n = 22$ ). In-depth interviews with students revealed prior knowledge on a political topic greatly influenced a student's ability to discern information credibility despite IL skills and instruction.

Ashipala, D.O. and Livingi, R.M. (2021), "Undergraduate nursing students' challenges when writing research proposals at the University of Namibia", *Africa Journal of Nursing and Midwifery*, Vol. 23 No. 1.

Interviewed undergraduate nursing students ( $n = 20$ ) at a university in Namibia on the challenges they face in writing a research proposal in their third year. Based on a thematic analysis of the data, challenges include a lack of library resources, IL instruction, and timely writing instruction, difficulty in choosing a research topic, and exhaustion from concurrent clinical rotations, as well as unhelpful feedback or little encouragement from their supervisors. Recommended better guidance from supervisors and teaching IL and English writing skills at the same time as the research proposals.

Awan, W.A., Ameen, K. and Soroya, S.H. (2021), "Research information encountering and keeping behaviour of post-graduate students of social sciences in an online environment", *Online Information Review*, Vol. 45 No. 1, pp. 21-45.

Quantitative questionnaire which investigated various aspects of research behaviors of social sciences in Pakistani students ( $n = 233$ ) in an online environment. The study's findings showed that students encounter research information not only when deliberately searching but also when generally browsing, and that this reshapes the information encounter (IE) model to include browsing at the beginning of the process.

Baer, A. (2021), "Academic librarians' development as teachers: A survey on changes in pedagogical roles, approaches, and perspectives", *Journal of Information Literacy*, Vol. 15 No. 1, pp. 26-53.

Surveyed academic instruction librarians ( $n = 87$ ) about how their teaching roles have changed over time. Responses were analyzed through manual textual coding providing insight into librarians' perceptions about their development as instructors. Findings revealed that librarian teacher identities evolve in relation to individual experiences and broader shifts in the profession.

Baer, A. (2021), "Exploring librarians' teaching roles through metaphor", *Portal: Libraries and the Academy*, Vol. 21 No. 1, pp. 63-79.

Explored evolving educational roles of librarians as they reconsider assumptions about teaching and learning. Drawn from the author's experience facilitating a librarian workshop and literature on librarians' teaching, discussed how inquiry into metaphor can help teaching librarians uncover assumptions about teaching and learning, and thereby reframe their instructional approaches. Highlighted how the use of metaphor as a means of reflective practice can help build community among librarians and colleagues.

Baldwin, D., Smith, J.P. and Dale, M. (2021), "The reading room goes virtual: Retooling first year experience class encounters with archives and primary sources in the wake of COVID-19", *The Primary Source*, Vol. 37 No. 1.

Described how Mississippi State University continued to offer First Year Experience students meaningful interaction with primary materials even when COVID-19 restricted long-established programs based on physical contact with archival items. Librarians and archivists shifted focus to digital collections and online visits from famous alumni to highlight the university culture and help connect students to primary sources. Though libraries and archives look forward to reinstating popular in-person programs, they feel they are developing new online and digital tools that will deepen primary source awareness, no matter the learning environment.

Bangani, S. (2021), "The fake news wave: Academic libraries' battle against misinformation during COVID-19", *Journal of Academic Librarianship*, Vol. 47 No. 5.

Described efforts by academic libraries to combat the glut of fake news and misinformation during the COVID-19 pandemic, reviewing library websites and LibGuides of 26 South African universities. These efforts included: IL instruction (including remotely); webpages and LibGuides specifically addressing COVID-19 information, along with outside links to reputable sources; LibGuides specifically addressing fake news, with numerous libraries linking to IFLA infographics and the CRAAP test; and acquisition of materials on fake news. Recommended additional research to build on this baseline study and notes that most materials made available by these academic libraries is in English rather than African languages, a factor that cannot be ignored and may be worth studying.

Batool, S.H., Rehman, A. and Sulehri, I. (2021), "The current situation of information literacy education and curriculum design in Pakistan: a discovery using Delphi method", *Library Hi Tech*.

Conducted a Delphi study with experts from the Institute of Information Management at the University of the Punjab ( $n = 13$ ) on the necessary content and instructional methods for post-graduate IL courses in Pakistan. The panelists made recommendations for copyright literacy and computer skills in addition to classic IL content. They also suggested the use of case studies to focus the class on immediate practical application.

Bauer, M. and Klink, S. (2021), "Two libraries, one synchronous workshop series: Creating a shared learning experience", *Technical Services Quarterly*, Vol. 38 No. 1, pp. 54-63.

Discussion and examination of the creation, management, marketing and impact of creating a collaboratively designed active workshop series, which would allow librarians to share content between two separate higher education institutions and be taught independently. The sharing of the content allowed librarians to reuse content for face-to-face instruction and librarians selected concepts that could be recycled for use in future face-to-face instruction at their separate institutions. Authors noted that online synchronous instruction paves the way for increased participation and connection with student communities which facilitates building a positive learning experience, particularly during times when connection is most needed, such as during the COVID pandemic.

Bedford, D. (2021), "Evaluating confidence in information literacy: a red/amber/green approach", *Journal of Information Literacy*, Vol. 15 No. 1, pp. 96-104.

Described adaptation and integration of a tri-color tool that gives students an opportunity to externalize feelings about their IL skills before and after a series of IL instruction sessions. Found that students initially feel less confident when evaluating sources and working with references yet more confident after instruction, while higher confidence in web searching skills remains constant. Author noted that competency cannot be measured by confidence levels, but highlighted that use of this tool has facilitated both open communication between students and librarians and productive student self-reflection regarding library anxiety and IL.



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Benallack, C. and Rundels, J.J. (2021), "Mapping the framework to credit-bearing information literacy courses", *Journal of Academic Librarianship*, Vol. 47 No. 6.

Analyzed the content of credit-bearing IL syllabi ( $n = 12$ ) to see how the ACRL *Framework* was incorporated into courses. Researchers used deductive coding methods to see how each *Framework* frame manifested, both explicitly and implicitly, in course objectives and course outlines. Coding found that instructors were not using the *Framework* as an organizational basis for their courses, nor were they using all the frames equally, with "Searching as Strategic Exploration" to be the most used frame, while "Authority is Constructed and Contextual" the least used. Many of the credit-bearing courses analyzed were still using competency-based instruction, common with the ACRL *Standards*, as opposed to the more conceptual approach of the *Framework*.

Benjes-Small, C.M., Wittig, C. and Oberlies, M.K. (2021), *Teaching About Fake News: Lesson Plans for Different Disciplines and Audiences*, Association of College and Research Libraries, Chicago, IL.

Presented approaches to combat misinformation through algorithms, misinformation formats and the impact of "fake news" for teaching/instructional librarians. Provided lesson plans and connected misinformation issues with real-life situations. Authors concluded by advocating strong partnerships with librarians and the library to work against misinformation.

Bennett, J.L. (2021), "Student and instructor perceptions of virtual library instruction sessions", *Journal of Library and Information Services in Distance Learning*, Vol. 15 No. 4, pp. 224-235.

Compared student and instructor responses to the perceived benefits of synchronous online information literacy sessions vs the recordings of the same sessions. Two mixed-method surveys, one for students and one for instructors, were given from Spring 2020 to Spring 2021 after IL sessions. Findings pointed to no clear preference between synchronous sessions and their recordings, but there was an appreciation for the availability of multiple modalities. Beyond the survey results, the researcher observed that students used a range of devices to engage with virtual courses, including cell phones, which is not ideal for the online teaching often done in IL sessions (e.g. screen sharing) and therefore encourages further investigation into tailoring virtual IL instruction to mobile devices.

Bobkowski, P.S., Younger, K. and Watson, J.C. (2021), "Redesigning a journalism course to integrate IL: a case study", *Journal of Democracy*, Vol. 33 No. 4.

Presented a case study where IL instruction was integrated into a redesigned journalism research course through a unified threshold concept (credibility), an open textbook and five research brief assignments, with assessment integrated early and late in the semester to measure student learning. Through evaluations, students recognized credibility as a key concept in the course and found the open textbook and assignments as important to learning about credibility and source evaluation. The authors underscored the importance of a unified threshold concept in journalism courses, since many journalism schools support both future journalists and public relations and marketing students, which have different approaches to information.

Borycz, J. and Carroll, A.J. (2021), "COVID-19 as an opportunity to expand the instructional portfolio of STEM librarians", *Issues in Science and Technology Librarianship*, Vol. 98.

Described the benefits of engaging in multiple curriculum-integrated graduate-level workshops in biomedical engineering, chemistry and physics that went beyond traditional IL concepts to discuss science research skills, such as research data management, scientific ethics and academic reading. Switching to online learning due to the COVID-19 pandemic allowed the librarians to think critically about their pedagogical approaches when responding to unique instruction requests.

Bosman, L.B., Paterson, K. and Phillips, M. (2021), "Integrating online discussions into engineering curriculum to endorse interdisciplinary viewpoints, promote authentic learning, and improve information literacy", *International Journal of Engineering Education*, Vol. 37 No. 1, pp. 19-30.

Described a framework used by four trained instructors to develop and implement a series of eight online discussion prompts, which asked students to apply IL concepts. Using a post-class survey, the authors assessed whether students recognized the emphasis of these concepts in their course by mapping KEEN Entrepreneurial Mindset learning outcomes to the ACRL *Framework*, most notably "Research as Inquiry" and "Searching as Strategic Exploration". Three of the questions pertaining to the application of IL concepts were statistically higher for the treatment group ( $n = 285$ ) as compared to the control ( $n = 24$ ). The authors believed that these findings, among others, indicated that their framework for developing online discussion prompts has promise.

Bowker, L. (2021), "Promoting linguistic diversity and inclusion: Incorporating machine translation literacy into information literacy instruction for undergraduate students", *The International Journal of Information, Diversity, and Inclusion*, Vol. 5 No. 3, pp. 127-151.

Argues for the importance of including machine translation literacy into information literacy instruction and describes a pilot study, where a machine translation literacy module was embedded into a first-year undergraduate course. The goal of the module was to get students to approach machine translation in a critical way, which included teaching students about machine learning and bias, evaluating translation results and modifying input texts and editing results to improve translations. A feedback survey after the module was given to students ( $n = 80$ ), with one question asking if machine translation literacy instruction was valuable for undergrads, 21% of respondents said it was essential, 61% said very important and 18% suggested it was moderately important.

Brady, F. (2021), "Training peer teachers to teach first-year graduate level information literacy sessions", *Journal of Academic Librarianship*, Vol. 47 No. 2.

Examined the potential impact of a peer teaching program on student attitudes about library instruction and librarian workload. The author's case study revealed that student attitudes about the value of the instruction experience remained high regardless of whether a librarian or peer instructor facilitated the session, and that faculty attitudes about the librarian role remained positive. Survey data collected confirmed that a peer teaching program may help libraries increase student outreach while reducing librarian burnout without negatively impacting student and faculty attitudes about library instruction.

Brady, J. M. (2021). "Embedded librarianship and student success in graduate nursing programs", Ed.D. Thesis, Lindenwood University, Saint Charles.

Surveyed undergraduate and graduate students ( $n = 132$ ) regarding their perceptions and reported usage of library resources, as well as a comparison of assignment grade across two iterations of a graduate nursing course, one with an embedded librarian and one without. Of the two assignments used for comparison, students in the course with an embedded librarian were found to be better able to critically evaluate the literature, while no statistically significant difference was found between groups when comparing mean scores on their final assignment, a systematic literature review.

Brazer, S.E. and de Socio, M. (2021), "Scaffolding and support through information literacy: Reimagining a geography of sport class project", *Geography Teacher*, Vol. 18 No. 1, pp. 39-44.

Case study on the redesign of a research assignment for a geography of sports class from a traditional research paper to a professional poster assignment. Library instruction evolved from a single "one-shot" instruction session to instruction that was scaffolded throughout the course through three synchronous workshops, a LibGuide, and embedded resources in the learning management system (LMS). The authors plan to develop interactive tutorials on

searching Census data, calculating population projections and using various business information resources in the future.

Brooks, A.W., Warner, L. and Hammons, J. (2021), "Information literacy leadership: The traits we did not know we had", *College and Research Libraries News*, Vol. 82 No. 6, pp. 278-281.

Reflecting on their experiences of instruction and leadership in a campus-wide IL initiative, the authors identify four traits (communication, risk taking, self-confidence, team building) that instruction librarians develop over the course of their careers, which they can utilize to become leaders within and outside the library. They also suggest exercises to foster skills and further cultivate these traits.

Buba, A.A., Muhammed, S.U. and Mohammed, A.Z. (2021), "Information literacy skills and use of e-resources by undergraduate students in Nigeria in relation to Kuhlthau's Model of Information Search Process (ISP)", *Library Philosophy and Practice*, Vol. 2021, pp. 1-21.

Study applied Kuhlthau's Information Search Process to discover the iIL levels and use of electronic information resources among undergraduate students at the Federal Universities, Nigeria ( $n = 2,402$ ). Found that students are aware of IL programs and e-resources to find and use information but lack confidence in their ability to synthesize and interpret information. Recommended that librarians strengthen IL interventions in key points in the curriculum as well as develop a stand-alone IL course.

Buchanan, H.E. and McDonough, B.A. (2021), *The One-Shot Library Instruction Survival Guide*, 3rd ed., ALA Editions, Chicago, IL.

The updated third edition of an overview on teaching in the one-shot format. Updates include 13 new teaching scenario vignettes, additional strategies on incorporating the *Framework* into IL instruction, more examples of active learning activities, and a glossary with new terms such as curriculum mapping. The chapters cover communicating with faculty, lesson planning, teaching strategies and assessment.

Budhai, S.S. and Williams, M. (2021), "Humanizing virtual library instruction: Anchoring teaching presence in online information literacy sessions", *Journal of Library and Information Services in Distance Learning*, Vol. 15 No. 3, pp. 204-217.

Documented the transition from in-person to online instruction because of the 2020 COVID-19 pandemic, then designed, delivered and analyzed data from an online survey to faculty who participated in the information literacy program during the 2020-2021 academic year. Survey results reflected high positive feedback from faculty in relation to the level of relevancy and learning students gained while in online sessions. Librarians observed in online instruction sessions that effective practices for teaching in this mode include adapting materials to be compatible for editing in a digital format, allowing more time for chat and verbal feedback in class, proactive scaffolding of topics rather than relying on body language or facial feedback, and providing the same period of silence to work and focus as students would receive in-person.

Bull, A.C., MacMillan, M. and Head, A. (2021), "Dismantling the evaluation framework", *In the Library with the Lead Pipe*.

Presented a proactive approach to teaching evaluative strategies, as opposed to what the authors describe as reactive strategies such as the CRAPP test and SIFT. Authors discussed how a proactive approach can help empower students to understand the systems of information finding and can create a more open dialogue by using open-ended questions. They argued this shift in IL and evaluation could help move the profession forward in teaching how students navigate the ever-changing information landscape.

Burns, C.S., Kaufmann, R. and Limperos, A. (2021), "Mixed findings in directly replicated experimental studies on fake news", *First Monday*.

Investigated article style(s) and reader bias of "fake news" articles in a repeated experiment at a university. Using four different news articles for each study ( $n = 416$ ;

$n = 650$ ;  $n = 661$ ;  $n = 303$ ), authors found article source and style have limited influence on participants' perception of "fake news" articles. One of the studies with an article from *Fox News* showed a relationship between political perspective and evaluation of an article as "fake news."

Cantwell, L.P., McGowan, B.S., Wolf, J.P., Slebodnik, M., Conklin, J.L., McCarthy, S. and Raszewski, R. (2021), "Building a bridge: A review of information literacy in nursing education", *Journal of Nursing Education*, Vol. 60 No. 8, pp. 431-436.

Systematic review of articles related to IL and nursing ( $n = 179$ ) categorized by several themes including article type, program type, degree type, ACRL *Framework* frame, IL documents and teaching tips or learning activity. Most articles discussed "Searching as Strategic Exploration," which highlights the need for integrating IL further into evidence-based practice. Advocated for librarians to continue conversations with nursing faculty about the ACRL *Framework* for mutual understanding, scaffolding instruction throughout program levels, and faculty-librarian collaboration.

Capinzaiki Ottonicar, S.L., Pomim Valentim, M.L. and Bouthillier, F. (2021), "From business information literacy to decision-making, problem solving and innovation", *International Journal of Media and Information Literacy*, Vol. 6 No. 1, pp. 66-77.

Systematic literature review of business IL research ( $n = 26$ ) represented in eight scientific databases. Analysis revealed trends of academic library IL interventions for business and management programs, and consensus that business IL in the curriculum improves programmatic student learning outcomes (critical thinking, lifelong learning, decision-making, problem-solving and innovation). Suggested library-industry partnerships in order to offer IL training to professionals, and highlights the literature gap of business IL in the sectors of business, manufacturing and startups.

Cerny, M. (2021), "Digital competences of students of library studies: Comparison of research results for 2018-2020", *Education Sciences*, Vol. 11 No. 11.

Analyzed digital IL competencies of students in a Library Studies BA program in the Czech Republic, using a model called DigComp which focuses on five dimensions of competencies, including information and data literacy. A self-reflective questionnaire showed a low level of perceived competence, possibly due to a lack of training opportunities for students. Authors considered possible changes at the curriculum level to include a more research focus could improve student's perceived abilities.

Chan, B. (2021), "Sidecar learning vs LibWizard: a comparison of two split-screen tutorial platforms", *Journal of Web Librarianship*, Vol. 15 No. 2, pp. 90-103.

Described the advantages and disadvantages of both platforms in detail. LibWizard is easy to use for developers, allows for multiple media types to be embedded on the right side of the screen, has more robust quiz features, and includes a welcome screen at the beginning and a certificate of completion at the end of the tutorial; whereas, Sidecar Learning (a commercialized version of Guide on the Side) no longer requires technical knowledge to set up and maintain, only allows for embedding web content, and has limited quiz features. Although both tutorial platforms have issues with opening content that cannot be embedded in a new tab, the authors concluded that Sidecar Learning's solution is more intuitive for users.

Chan, C.K.Y. and Luk, L.Y.Y. (2021), "Development and validation of an instrument measuring undergraduate students' perceived holistic competencies", *Assessment and Evaluation in Higher Education*, Vol. 46 No. 3, pp. 467-482.

Surveyed undergraduate students ( $n = 2,192$ ) from six Hong Kong universities to measure their perceived holistic competencies. The six scales obtained from exploratory analysis – cultural sensitivity and global citizenship, interpersonal and leadership competencies, problem-solving and critical thinking skills, self-understanding and resilience, information literacy and moral values – were supported by findings from confirmatory factor analysis.

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Concluded that instrument is sufficiently reliable and valid for educational practice and research.

Charles, L.H. (2021), "Using a Teachmeet model to enhance collaboration in an information literacy instruction program", *Journal of Academic Librarianship*, Vol. 47 No. 5.

Proposed multi-library university (New Brunswick libraries at Rutgers University) with burgeoning and evolving IL responsibilities use informal unconference (Teachmeet) to workshop ideas and enhance collaboration among librarians. Following an independent survey by IL Design Librarian, annual Teachmeets are held on various aspects of IL instruction, including teaching strategies, new technology, establishing partnerships and assessment of IL efforts. Teachmeets allowed all departments of disparate libraries to communicate well, work effectively and swiftly adapt to changing demands on librarians.

Chen, C.Y., Kearney, M. and Chang, S.L. (2021), "Belief in or identification of false news according to the elaboration likelihood model", *International Journal of Communication*, Vol. 15, pp. 1263-1285.

Argued that the central and peripheral processes measured in the Elaboration Likelihood Model (ELM) can help indicate user susceptibility to fake news in social media and news websites, and indicate efficacy of information literacy efforts in resisting fake news. Students at Asia University and Taichung community colleges in Taiwan ( $n = 1862$ ) were presented with a series of true and fake news items through social media and online news sites, then surveyed on belief of items and their enthusiasm for sharing. While the study suggested that users of news sites are more critical of information than those receiving news through social media, authors acknowledged study is overall inconclusive, but may form a foundation for more advanced studies in the future.

Chen, Y.T., Shih, W.L., Lee, C.H., Wu, P.L. and Tsai, C.Y. (2021), "Relationships among undergraduates' problematic information security behavior, compulsive Internet use, and mindful awareness in Taiwan", *Computers and Education*, Vol. 164.

Used a cross-sectional survey design and hierarchical regression analysis to investigate information-seeking behavior of undergraduates ( $n = 514$ ) at three Taiwanese universities. Results revealed a clear relationship between problematic information security behavior (PISB), compulsive Internet use (CIU) and mindful awareness. Concluded that CIU can be targeted with cognitive behavioral therapy and PISB with mindfulness training.

Ching, S.H. and New, B. (2021). "Information literacy and transcultural learning: How Chinese calligraphy and historical Korean poetry were turned into a library co-curricular initiative", *International Information and Library Review*, Vol. 53 No. 2, pp. 142-156.

Discussed the importance of co-curricular programs in embedding IL skills in unique and creative ways. Highlighted the poetry recital project, a co-curricular program run by the Run Run Shaw Library and City, which connects students with historical East Asian poetry. Concluded that the poetry recital project facilitated knowledge transfer, linking students to scholars and utilizing poetry to teach transferable information literacy skills.

Choi, E.J., Park, J.H. and Kang, S.W. (2021), "Nursing students' acceptance intention of a smart device, information literacy, and problem-solving confidence", *Healthcare*, Vol. 9 No. 9.

Survey of Korean undergraduate nursing students ( $n = 450$ ) on their acceptance intention, or plans to use smart devices, IL skills, measured using an informatics competencies scale and confidence in their problem-solving abilities. Found that respondents with higher IL skills were more confident in their problem-solving abilities. Recommends using smart devices to encourage information utilization.

Chong, R. (2021), *Indigenous Information Literacy*, Kwantlen Polytechnic University, Surrey, British Columbia.

This open educational resource discusses how to incorporate Indigenous print and oral sources in academic research. The book begins with terminology and foundations followed by sections on evaluating Indigenous sources, finding sources, human research ethics

protocol for Canadian institutions and working with elders respectfully. Each chapter concludes with reflective questions for the reader.

Chukwu, S.A.J., Nkiru, E., Nwaohiri, Ngozi, M., Haco-Obasi, F.C., Doris, Obiano, C. and Bernard, I.I. (2021), "Information literacy: academic librarians as stakeholders in the learning process: with focus on Federal University of Technology, Owerri", *Library Philosophy and Practice*, Vol. 2021.

Surveyed academic librarians ( $n = 40$ ) to investigate their perceptions of their role in promoting and integrating IL at a Nigerian university. In the results, librarians said IL was important for both curricular and extra-curricular needs and promoting information literacy. However, the lack of commitment by administrators for creating IL programs and insufficient power supply at the university were challenges, leading authors to emphasize the importance of university management support for integrating IL into the curriculum.

Cid, R., Machin-Mastromatteo, J.D. and Tarango, J. (2021), "Diagnosing Spanish literature bachelor students' information literacy in digital environments", *Digital Library Perspectives*, Vol. 37 No. 1, pp. 54-69.

Presented a study that used a diagnostic survey to measure basic IL skills in Spanish literature students ( $n = 42$ ). Questions on the survey ranged from inquiries about students' background with research, the resources they had available for study (books, Internet, computer, etc.), and an IL test developed from the ACRL's *Research Competency Guidelines for Literature in English*. The survey also included two sections for students to rate their perception of their proficiency with IL skills, which they took before and after the IL test. Authors found the IL skill students were most familiar with was selecting information and students' self-perception of IL skills dropped after the IL test. Another takeaway was that there was no relationship between academic performance and IL skills, which the authors concluded could point to IL not being considered as important in a BA program by professors.

Click, A.B., Wiley, C.W. and Houlihan, M.A. (2021), "We're a little different': Business information literacy perspectives on the ACRL Framework", *Communications in Information Literacy*, Vol. 15 No. 1, pp. 24-56.

Constructivist, multi-method study examined librarians' use of the *Framework* in business information literacy (BIL) through focus groups ( $n = 36$ ) and survey data ( $n = 152$ ). Found that *Exploration*, *Value* and *Authority* are the most useful and most highly utilized frames for BIL; helpfully provides a link to a complete list of resources and tools used by respondents. Found that the majority use the *Framework* (whether directly in BIL or indirectly to inform their teaching philosophy and goals) and encouraged business librarians to collaboratively create robust *Framework* teaching and learning resources for BIL.

Coetzer, L. and Mapulanga, P. (2021), "Delivering equitable distance library services to off-campus users at the University of the Free State in South Africa", *Global Knowledge, Memory and Communication*, Vol. 70 No. 1-2, pp. 94-113.

Examined online library service satisfaction of library users ( $n = 40$ ) at the University of the Free State in South Africa. Used a survey with qualitative and quantitative component and researchers found survey respondents faced low levels of IL when using online services (13%), particularly never having used online services of the library (85%).

Cowden, C., Seaman, P., Copeland, S. and Gao, L. (2021), "Teaching with intent: Applying culturally responsive teaching to library instruction", *portal: Libraries and the Academy*, Vol. 21 No. 2, pp. 231-251.

Presented practical applications for Culturally Responsive Teaching (CRT) within the library instruction classroom. Recognized the challenges of applying the theory in higher education environments given CRT's origins in K-12 environments and recognizes the limitations of "one shot" information literacy sessions. However, highlighted that when centering students as fully engaged partners, CRT can improve student learning outcomes, engage more learners and enhance the library classroom climate.

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Dadaczynski, K., Okan, O., Messer, M., Leung, A.Y.M., Rosário, R., Darlington, E. and Rathmann, K. (2021), "Digital health literacy and online information-seeking in times of COVID-19. A cross-sectional survey among university students in Germany", *Journal of Medical Internet Research*, Vol. 23 No. 1.

Surveyed German university students' ( $n = 14,916$ ) health information literacy search behaviors. One-third of participants reported having problems accessing accurate health information with nearly half indicating they could not easily evaluate the reliability of web sites. The authors also found that women reported more difficulties with finding information than male participants and suggested IL interventions focused on information evaluation for all college students.

Dale, J. and Craft, A.R. (2021), "Professional applications of information literacy: Helping researchers learn to evaluate journal quality", *Serials Review*.

Proposed the use of information literacy practices, particularly the practice of lateral reading, to teach faculty to evaluate the quality of journals where they intend to publish research. Authors discussed resources for facilitating lateral reading about journal characteristics and urged collaboration between scholarly communication and IL experts in libraries.

Damasceno, C.S. (2021), "Multiliteracies for combating information disorder and fostering civic dialogue", *Social Media and Society*, Vol. 7 No. 1.

Presented undergraduate competencies for multiliteracy that incorporates elements of IL, rhetorical literacy and functional literacy as a more expansive approach to stemming the creation and circulation of misinformation. The proposed competencies address information concerns such as filter bubbles, echo-chambers and algorithmic thinking without the reliance on static fact-checking lists. The author argued the nature of the speed of the Internet requires new pedagogical and theoretical implications for IL instruction.

Dandar, D. and Lacey, S. (2021), "Critical discourse analysis as a reflection tool for information literacy instruction: A case study approach of library orientation sessions", *Journal of Information Literacy*, Vol. 15 No. 1, pp. 3-25.

Described how librarians at two different universities in British Columbia used Critical Discourse Analysis (CDA) to identify words used in first-year instruction and orientation presentations that could reflect normative assumptions made about authority and power within the context of the library and academia. Once identified, the authors described how uncritical use of these terms (e.g. "evaluating" and "peer review") could be alienating to students and offered suggestions for ways to draw on students' prior experience and expertise in the classroom around these concepts. Each author's presentations and lesson plans are used as the material for analysis, presented in two different case studies.

Davis, D. (2021), "Using visual resources to teach primary source literacy", *Journal of Western Archives*, Vol. 12 No. 1.

Case study examined the use of nineteenth century western photographs in primary source literacy instruction. Described how the instruction archivist utilized the ACRL *Guidelines for Primary Source Literacy* to develop a lesson plan to teach students to analyze and interpret historical photographs. The author concluded that while the lesson plan is specific to the Golden Age of Photography, it can be used as a template for teaching with any visual documents or other archival mediums.

Deja, M., Rak, D. and Bell, B. (2021), "Digital transformation readiness: Perspectives on academia and library outcomes in information literacy", *Journal of Academic Librarianship*, Vol. 47 No. 5.

Explored Digital Transformation (DT) as a theoretical concept within the context of academia, specifically the preparedness of faculty at six Polish Universities for the Digital Transformation of academic libraries and universities initiated by the pandemic response. Data was gathered from faculty ( $n = 266$ ) via an online survey and analyzed using

covariance-based structural equation modeling to determine the effects of digital and information literacy on self-efficacy and information empowerment in the context of DT. Found that digital and information literacy are valuable to faculty navigating digital changes in academia and that academic libraries are well poised to support campus efforts toward DT.

Dempsey, A. and Heil, C. (2021), "Agile library instruction: Piloting collaboratively-created information literacy modules", *Journal of Library and Information Services in Distance Learning*, Vol. 15 No. 3, pp. 187-203.

Case study wherein authors created and piloted a series of online information literacy modules applying Universal Design for Learning (UDL) principles in response to the COVID-19 pandemic and the need to pivot from in-person to online instruction. The team of librarians created and launched six self-paced online learning modules using Moodle, covering IL topics. Challenges reported included time investment, cohesiveness of information with librarians working independently, and customizing modules for individual classes or subject areas. Recommended simplifying modules without customization for subject or class, increased outreach to librarians and faculty to use the modules, use in first-year seminars, library orientation and special events.

Deng, L. (2021), "The pathway to success: Facilitating first-generation student learning in academic libraries through cross-campus collaborations", *Journal of Library Administration*, Vol. 62 No. 1.

Discussed an embedded librarian project in a first-year writing course, where the librarian set-up individualized follow-up meetings with first-generation students. During one-on-one meetings with students, the librarian offered a range of 15 topics (ex: strategic searching, MLA citations, identifying scholarly articles, etc.) that students could choose from to discuss during their appointments. The project was evaluated through pre- and post-test surveys and findings concluded that individualized research assistance increased students' understanding of information literacy concepts and awareness of library services.

Detmering, R. and Payette, P. (2021), "Finding a new fit for student success: Librarians as agents of teaching innovation and institutional change", *Journal of Library Administration*.

Reported on a long-term collaboration between the Research and Instruction (RAI) library department and university center for teaching and learning to develop a for-credit 300-level course on academic and personal inquiry. The course was part of the university's re-accreditation plan, targeting students at risk for dropping out because they had not chosen or qualified for a major. Described the development, implementation and formative assessment of the course, including librarians' evolving roles on the course's instructional team, as well as recommendations for implementing similar initiatives.

Diao, J. (2021), "Instructional design with the ICE approach in academic libraries: A framework that integrates assessing, learning, and teaching", *Journal of Academic Librarianship*, Vol. 47 No. 6.

Discussion of the Ideas-Connections-Extensions (ICE) framework as a means for librarians to better assess not only what students learn (summative) but to understand how they learn and apply that knowledge (formative). ICE emphasizes autonomy and self-awareness in the learner, and the example of a librarian-faculty collaboration on an annotated bibliography assignment is given as an example of putting ICE into action. Concluded with suggestions for how to revise existing lesson plans to incorporate ICE.

Dong, H. (2021), "Adapting during the pandemic: A case study of using the rapid prototyping instructional system design model to create online instructional content", *Journal of Academic Librarianship*, Vol. 47 No. 3.

Applied the rapid prototyping instructional system design model to develop new instructional content for First-Year Education courses relating to ENGL 101/ENGL 102 while flipping instruction from in-person to online during the COVID-19 pandemic. Authors found that traditional instruction models, such as the ADDIE model, were not sufficient due to



multiple restrictions relating to overburdened duties, lack of staffing, funding and time. Concluded the rapid prototyping instructional system design model is useful for understaffed and under-resourced librarians that need to deliver instructional content in an online platform under tight deadlines.

Dreisiebner, S., Polzer, A.K., Robinson, L., Libbrecht, P., Boté-Vericad, J.J., Urbano, C., Mandl, T., Vilar, P., Žumer, M., Juric, M., Pehar, F. and Stričević, I. (2021), "Facilitation of information literacy through a multilingual MOOC considering cultural aspects", *Journal of Documentation*, Vol. 77 No. 3, pp. 777-797.

Described the creation of a multilingual massive open online course (MOOC) in German, English, Catalan, Slovenian and Croatian for IL. The article detailed content, technical application using OpenEdX and translation considerations. Authors also presented findings from usability surveys and a pre/post IL test. Students who completed the MOOC had a slight increase in IL competency, especially when the MOOC was a mandatory part of their coursework.

Duffy, B., Rose-Wiles, L.M. and Loesch, M.M. (2021), "Contemplating library instruction: Integrating contemplative practices in a mid-sized academic library", *Journal of Academic Librarianship*, Vol. 47 No. 3.

Literature review and assessment of applying contemplative practices (CP) in higher education and library instruction through meta-cognitive exercises for alleviating stress and burnout in students, faculty and librarians. Authors found evidence that CP was effective in reducing stress, anxiety, depression and prompting attentiveness and critical thinking, particularly among transgender and minority students. Barriers include conflation of CP with spiritual practices, pastoral care or therapy and conflict with institutional bylaws. Authors concluded that while contemplative pedagogy is not a solution, it is an important philosophy that should be applied in practical ways to help the academic community cope with and address systemic issues and promote mindfulness for more effective learning in stressful times.

Ebijuwa, A.S., Oyelude, A.A., Abubakar, A.M., Nongo, C.J. and Sani, A.H. (2021), "Sensitisation and promotion of information literacy on COVID-19 pandemic by librarians in public university libraries in Southwestern Nigeria", *Library Philosophy and Practice*, Vol. 2021.

Surveyed Nigerian university librarians ( $n = 233$ ) on their awareness campaigns of COVID-19 prevention strategies and promotion of IL to address misinformation. Found that librarians are primarily providing COVID-19 information through social media and access to remote resources; however, adequate research is lacking.

Esparza, L., Fonseca, C. and Wegmann, M. (2021), "Framing a gallery program: Integrating the ACRL Framework into a university library art gallery", *Art Documentation*, Vol. 40, pp. 282-303.

Described a university library's approach to exhibitions in their library gallery, which includes incorporating ACRL *Framework* into the development and programming of exhibits. Authors outlined specific exhibits, along with their various IL driven programming, supplementary materials, and collaborations with courses and community groups. Highlighted the importance of integrating the *Framework* into informal learning spaces.

Espe, T.W., Dettman, D.M., Noltze, M. and Harnett, D. (2021), "Credit score: Assessing a library course's association with graduation rates and GPAs for at-risk students at a regional public university", *College and Undergraduate Libraries*.

Analyzed GPA and graduation rates for undergraduates who completed University of Wisconsin-Stevens Point's library course ( $n = 1261$ ) over a 14-year period. Students who completed the course did not have higher cumulative GPAs than their peers who did not, however, they did have greater graduation rates, even when their academic preparation was taken into consideration. The authors hypothesized the single unit course helps fill a gap for

students to graduate on time while teaching research skills and therefore recommend keeping the course.

Eva, N.C., Rocca, M.S. and Mackay, D.B. (2021), "Aha moments and continued confusion: An analysis of threshold concepts through student reflections in the ACRL framework", *College and Research Libraries*, Vol. 82 No. 2, pp. 199-218.

Textual analysis of three semesters' worth of student reflections ( $n = 398$ ) as part of a foundational liberal arts course at the University of Lethbridge focused on concepts of knowledge and IL. The analysis sought to assess how well students comprehended and reflected on the six frames of the *Framework*, around which four IL lab sections were built. Found that a deeper understanding for the frames when more time was spent covering them.

Ezell, J. (2021), "Digging in and branching out: Collaborative processes of building, embedding, and evolving online interactive learning modules for library instruction", *Journal of Library and Information Services in Distance Learning*, Vol. 15 No. 2, pp. 129-141.

Case study described the development, delivery and iterative design process of embedded interactive tutorials created in collaboration with a first-year writing program using the ADDIE model, which was implemented in fully online asynchronous courses and later assigned as pre-work for in-person sessions to flip the classroom. The team ultimately opted for Articulate Storyline 360 after discovering that Articulate Rise did not meet ADA compliance, and they initially faced challenges in assessing the tutorials since they did not have access to student grades in Blackboard. Later assessment measures included a survey of students ( $n = 275$ ), which found that students were referencing the content and that they saw in the tutorials moderately or very helpful.

Ezell, J. and Rosenbloom, L. (2021), "Improving research: Instructional design for serendipity in archival exploration", *The Journal of Academic Librarianship*, Vol. 47 No. 1.

Exploratory study that piloted application of Lennart Bjorneborn framework for serendipity to explore students' classroom experiences exploring a digital archive. Researchers invited the less structured activity of exploration vs the more typical hyper-structured instruction sessions for evidence of serendipity that could then be linked to instructional strategies. This research has implications for further applying Bjorneborn's framework and suggestions for instructional design in archival exploration.

Fagan, J.C., Ostermiller, H., Price, E. and Sapp, L. (2021), "Librarian, faculty, and student perceptions of academic librarians: Study introduction and literature review", *New Review of Academic Librarianship*, Vol. 27 No. 1, pp. 38-75.

The first of a series of papers, this work presented a literature review on previous research into perceptions of librarians to contextualize a three-part survey of student, faculty and librarian perceptions of academic librarians and their work conducted at a large, 4-year, university. Survey results will be published in future papers. The literature review covered topics including librarians' self-perceptions of their roles, knowledge and motivations; faculty understandings of librarians' work, expertise, duties and affect; and students' perspectives on librarians' value, skills, work, and motivations.

Famaren, T.A.H. and Doo, A.P. (2021), "Information literacy skills acquisition by postgraduate students of National Open University of Nigeria: Makurdi Study Center", *Library Philosophy and Practice*, Vol. 2021.

Surveyed postgraduate students ( $n = 771$ ) at the National Open University of Nigeria, Makurdi Study Center to measure their acquisition of information literacy skills. Students reported they can locate and access information, however they are less adept using reference sources and advanced search techniques, such as truncation. Authors argued that IL should be integrated into the curriculum by university administration, since the study found that students learn information skills through library orientations, social interactions and social media, and surprisingly not through library efforts like in-person facilitation or online tutorials.

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Farooq, O. and Maher, M. (2021), "Synthesis and generativity: Elaborative interrogation prompts for graduate information literacy instruction", *Journal of Academic Librarianship*, Vol. 47 No. 5.

Presented a set of elaborative interrogation questions that can be used to help guide graduate students through the research proposal process. These questions encourage students to identify research gaps and critically evaluate how their research contributes to the literature in their discipline, focusing on the *Framework* frames "Scholarship as Conversation" and "Information Creation as a Process." This set of 25 questions are geared mostly toward students doing social science research.

Faulkner, K. and Ford-Baxter, T. (2021), "An analysis of references to information literacy in national disciplinary standards", *portal: Libraries and the Academy*, Vol. 21 No. 4, pp. 797-834.

Explored the presence of IL concepts in undergraduate disciplinary standards from the ( $n = 29$ ) disciplines described in Laird's "The Effects of Discipline on Deep Approaches to Student Learning and College Outcomes" (2008). Standards are coded for the term "information literacy" or any of the six ACRL *Framework* frames. Researchers determined that while many disciplines reference at least one of the six frames, there are few mentions of "information literacy" specifically and the treatment of both IL and the ACRL *Framework* are perfunctory.

Fazal, F.A. and Chakravarty, R. (2021), "Researcher development models and library research support", *Library Hi Tech News*, Vol. 4.

Described and explained different frameworks and models of research development, and how library services, facilities and activities help support research work and development. In describing these frameworks and models, authors hoped that librarians can design support systems based on the varying needs and levels of researchers. They conclude that continuing discussion of guidelines and strengths are needed to strengthen the literature of research development and their support systems.

Fázik, J. and Steinerová, J. (2021), "Technologies, knowledge and truth: The three dimensions of information literacy of university students in Slovakia", *Journal of Documentation*, Vol. 77 No. 1, pp. 285-303.

Examined the results of a qualitative phenomenographic study and analysis of first-year undergraduate students ( $n = 40$ ) in Slovakia to gauge information literacy skills. The author used the data collected through written statements, drawings and interviews to create a three-tier structure to represent the levels of information literacy knowledge and in a wider context that information literacy is a demonstrated competence where one challenges found information to verify it.

Feekey, A.J., Chisholm, K., Jeffrey, C. and Diesch, F. (2021), "Enhancing students' professional information literacy: collaboratively designing an online learning module and reflective assessments", *Journal of Information Literacy*, Vol. 15 No. 2, pp. 150-165.

Describes an online learning module created by three business librarians and a professor who coordinates a required course in a Bachelor of Business degree in New Zealand. For the module, which focused on professional sources used in post-academic contexts, the team created a local definition of IL and a framework for evaluating sources based in indigenous (Māori) concepts. Authors include assessments of students' understanding from coursework.

Finch, J.L. (2021), *Envisioning the Framework: A Graphic Guide to Information Literacy*, Association of College and Research Libraries, Chicago, Illinois.

Explored the understanding of the ACRL *Framework* using visual representations and symbols, and how the frames can be informed by other elements such as learning outcomes, survey results, etc. Chapters included using data visualization, infographics, how to envision, apply and understand that framework through visualization. Authors hoped to add clarity of understanding and practical and successful implementation of the ACRL *Framework*.

Fletcher, K.D. (2021), "Casebooks, bias, and information literacy—Do law librarians have a duty?", *Legal Reference Services Quarterly*, Vol. 40 No. 2-3, pp. 184-198.

Analyzed a set of constitutional law casebooks, property law casebooks and civil procedures casebooks comparing how the same cases were presented in each. The author noted bias and choices of the authors and editors in each case over which facts were presented. Concluded with the recommendation that law librarians teach legal students to evaluate all information for bias including casebooks, even though bias was only recently added to the American Association of Law IL standards in 2020.

Flierl, M., Maybee, C. and Bonem, E. (2021), "Developing the informed learning scale: Measuring information literacy in higher education", *College and Research Libraries*, Vol. 82 No. 7, pp. 1004-1016.

Described the development of the "Informed Learning Scale," designed to measure student perceptions related to information use in the context of coursework rather than skills, as previous IL instruments have. The instrument was administered to over 6,000 undergraduate students at one institution over two semesters of a specific course. Results were analyzed using factor analysis and comparison with two other measures of student perception, along with students' academic performance.

Flynn, D. (2021), "Evaluating a recorded appointment service for individual research consultations between librarians and allied health students", *Reference Services Review*, Vol. 49 No. 3-4, pp. 231-249.

Examined student responses to a service offering screencast recordings of individual research consultations for undergraduate allied health students to determine if and how students use these recordings in future research. Analyzed quantitative data from ( $n = 57$ ) responses to an online questionnaire emailed to students who use this service as well as qualitative data gathered through ( $n = 27$ ) follow-up interviews. Students overwhelmingly described this service as useful and over half described using the recording later in their research process.

Folk, A.L. (2021), "Exploring the development of undergraduate students' information literacy through their experiences with research assignments", *College and Research Libraries*, Vol. 82 No. 7, pp. 1035-1055.

Studied factors contributing to IL developments in first-generation undergraduates ( $n = 30$ ) at two research universities through a qualitative study. Using a combination of experiential memos and coding, the author found four themes: the high school-to-college transition, the perceived role of research assignments, the perceived emphasis of products over process and learning motivations. The author advocated for partnering with instructors, partnering with k-12 librarians and faculty, and developing/implementing instructor development programs for improving IL.

Folk, A.L. and Hammons, J. (2021), "Expanding our reach: Implementing instructor development programming", *International Information and Library Review*, Vol. 53 No. 1, pp. 69-78.

Described the planning and implementation of two instructor development initiatives aimed at instructional faculty and staff across the Ohio State University by the Libraries' Teaching and Learning Department: Meaningful Inquiry (focused on making disciplinary inquiry and assignments more transparent to students) and Teaching Information Literacy (focused on understanding and implementing information literacy in teaching). Discussed the outcomes of different teaching methods and delivery formats, as well as the benefits of pairing with a central teaching and learning center. Concluded with recommendations for building similar instructor development programs.

Foster, K.T. (2021), "Engagement in an online library class: Using extra credit activities to encourage student interaction", *Reference Services Review*, Vol. 49 No. 2, pp. 151-162.

Explained a semester-long case study of offering students extra credit for participating in information literacy activities in a one-credit asynchronous library online course. The study found that only 2 out of 17 students did a few of the small extra credit assignments (i.e. “micro-incentives”), and those students that did the assignments did not need the extra points since their grades were already high. A goal of the extra credit assignments was to increase engagement and peer discussion; however this was not the case, with there being no evidence of the assignments offering an increase in student engagement.

Franklin, K.Y., Faulkner, K., Ford–Baxter, T. and Fu, S. (2021), “Redesigning an online information literacy tutorial for first-year undergraduate instruction”, *Journal of Academic Librarianship*, Vol. 47 No. 1.

Described a redesign project of a library tutorial for first-year students at California State University, Los Angeles that covered research questions, evaluating sources, searching, citation and students as scholars using the ACRL *Framework* and learning outcomes. Created in Articulate Storyline 360, the tutorial design process included backwards design, a predictable understanding and misunderstanding framework, a library photoshoot and student audio recordings, accessibility checks and usability testing. Recommended setting a reasonable timeline, working around technology constraints, and following university policies for incentives and branding.

Frederick, D.E. (2021), “Scientific literacy, librarians and information literacy in the post-truth era”, *Library Hi Tech News*, Vol. 38 No. 9.

Advocated for librarian professional self-image and practice change as a profession to build toward a better scientific IL. Some suggestions included sharing a vision of scientific literacy, identifying library collections and services, rethinking traditional forms of literacy, and building on the existing reputation of librarians/libraries and information sources.

Gani, A., Zulaikhah, S., Irsyady, K.A. and Siregar, F.M. (2021), “Problem-based learning and thinking style impact on information literacy skill improvement among Islamic education department students”, *Library Philosophy and Practice*, Vol. 2021.

Pre- and posttest with a control and experimental group to determine whether problem-based learning is a more effective approach to teaching IL than conventional methods in Islamic education. Found that students’ ability to read information and apply knowledge was greater when taught using problem-based learning, and that students with concrete sequential thinking had greater IL skills.

Garcia, C., Argelagós, E. and Privado, J. (2021), “Assessment of higher education students’ information problem-solving skills in educational sciences”, *Information Development*, Vol. 37 No. 3, pp. 359-375.

Argued that traditional instruments used to assess undergraduate information problem-solving skills suffer from library bias – basing results on how well students use library tools – rather than focusing on other necessary competencies, such as defining, evaluating, processing and presenting the information found. Presented results of instruments administered to undergraduates in three Spanish-speaking countries using a modified Procedural Information-seeking Knowledge Evaluation – Psychology (PIKE-P) test to assess these otherwise neglected key competencies. While too early to draw definitive conclusions, authors contended the test is promising in accurately assessing problem-solving competency levels.

Geary, J. (2021), “Information literacy skills and college students: a mixed-methods, action research study of students’ knowledge and self-efficacy for applying information literacy skills to their academic and social lives”, Ed.D. Thesis, University of South Carolina, Columbia, SC.

Investigated undergraduates’ knowledge of IL, belief in their own IL skills, and application in academic and personal lives at the University of South Carolina. Using a mixed-method questionnaire and focus groups, the author found that undergraduates ( $n = 72$ ) have

a working knowledge of IL with a good application of IL in their lives. While students had positive levels of self-efficacy in their skills, individual results varied.

Gibson, N.S and Regan, M.T. (2021), "On the journey to a contemplative library: Reflections from a professional community of practice," *International Information and Library Review*, Vol. 53 No. 3, pp. 264-271.

Examined how the concept of contemplative pedagogy (CP) and mindfulness can be incorporated into information literacy instruction. Drawing from the ACRL Contemplative Pedagogy Interest Group (CPIG), suggested ways libraries can incorporate CP into their practice. Offered insight into how libraries can sustain and reimagine their abilities to incorporate CP into their public-facing library services.

Graves, S.J., LeMire, S. and Anders, K.C. (2021), "Uncovering the information literacy skills of first-generation and provisionally admitted students", *Journal of Academic Librarianship*, Vol. 47 No. 1.

Assessed the IL gains of students ( $n = 169$ ), particularly first-generation and provisionally admitted students, who participated in a pilot instructional model at Texas A&M University. Using the Project SAILS standardized IL test, found that students in the test and control groups scored similarly on the pretest, while students in the librarian-led composition course outperformed students who received "one-shot" instruction on the posttest. First-generation students initially scored lower on the specific skill of selecting but were able to close the gap and scored lower on the skill of documenting in the posttest. Future research directions included examining the factors leading to declines in pre/posttest scores, and further refining the IL interventions for target student populations.

Guo, J. and Huang, J. (2021), "Information literacy education during the pandemic: The cases of academic libraries in Chinese top universities", *Journal of Academic Librarianship*, Vol. 47 No. 4.

Analyzed "Double First-Class" Chinese academic libraries' ( $n = 42$ ) IL education in response to the COVID-19 pandemic during the winter break and spring semester of 2020. Academic libraries, in accordance with government requirements and guidelines, transitioned to providing IL education via mini courses, online lectures and recorded video uploaded to library websites and social media platforms. The findings suggested that while libraries took advantage of their websites and social media platforms to release IL education resources, they did so disproportionately across platforms, suggesting a need for more even platform support.

Gupta, A. and Gupta, S. (2021), "Information literacy among research scholars of University of Jammu in an electronic environment: A case study", *Library Philosophy and Practice*, Vol. 2021.

Surveyed research scholars ( $n = 236$ ) at University of Jammu in India to analyze IL awareness and competencies for information searching, retrieval and evaluation. Found low IL awareness and need for greater education related to IL competencies. The authors suggested a regular IL program that meets scholars' research needs.

Guth, L. and Stonebraker, I. (2021), "AACSB accreditation standards: what they mean for business librarians past, present, and future", *Journal of Business and Finance Librarianship*.

Examined the past and future significance of the Association to Advance Collegiate Schools of Business (AACSB) International accreditation standards to libraries. Found that the standards have shifted emphasis from library collections to information access and services, with the 2020 standards providing entry points for librarians to collaborate with business faculty on storytelling, promoting lifelong learning, creating scaffolded instructional experiences and advancing IL outcomes. Provided specific examples of the standards' intersection with library goals and mission, suggests related actions and opportunities and urged professional librarian organization involvement in shaping the standards' Interpretive Guidance.

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Haider, M.S. and Ya, C. (2021), "Assessment of information literacy skills and information-seeking behavior of medical students in the age of technology: a study of Pakistan", *Information Discovery and Delivery*, Vol. 49 No. 1, pp. 84-94.

Assessed the information-seeking behavior and usage of library resources of medical students in Islamabad, Pakistan through a survey collecting quantitative data. Authors found that medical students surveyed rely on a variety of resources, primarily Google, social media with less use of databases due to lack of availability, low speed Internet, time restrictions and lack of computer and/or digital library literacy. Recommendations included increased collaboration with medical programs and the library, compulsory IL workshops or seminars built into orientation and increasing funding for the library to develop IL tools and support for medical program students.

Hak, A.A. (2021), "Effect of e-Literacy maturity level on lecturers' information use behavior at Islamic University, Indonesia", *Library Philosophy and Practice*, Vol. 2021.

Defining "e-literacy" as the combination of IL, media literacy, moral literacy and thinking skills, this study examined the effect of e-literacy maturity level on the information use behaviors of lecturers ( $n = 91$ ) at Islamic University, Indonesia. Found that 76% of lecturers have obtained a stage 4 level of maturity where there is a positive impact on information use behaviors. Taken together, maturity in the four sub-variables had a statistically significant impact on information use behaviors; however, there was no statistically significant correlation with media literacy or moral literacy alone. Suggested that instructors design activities which address each of the sub-variables, enabling the information user to act in accordance with their level of media expertise and moral beliefs.

Hallam, S., Willingham, P. and Baranovic, K. (2021), "A process of engagement: Using government documents in open pedagogy", *The Journal of Academic Librarianship*, Vol. 47 No. 3.

Examined the effectiveness of an open pedagogy method to increase student engagement with US government documents. Highlighted the value of government documents in information literacy instruction and discussed barriers for use by both students and instruction librarians. Concluded by evaluating the strengths of government document focused OER lesson plans and provides recommendations for assessment.

Hamlett, A. (2021), "Getting to work: Information literacy instruction, career courses, and digitally proficient students", *Journal of Information Literacy*, Vol. 15 No. 2, pp. 166-177.

Described the author's collaboration with first-year experience instructors to integrate IL skills into the Guttman Community College (New York) "Ethnographies of Work" courses. Designed to close the IL skills gap for new graduates, efforts focused on helping students to navigate the information landscape more effectively to support career and job success. This was achieved through a series of structured assignments which explore and apply various IL ACRL *Framework* frames. Of note was a link to the Guttman IL Faculty Toolkit, containing lesson plans and assignments for adaptation.

Harkness, S.J., Rusk, F.A. and Rubio, R. (2021), "Using an embedded librarian model to increase information literacy in political science research methods", *Journal of Political Science Education*, Vol. 17, 385-405.

Discussed a pilot of an embedded librarian initiative within two sections of a political science research methods course, with one section having an embedded librarian and one without. Both sections received the same one-shot IL session and full access to a reference librarian, but in the embedded librarian section the librarian was a collaborative partner to the instructor, taking part in instruction throughout the semester and providing additional resources through a targeted LibGuide. There were no statistically significant findings, but the authors did find differences between the course sections, with the embedded librarian sections having increased librarian-student engagement and IL in students.

Hashim, H., Shuhidan, S.M. and Anwar, N. (2021), "Utilization of web-based information services among university students in Malaysian academic libraries: a proposed conceptual framework", *Annals of Emerging Technologies in Computing*, Vol. 5 No. 5, pp. 79-85.

Proposes a test to evaluate independent variables of web-based information technology usage at four Malaysian universities. Students' comfort with technology, willingness to seek the library environment and partner with information professionals will be studied and scored with the proposed test. Results will lead to development of instruments that determine key values, and moderating the effect of information literacy training.

Heinbach, C., Mitola, R. and Rinto, E. (2021), *Dismantling Deficit Thinking in Academic Libraries: Theory, Reflection, and Action*, Library Juice Press, Sacramento, California.

Explored deficit thinking in higher education and included pedagogical models, strategies for dismantling deficit thinking, practical applications in various academic library settings, and perspectives from critical information literacy educators. Each section was paired with self-reflective activities and exercises.

Heriyanto, Prasetyawan, Y.Y. and Krismayani, I. (2021), "Distance learning information literacy: undergraduate students experience distance learning during the COVID-19 setting", *Information Development*, Vol. 37 No. 3, pp. 458-466.

Qualitative study using thematic analysis of interviews with second-year Indonesian university students ( $n = 91$ ) to explore their IL experiences six months into remote learning. Found that students: equated distance learning with learning from home whilst receiving adequate attention from lecturers; viewed mastery of the online learning platform essential to success, prompted information-seeking in the form of reliance on campus IT staff and fellow students for assistance; understood the need to practice self-motivated learning through time management and access of course materials available on the learning platform; and utilized asynchronous supplemental materials (e.g. YouTube, lecture recordings and notes from fellow students). Posited that research of university students elsewhere can contribute to knowledge about remote learning IL.

Hicks, A. (2021), "Hay muchos Méxicos: A new approach to designing international information literacy instruction", *Journal of Democracy*, Vol. 33 No. 4, pp. 859-884.

Using surveys and focus groups, qualitative study examined how Mexico City-based librarians ( $n = 22$ ) understand and teach IL in higher education settings. Examined how annual exchange of international students between Mexico and the United States speaks to the interconnectedness of IL instructional possibilities between both countries. Findings revealed that Mexican librarians viewed IL as an investment beyond academia and into the workplace. Implications will help inform the design of culturally relevant learning experiences for international students in the United States.

Hicks, A. and Lloyd, A. (2021), "Deconstructing information literacy discourse: Peeling back the layers in higher education", *Journal of Librarianship and Information Science*, Vol. 53 No. 4.

Reported on a study, using discourse analysis, of four major documents, along with books that studied the documents, that play a prominent role in US and UK academic libraries. In this first part of a multi-part study, the authors found a contrast between how learners are positioned in "outward facing narratives" (which articulate the role of librarians and information literacy) and "inward facing narratives" (aimed at operationalizing information literacy practice). In outward narratives, learners were positioned as empowered, while in inward narratives, they were positioned at a deficit, the latter running counter to constructivist learning.

Hicks, A. and Sinkinson, C. (2021), "Participation and presence: Interrogating active learning", *portal: Libraries and the Academy*, Vol. 21, No. 4, pp. 750-771.

Theoretical paper critically examined the prevalence of active learning strategies within IL instruction in order to reflect on the purpose and goals of active learning in the context of



changing educational priorities and information landscapes. Drew on research from the disciplines of LIS, education, educational technology and development studies to identify both benefits and potential issues around the use of active learning in IL instruction and its place in disciplinary and institutional documents. Issues explored included the stigmatization of non-participatory forms of engagement in favor of performative learning, neglect of the personal risk associated with the use of educational technologies, the focus of the individual as the site of learning over the community, and an emphasis on inclusion through participation, which fails to address the systemic and structural inequalities that may impede student participation.

Holda, B. and Hayes, E. (2021), "Advancing information literacy with Credo Instruct: Davenport University's story", *Computers in Libraries*, Vol. 41 No. 10, pp. 15-20.

Authors outlined how they outsourced, customized, tested and promoted digital IL training using Credo Instruct. Credo Instruct produced generic training modules that Davenport University librarians were able to tailor the content to be best utilized by their students and faculty. Ongoing evaluation and assessment of outsourcing this area of instruction allowed the library to continue to customize content and teach IL at a wider and deeper level.

Horst, S.J., Leventhal, B.C., Clarke, K. and Hazard, G.A. (2021), "Bringing together two ends of the spectrum", *Assessment Update*, Vol. 33 No. 5, pp. 4-14.

Discussed IL assessment at James Madison University as an example of a framework utilizing generalized, themed questions to connect faculty and higher education administrators with a shared assessment goal. In addition to IL embedded in a GE course, selected students completed a faculty-developed 30-item test on IL for assessment. The authors posed sample discussion questions for both measures on validity, group differences and competency for others doing similar assessment work.

Hosier, A. (2022), *Using Context in Information Literacy Instruction: Beyond Basic Skills*, ALA Editions, Chicago, IL.

Argued that IL instruction should center the contextual nature of research and information-seeking. Began by linking this idea to student motivation and curiosity and the literature on information-seeking and education, as well as arguing that the ACRL *Framework* offers opportunities to center context in ways the ACRL *Standards* did not. The author also proposed six genres of research: academic, creative, personal, professional, scholarly and scientific. Each chapter after the two first framing chapters addressed a different aspect of information literacy, such as evaluating sources. Each chapter also included a connection to the *Framework*, along with practical suggestions for incorporating a contextual framing of these aspects in several instructional situations: credit-bearing IL courses, course-related instruction (beginner and advanced), tutorials and online learning objects, research consultations and library programs.

Hostetler, K. and Luo, T. (2021), "Managing cognitive load in information literacy instruction", *Educational Technology Research and Development*, Vol. 69 No. 2, pp. 583-606.

A quasi-experimental study of college students ( $n = 90$ ) multitasking in an IL one-shot and analyzed through cognitive load theory (CLT). Treatment and control group students completed a pre- and posttest. The groups had no statistically significant differences on the IL skills regardless of cognitive load. However, the authors noted that increasing overall student engagement with the content or a larger sample size may better illustrate the role of CLT in library instruction.

Hsieh, M.L., Dawson, P.H. and Yang, S.Q. (2021), "The ACRL Framework successes and challenges since 2016: A survey", *Journal of Academic Librarianship*, Vol. 47 No. 2.

Surveyed academic librarians ( $n = 519$ ) through email listservs on their use of the ACRL *Framework*. Found that 71% of participants used the *Framework* in their IL instruction and that 66% had updated their learning objectives since its publication. Librarians appreciated

the concepts in the *Framework* and its use in communicating with faculty, but limited time and the dominant one-shot IL model were described as challenges. Other challenges related to assessment were lack of time and institutional support for *Framework*-related IL assessment.

Huber, S., Bosman, L. and Bartholomew, S. (2021), "Library instruction and adaptive comparative judgment to foster visual literacy skills", *portal: Libraries and the Academy*, Vol. 21 No. 1, pp. 149-169.

Presented a case study where librarians and instructors collaborated to create a five-session instruction module on visual literacy that used adaptive comparative judgment (ACJ) as a pedagogical approach for a portfolio class of engineering students. Adaptive comparative judgment was an important teaching tool and assessment instrument in the module, with the study finding an improvement in students' visual literacy skills through the scaffolded assignments. The authors advocated for an update to the ACRL *Visual Literacy Competency Standards for Higher Education*, along with more dynamic supporting tools and examples that librarians could bring into the classroom and students could interact with on their own.

Humrickhouse, E. (2021), "Flipped classroom pedagogy in an online learning environment: A self-regulated introduction to information literacy threshold concepts", *Journal of Academic Librarianship*, Vol. 47 No. 2.

Examined the effectiveness of flipping information literacy instruction to a fully online dual synchronous and asynchronous format. Students, faculty and librarians all benefited from the mode of instruction. Faculty feedback was highly positive and many shared that they felt it would be most useful as a model embedded in their Canvas course. Teaching librarians also had high satisfaction in that using the mode of instruction freed up availability for one-on-one student interactions more frequently, particularly those who typically teach up to 50 sessions per semester. Lastly, students engaged more frequently (up to 11 h in one course) with materials and learning concepts over time than is allowable in one-shot sessions.

Ibacache, K., Koob, A.R. and Vance, E. (2021), "Emergency remote library instruction and tech tools: A matter of equity during a pandemic", *Information Technology and Libraries*, Vol. 40 No. 2.

Survey of academic librarians' ( $n = 91$ ) use and perception of technology in remote instruction in the early stages of the COVID-19 pandemic. Librarians described primarily using Zoom, LibGuides and Learning Management Systems for remote instruction. In the course of remote instruction, survey participants reported a lack of access to devices (28%) or Internet access (25%). The authors concluded with recommendations for library instruction centering equity of access.

Iqbal, S. (2021), "The assessment of information literacy instruction (ILI) in university libraries of Pakistan", *Library Philosophy and Practice*, Vol. 2021.

Explored assessment practices of ILI using a quantitative survey in university libraries ( $n = 87$ ) in Pakistan. Findings showed that an overwhelming majority of libraries reported that they assess their ILI programs, and that many of them also assessed student learning outcomes. The most popular methods for both assessing the program and student learning outcomes were verbal feedback from students and faculty.

Iqbal, S. and Idrees, H. (2021), "The current status of information literacy instruction in University Libraries of Pakistan", *New Review of Academic Librarianship*.

Survey of head librarians ( $n = 138$ ) at universities ( $n = 192$ ) across Pakistan in both public and private sectors on their practices and methods of IL instruction. Of the 63% of libraries that offered some kind of IL instruction, common methods included providing training on basic and advanced search strategies for new users, preferably in-person in library instruction labs, as well as face-to-face during tours and at a reference desk. Since IL instruction in Pakistan is still in its infancy, recommendations included acquiring additional funding, making library stakeholders aware of these services and the creation of professional organizations.

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Jarson, J. and Hamelers, R. (2021), "Is the ACRL Framework a teaching tool? Undergraduates' interpretations of its language and concepts", *Research Services Review*, Vol. 50 No. 2, pp. 179-189.

Discussed a case study where librarians asked students to reflect on their research experiences in an award application using the ACRL *Framework*, for the purpose of investigating whether the language of the frames resonated with students. Found that students did connect to the language in the *Framework* and especially focused on the frames, "Searching as Strategic Exploration," "Research as Inquiry" and "Scholarship as Conversation." Authors argued that the *Framework* could be explicitly used with students, especially for the purpose of reflection.

Jastram, I., Peterson, C. and Scharf, E. (2021), "Source evaluation: Supporting undergraduate student research development", *In the Library with the Lead Pipe*.

Presented conclusions from consultations and instruction session experiences with undergraduate students through the Information Literacy in Student Writing project at a liberal arts college in the midwestern United States. Findings highlighted common student difficulties: evaluating and selecting sources and understanding the purpose and methods of integrating sources into written work. Concluded with discussion about the importance of faculty librarian collaborations, and acknowledges the challenges posed by born-digital and online resources.

Jeyshankar, R. and Nachiappan, N. (2021), "Study on gender differences in information literacy skills among research scholars of Alagappa University, Karaikudi, Tamil Nadu", *Library Philosophy and Practice*, Vol. 2021.

Sampled research scholars ( $n = 430$ ) of Alagappa University to investigate gender differences in IL skills. The researchers found statistically significant differences in IL skills between the genders of the respondents, with female research scholars representing a smaller proportion of the sample and characterized by lower IL skills. Recommendations for reducing gender disparity and overall IL skills included the development of IL standards at the university and country level.

Johnson, M.E., Weeks, T.C. and Kubicki, J.M. (2021), "Composition and collaboration: Partnering with an academic department to promote information literacy", *College and Undergraduate Libraries*.

Discussed the design, development and data collected during the implementation of a flipped information literacy module. Study stemmed from a three-year collaboration between the University of Georgia and a course redesign institute. While the project was cut short due to COVID-19 closures, the creation of the modules nevertheless proved beneficial. Findings ultimately served to support future projects that explore student success in flipped library instruction.

Johnson, S.C., Bausman, M. and Ward, S.L. (2021), "Fostering information literacy: A call for collaboration between academic librarians and MSW instructors", *Advances in Social Work*, Vol. 21 No. 1.

Following a quantitative survey of academic social work librarians ( $n = 27$ ) in the United States using semi-structured interviews regarding IL instruction in social work education. Themes surrounding librarian relationships with faculty, including factors both contributing to and inhibiting such relationships, and assessment of IL instruction emerged. Findings indicated that the strength of instructor-librarian relationships is often a major determinant in the prevalence and success of IL instruction, which leads to both pedagogical and sustainability issues. Called for a move toward more curriculum-integrated instruction and offered recommended action items for making transition.

Johnson-Barlow, E.M. and Lehnen, C. (2021), "A scoping review of the application of systematic instructional design and instructional design models by academic librarians", *Journal of Academic Librarianship*, Vol. 47 No. 5.

A scoping review of 11,221 abstracts in peer-reviewed journals in LIS from 1990 to 2020. Authors were looking for examples of instructional design (ID) methods and models used in academic library instruction. They found discussion of ID by name in only 58 articles; they detail the scope and content of each of the 34 articles that used specific ID models. Concluded that there is more opportunity to take advantage of ID models in library instruction programs.

Jones, E.P. and Wisniewski, C.S. (2021), "Video killed the multiple-choice quiz: Capturing pharmacy students' literature searching skills using a screencast video assignment", *Journal of the Medical Library Association*, Vol. 109 No. 4, pp. 672-676.

Case report of a drug information assignment where ( $n = 66$ ) students recorded and narrated a video of their search process in PubMed. The assignment was graded by the librarian with a rubric (an initial and revised rubric is provided in the appendices), and the librarian created general feedback videos for each drug scenario. Although the process of grading and creating feedback videos was time-intensive, the assessment was more effective in measuring competencies than the previous multiple-choice quiz.

Kalaf-Hughes, N. and Cravens, R.G. (2021), "Does a Wikipedia-based assignment increase self-efficacy among female students? A qualified maybe", *Journal of Political Science Education*, Vol. 17 No. S1, pp. 862-879.

Assessed the use of a Wikipedia editing exercise assigned to undergraduate political science students ( $n = 71$ ) to determine its effects on increasing student IL competence and confidence in editing Wikipedia articles with a particular emphasis on the potential to bridge the gender gap in Wikipedia editorship. Qualitative pre- and posttest results indicated that students of all genders, but particularly women, felt more confident in their understandings of how to edit and create Wikipedia content and conduct research on Wikipedia, however this did not lead to an increase in Wikipedia editing among female students. Provided recommendations for educators interested in employing Wikipedia as a pedagogical tool including providing technology support, emphasizing Wikipedia editing as an opportunity for scholarship, and encouraging group ideation.

Kammer, J., Atiso, K. and Bortey, E.M. (2021), "Student experiences with digital citizenship: A comparative cultural study", *Libri*, Vol. 71 No. 3, pp. 279-291.

Comparative cross-cultural study of differences in digital citizenship between college students at a university in the US ( $n = 17$ ) and Ghana ( $n = 18$ ). Used Choi's digital citizenship scale to ask students about aspects of digital citizenship such as political engagement, global awareness and technical skills. Found that Ghanaian students generally scored higher, and that American students were wary of using the Internet for political goals because of issues such as harassment and hackers.

Kapel, S. and Schmidt, K. (2021), "A student-focused checklist for creating infographics", *Reference Services Review*, Vol. 49 No. 3/4, pp. 311-328.

Described the development of a checklist for students creating infographics, spurred by a rise in faculty at the authors' institution assigning students to create infographics. The authors provided practical guidance on the steps, technology and time involved in creating support for non-traditional assignments, both generally and specific to infographics. The checklist was intended for first- and second-year undergraduate students.

Kaufman, C. (2021), "Civic education in a fake news era: Lessons for the methods classroom", *Journal of Political Science Education*, Vol. 17 No. 2, pp. 326-331.

Summarized current research and corresponding pedagogical practices of media IL skills and navigating "fake news". Several example activities were provided such as extracting information from polls to discussions around the peer-review process. Due to how students consume and access the news, the author argued they tend to be underprepared in critical IL and these activities encourage critical thinking in the classroom and beyond.

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Kazan, T.S., Behm, N.N. and Cook, P. (2021), "Writing faculty and librarians collaborate", *Pedagogy: Critical approaches to Teaching Literature, Language, Culture, and Composition*, Vol. 21 No. 2, pp. 311-328.

Qualitative study examined a collaborative assessment project at a small liberal arts college. Applied dynamic criteria mapping (DCM) to measure how librarians and faculty defined information literacy and determined which criteria of academic essays exemplified writing, reading and information literacy (WRIL) proficiency. Concluded with pedagogical suggestions on how WRIL is critical to helping first-year students decipher fake news.

Khailova, L. (2021), "Using curriculum mapping to scaffold and equitably distribute information literacy instruction for graduate professional studies programs", *Journal of Academic Librarianship*, Vol. 47 No. 1.

Described the process of creating curriculum maps for fast-growing Master of Professional Studies programs at a large private university. The author interviewed faculty program directors ( $n = 5$ ) along with analyzing courses to streamline and scaffold library instruction, both synchronous and asynchronous. The author used the interviews both as information gathering and a means of getting buy-in to the proposed instruction plan.

Khan, S., Anwar, M.A. and Naveed, M.A. (2021), "Prevalence and levels of information-seeking anxiety among business students", *Library Philosophy and Practice*, Vol. 2021.

Examined the levels of and factors contributing to information-seeking anxiety for business students ( $n = 283$ ) at the Lahore School of Economics, Pakistan. Found that 62.9% of respondents faced mild anxiety while seeking information, while 25.1% experienced moderate anxiety. No statistically significant correlation was found with other variables; recommended implementation of a strategic campus-wide IL program to build skills and reduce information-seeking anxiety.

Khorsheed, R. (2021), "Assessing and assisting Arab undergraduates' skills in producing research papers in English", *Theory and Practice in Language Studies*, Vol. 11 No. 5, pp. 481-488.

Surveyed students ( $n = 52$ ) learning English on which aspects of writing a research paper they find most difficult using a pre- and posttest methodology. The writers struggled with plagiarism and noted that finding English language references and summarizing to be the most difficult parts of the research process and IL. The author suggested scaffolding research assignments and peer feedback based on the student feedback.

Kight, D.V. (2021), *A study of information literacy instruction and its impact on STEM students at HBCUs*, Ph.D Thesis, Southern University and Agricultural and Mechanical College, Baton Rouge, LA.

Investigates impact of IL on STEM students in Historically Black Colleges and Universities (HBCU) through librarian interviews, faculty and undergraduate questionnaires and focus groups in Louisiana. Findings reveal four central themes: (1) desire to improve academic effectiveness from librarians; (2) need for IL instruction and skills development; (3) willingness for faculty-librarian collaboration; and (4) opportunities for IL to develop as IL strengths and weaknesses showed during the COVID-19 pandemic.

Kim, K.S., Sin, S.C.J. and Yoo-Lee, E. (2021), "Use and evaluation of information from social media: A longitudinal cohort study", *Library and Information Science Research*, Vol. 43 No. 3.

Longitudinal study of cohorts of undergraduate information-seeking and evaluation behaviors with survey data from 2013 ( $n = 1,355$ ) and 2019 ( $n = 928$ ). Social networking sites, Wikis and media sharing sites were the most frequently used types of resources for everyday life information-seeking and academic purposes. The 2019 cohort used more evaluation strategies than the 2013 such as check the posting date and compare with other sources. The authors concluded with the recommendation for librarians to adopt heuristics and steer students away from simplistic mechanical evaluation strategies that they rely on.

Klotzbach-Russell, C., Rowley, E.M. and Starry, R. (2021), "Librarians in the LaunchPad: Building partnerships for entrepreneurial information literacy", *Journal of Business and Finance Librarianship*, Vol. 27 No. 1.

Case study describing a collaboration between an academic library and an entrepreneurial training network for students (Blackstone LaunchPad) to develop targeted entrepreneurship IL instruction for international students in a micro-credential program. The collaboration resulted in a successful three-part workshop series which covered data visualization, market research, and patents and standards. Future plans included further developing entrepreneurship LibGuides and embedding IL instruction in a separate micro-credential.

Knight, J.D., Budd, S., Bruehl, M. and Pan, D. (2021), "A paired set of biochemistry writing assignments combining core threshold concepts, information literacy, and real-world applications", *Journal of Chemical Education*, Vol. 98 No. 12, pp. 3758-3766.

Investigated scientific IL in biochemistry among undergraduates by comparing literature review projects among two, upper-division biochemistry classes at the University of Colorado, Denver. Describing two-semester assignments of 30 students, students gained professional experience performing scientific literature reviews that encourage science-based IL.

Koelling, G. and Russo, A. (2021), "Teaching assistants' research assignments and information literacy", *Journal of Democracy*, Vol. 21 No. 4.

Explores = *d* the IL content of research assignments created by teaching assistants (TAs) in an undergraduate composition course. The majority of the writing assignments were annotated bibliographies, analysis or argumentative writing and while the library was implied, rarely was it mentioned as an explicit site of research help or resources. When it came to how containers were described, assignments frequently mixed and matched various levels of organizational hierarchies of information often with conflicting information about formats. The authors concluded with recommendations for specificity and incorporating information evaluation into IL research assignments.

Korber, I. and Kruger, P.N. (2021), "Who needs a laptop? Adopting a mobile laptop cart to address space and equity issues in information literacy instruction", *Public Services Quarterly*, Vol. 17 No. 3, pp. 195-200.

Described the use and administrative process of a mobile laptop cart for students who do not have a personal device for IL instruction sessions. This approach allowed librarians to ensure that all students have an equal opportunity to participate in hands-on activities, meet increased demand for IL instruction, accommodate larger class sizes and provide pop-up instruction elsewhere in the library. The cart was managed by an office manager and checked out using LibCal's Equipment Booking Management system.

La Macchia, K. (2021), "An academic digital library advancing an equitable and inclusive educational environment", *Digital Library Perspectives*, Vol. 37 No. 1, pp. 18-27.

Related the European School of Management and Technology (ESMT) librarian's experience of providing remote IL and research support during COVID-19. The remote environment enabled more students to connect with the librarian for research and thesis assistance, and online chat, zoom sessions and online appointment scheduling were critical tools in support of these efforts. Plans for future virtual services were outlined, such as the "virtual reference desk" and video tutorials.

Lacy, M. and Hamlett, A. (2021), "Librarians, step out of the classroom!: How improved faculty-led IL instruction improves student learning", *Reference Services Review*, Vol. 49 No. 2, pp. 163-175.

Presented a case study of community college librarians training faculty to integrate IL into English composition courses, with the goal of moving away from one-shot instruction and more deeply integrating IL into classes. Four faculty were incentivized to take part in the program, where they agreed to: librarians reviewing and offering revisions to their syllabi,

participating in a two-hour IL training workshop, teaching course-specific IL skills throughout the semester, and participating in a focus group at the end of the semester to review their experience. IL learning was also measured through surveying students and reviewing student assignments. The authors found that the syllabi review was particularly valuable, since it revealed faculty assumptions about their students' research skills and helped embed IL skills throughout the assignments and course.

Lalthlamuanpuii, R., Lalngaizuali, and Ngurtinkhuma, R.K. (2021), "Information literacy among students of Regional Institute of Paramedical and Nursing Science (RIPANS) Aizawl, Mizoram", *Library Philosophy and Practice*, Vol. 2021.

Survey of paramedical students ( $n = 144$ ) in India on their awareness of IL and perceived IL skills. Although only 18% had ever attended an IL session, they were moderately aware of search and evaluation strategies. Recommended additional IL instruction and support.

Langan, K.A. (2021), "The library language game: Information literacy through the lens of Wittgenstein's language games", *Communications in Information Literacy*, Vol. 15 No. 1, pp. 104-118.

Argued that how we label or refer to something shapes how we interpret and contextualize that information and provided an example of "assault rifles" vs "weapons of war." Posited that catalogers knowingly and unknowingly bring personal perspectives to the act of labeling information. Discussed strategies for instruction librarians to teach self-awareness around language in searching and the role of personal bias.

Lantz, C., Insua, G. and Armstrong, A. (2021), "Students leading the way: A micro-adaptation of UCLA's WI + RE model to create information literacy tutorials", *College and Research Libraries News*, Vol. 82, pp. 462-465.

Reflected on the authors' development of a student-centered tutorial creation project, adapted from UCLA's WI + RE program to their context, which was smaller and had limited resources. The authors took a student-driven approach to the tutorials by hiring two student workers who actually developed and created the tutorials, with feedback and support from librarians. Argued the importance of communicating research concepts from the point-of-view of students, not just librarians or educators.

Lapointe, J.M., Gibson, C. and Jacobson, T. (2021), "Insiders' perspectives on the ACRL Framework for Information Literacy: An interview with Trudi Jacobson and Craig Gibson", *Canadian Journal of Academic Librarianship*, Vol. 76.

An interview with the two librarians who co-chaired the ACRL *Framework* taskforce discussing the concepts and reception of the document 5-years after its adoption. Jacobson and Gibson addressed the watering-down of metaliteracy and its associated concepts from the final *Framework* draft and lament its removal. The authors noted and celebrated the promise and potential for instructional collaboration as a result of the *Framework*. Discussed competing epistemologies of information literacy and its role in the future.

Lauri, L., Virkus, S. and Heidmets, M. (2021), "Information cultures and strategies for coping with information overload: Case of Estonian higher education institutions", *Journal of Documentation*, Vol. 77 No. 2, pp. 518-541.

Explored the information culture among academic staff at four Estonian higher education institutions and how information culture informs the perception of and coping mechanisms for information overload. Data was gathered through focus groups ( $n = 14$ ) and semi-structured interviews ( $n = 17$ ) with academic staff and identified integrated and open as the dominant information cultures present. Advocated for information management at the organizational level in order to best address information overload.

Lawless, B. (2021), "Can you spot a troll? Teaching information literacy through conversations about social media attacks", *Communication Teacher*, Vol. 35 No. 1, pp. 12-16.

Presented strategies for using persistent far-right attacks on social justice-oriented academics as a means for framing conversations and learning about IL with undergraduate

students. Situated IL competencies as essential for identifying and evaluating information on social media for potential far-right bias as well as a lens through which academics who have been the subject of attacks by the far-right to discuss their experience and the phenomenon of far-right trolling in general with their students. The author shared an activity designed for undergraduate students to guide them through analysis of a scholarly source and related media attacks in order to identify and explore media bias.

Lehnen, C. and Insua, G.M. (2021), "Browsing, networking, contextualizing: Research practices of humanists and implications for library instruction", *portal: Libraries and the Academy*, Vol. 21 No. 2, pp. 275-297.

Assessed the findings of semi-structured interviews with humanities faculty ( $n = 12$ ) (literature, culture and writing) about their research practices to explore how librarians can approach discipline-specific research instruction that aligns with research methods most used by faculty. Authors found that faculty interviewees focused little on using library resources or databases in their research, and instead described using informal methods like citation tracking, colleague recommendations and browsing. Advocated for librarians not faulting these informal research strategies used by faculty, and instead help students develop these methods of research for themselves, like teaching how to reflect on prior knowledge, leveraging social contacts, and surveying and monitoring existing literature.

Lehner-Quam, A. (2021), "Diversifying and transforming a public university's children's book collection: Librarian and teacher education faculty collaboration on grants, research, and collection development", *Collection Management*, Vol. 47 No. 2-3, pp. 157-178.

Described the collaboration between an academic librarian and an education faculty member to develop and assess a grant-funded, culturally and linguistically sustaining children's book collection reflective of the diversity of its users and the community. Researchers developed an Impact Assessment Model to analyze the overall impact of grants for developing this collection on the library and users including measuring the size of the collection, author and illustrator diversity, an analysis of the number of instruction sessions related to children's books offered, use of a companion research guide, and critical reflection by researchers on the collection and grant process. The results of this collaboration included increased understanding for the librarian of bilingual children's books, increased use of culturally and linguistically sustaining children's books by students, and improved value to the community of the library's children's book collection.

LeMire, S., Graves, S.J., Bankston, S. and Wilhelm, J. (2021), "Similarly different: Finding the nuances in first year students' library perceptions", *The Journal of Academic Librarianship*, Vol. 47 No. 4.

Explored how students from different first-year learning communities described their experiences with libraries and perceived their preparation for college level research. Study found that students had an array of different perceptions about the library and their personal skill levels, but a post library instruction end-of-year survey revealed a reduction in research anxiety. Provided guidance for universities looking to scale first-year undergraduate programs.

LeMire, S., Xu, Z., Balester, V., Dorsey, L.G. and Hahn, D. (2021), "Assessing the information literacy skills of first-generation college students", *College and Research Libraries*, Vol. 82 No. 5, pp. 730-754.

Study of Texas A&M University students ( $n = 2,395$ ) in general education courses to assess the IL skills, knowledge and attitudes of first-generation students in comparison with continuing-gen students using the Threshold Achievement Test of Information Literacy (TATIL), which corresponds with the ACRL *Framework*. Found differences between the two groups, with first-gen students: scoring lower overall across all modules; scoring statistically significantly less on 22% of IL dispositions; and scoring statistically significantly less on 36% of specific performance indicators. Acknowledged that students in both groups do enter



college with an IL base but recommends continued efforts “to explicitly welcome first-generation students into the scholarly research community and to make that community’s norms more transparent and inclusive” to close the gaps.

Li, H., Chen, Z. and Guo, Q. (2021), “The evolution and approaches of information analysis service of university libraries in China”, *Science and Technology Libraries*, Vol. 40 No. 1, pp. 52-64.

Reviewed the progress, practice and approaches to information analysis service at Zhejiang University Library. Authors found that the library’s expansion of information analysis services not only saw greater collaboration between internal library departments but also growth in relationships among the broader university community.

Lim, J. and Newby, T.J. (2021), “Preservice teachers’ attitudes toward Web 2.0 personal learning environments (PLEs): Considering the impact of self-regulation and digital literacy”, *Education and Information Technologies*, Vol. 26 No. 4, pp. 3699-3720.

Investigated undergraduates’ attitudes toward Web 2.0 Personal Learning Environments (individualized approaches to research and learning) with respect to self-regulation and digital literacy. Authors find in their survey of undergraduates ( $n = 137$ ) in a Midwestern university that students did not have enough literacy on digital tools for themselves and that time management skills of students were not predictive of students’ attitudes toward personal learning environments.

Linsinbigler, V., Lowder, C., Mattson, J., Murphy-Lang, A. and LoPresto, S. (2021), “User-centered design of a library tutorials page: A solution to digital hoarding”, *Journal of Library and Information Services in Distance Learning*, Vol. 15 No. 2, pp. 142-156.

Investigation into the academic library’s website toward framework using Universal Design for Learning (UDL) principals. Authors redesigned online tutorials for library instruction using wireframes, focus groups, usability studies and surveys of users at George Mason University in Fairfax, VA. Full post-design analysis was incomplete due to lack of data.

Liu, G. (2021), “Information literacy instruction for international graduate engineering students: A case study at University of Windsor”, *Journal of Academic Librarianship*, Vol. 47 No. 5.

Examined University of Windsor’s attempt to address lack of information literacy skills among rapidly growing enrollment of international engineering graduate students. Students in an Engineering Technical Communications class ( $n = 366$ ) were tested on basic IL learning outcomes before and after a mandatory one-shot session was introduced during the semester. Results suggested students showed significant improvement in searching and locating information, but virtually none in identifying and evaluating information, suggesting a need to refine instruction and conduct further testing.

Liu, G., Guth, L. and Stonebraker, I. (2021), “‘Information has value’ in business library instruction: Approaching the frame three ways”, *Journal of Business and Finance Librarianship*, Vol. 26 No. 1-2, pp. 32-45.

Shared three approaches, including lesson plans and assignments, to utilizing the ACRL *Framework frame* “Information Has Value” in business IL instruction. Illustrated how the approaches integrate the valuing of information to achieve common business objectives, such as gaining a competitive edge, making informed decisions, and gathering diverse voices. Suggested the approaches might be useful for exploring other frames in the ACRL *Framework* and encourages librarians to take agency in designing impactful learning activities.

Lockhart, J. (2021), “Embedding an information literacy course into a learning management system: A case study”, *Library Management*, Vol. 42 No. 6-7, pp. 376-394.

Described the facilitation of a 2017 pilot IL course embedded in a learning management system (LMS). After course completion, feedback was gathered from two groups of students

via an online questionnaire. Assessment determined that students want online information literacy courses and that having access to fully downloadable open access, Creative Commons licensed course materials is crucial for students who may not have Wi-Fi at home. Campuses closing due to health and safety issues may be a roadblock to students using campus Wi-Fi to download materials. Authors determined that the courses may best benefit first-year students, students with learning differences and students with disabilities.

Locoro, A., Fisher, W.P. and Mari, L. (2021), "Visual information literacy: definition, construct modeling and assessment", *IEEE Access*, Vol. 9, pp. 71053-71071.

Argued that current models do not adequately assess visual information literacy, defined as the ability to properly process information related to data graphics, in a way equivalent to models assessing reading and writing IL. Proposed instrument roughly corresponds to Piaget's theories of stages of development, with a questionnaire ( $n = 3,001$ ) to assess subjects' facility with complex data graphic models (six original levels conflated into three: very simple, simple and complex). While authors discovered unexpected and unexplained inconsistencies when subjects move from one level of graphic complexity to another, they contended that the model is valuable in showing visual information literacy developing in ways similar to other IL models.

Logeswari, A., Ramaiah, C.K., Shimray, S.R. and Deepti, C. (2021), "Awareness about media and information literacy among research scholars of Pondicherry university: A survey", *DESIDOC Journal of Library and Information Technology*, Vol. 41 No. 4, pp. 250-259.

Examined the awareness and use of media and information literacy (MIL) to find the best methods of delivering and training of MIL within Indian universities using a survey. Findings showed that while most participants were aware of MIL and utilized many tools and resources in finding information, more than half of participants lacked knowledge and skill when misinformation, sensationalism and fake news was presented as news. Limitations in this study prevented a lack of generalization across other universities in India.

Lomness, A., Lacey, S., Brobbel, A. and Freeman, T. (2021), "Seizing the opportunity: Collaborative creation of academic integrity and information literacy LMS modules for undergraduate Chemistry", *Journal of Academic Librarianship*, Vol. 47 No. 3.

Described a collaboration between librarians, writing support services and faculty to create scaffolded online learning opportunities for first-year undergraduate Chemistry students. The partnership started before the COVID-19 pandemic and resulted in five modules that focused on IL, scientific writing and academic integrity, all of which were edited and refined for online-only learning during the pandemic. Authors emphasized the importance of Creative Commons licensing and sharing content in Canvas Commons, since skills students need for success are not unique to a particular campus.

Louderback, P. (2021), "During and post COVID-19 practices of a regional academic library", *Journal of Library Administration*, Vol. 61 No. 6, pp. 726-734.

Column describing COVID-19 protocols from March 2020 to full reopening in Spring 2021 at an academic library in Oklahoma. Library leadership consulted guidance from the Centers for Disease Control, World Health Organization, and OCLC's (2020) Reopening Archives, Libraries and Museums (REALM) Project to make decisions about library staffing and services. Online library instruction included creating tutorials and embedding librarians into the LMS.

Luo, Y.-Z., Xiao, Y.M., Ma, Y.Y. and Li, C. (2021), "Discussion of students' e-book reading intention with the integration of theory of planned behavior and technology acceptance model", *Frontiers in Psychology*, Vol. 12.

Study ( $n = 263$ ) at the Guilin University of Technology, China to determine factors related to students' acceptance of reading in the digital format for academic purposes. Found that students preferred the ease of access of e-books, but they primarily used them to answer specific questions, whereas they turned to print for reading comprehension. Suggested that

IL instruction could help students to embrace digital reading more fully by familiarizing them with the technology and tools available to them.

Maharaj, N.G., Kanadia, P. and Tandel, R. (2021), "Digital information literacy among the faculty members of Gujarat Adani Institute of Medical Sciences", *Library Philosophy and Practice*, Vol. 2021.

Analyzed responses of medical faculty ( $n = 86$ ) members to a quantitative online survey designed to assess faculty competency with a variety of skills required to access digital information sources and communicate information digitally (for example, using email, social media or messaging apps). Survey results indicated no difference in competency or value applied to digital information literacy (DIL) related to subjects' age or gender. Competency was overall high among subjects as was value placed on DIL, however multiple demotivating factors for promoting DIL were identified including lack of funds and human resources.

Maki Haffa, A.L., Kato, J.J. and Slown, C.D. (2021). "Linking labs, writing, and information literacy to improve student success", *Journal of Higher Education Theory and Practice*, Vol. 21 No. 5, pp. 196-207.

Discussed a scientific writing intensive course that was paired with an upper division laboratory class, the goal of which was to develop discipline specific writing skills and critical thinking. Course topics incorporated ideas pertaining to writing mechanics, ethics, information literacy and self-promotion. Students completed scaffolded assignments that resulted in a final research paper, with the authors assessing student work through the Value Rubric developed by the American Association of Colleges and Universities. Study found that students' writing improved between drafts throughout the writing intensive course, meanwhile students who only took the laboratory course, without the simultaneous writing intensive class, did not score as well. Authors emphasize the importance of supporting student disciplinary communication and critical thinking skills in order to foster student success and help develop students' scientific identities.

Malekani, D. and Mhomisoli, M. (2021), "A study of information literacy competency among undergraduate students at Mzumbe University in Morogoro Municipality, Tanzania", *Library Philosophy and Practice*, Vol. 2021.

Examined undergraduate information literacy knowledge among students at Mzumbe University in Morogoro Municipality, Tanzania. Authors applied a mixed-method case study approach by gathering data through questionnaires then randomly selected student responses from those in their first, second and third year of education. Data demonstrated that the majority (~88%) of undergraduate students have the ability to identify credible sources, evaluate information and cite sources. Students reported that they felt least confident in citation. Based on the data, the authors recommended folding IL topics into the existing research methods courses offered and creating training on citing sources.

Mamtora, J., Ovaska, C. and Mathiesen, B. (2021), "Reconciliation in Australia: The academic library empowering the indigenous community", *IFLA Journal*, Vol. 47 No. 3, pp. 351-360.

Described the role of the libraries at an Aboriginal serving university in North Queensland, Australia in participating in university efforts at reconciliation between white and Indigenous Australians as outlined by the Australian government's *Indigenous Strategy 2017–2020*. In response to James Cook University's *Statement of Strategic Intent* which outlines the University's commitment to raise awareness, provide students opportunities to engage with reconciliation, and address equity gaps between white and Aboriginal and Torres Strait Islander peoples, the University Libraries initiated projects in four primary areas: procurement, engagement, staffing and information literacy training. Actions taken included renaming the primary campus library after Aboriginal activist Eddie Koiki Mabo, procuring and displaying Indigenous artwork in the library in consultation with the university's Indigenous Education and Research Centre, further developing collections of

monographs produced by Indigenous Australian authors, a review of database content created by and about Indigenous Australians, recruitment of Indigenous staff and providing culturally informed IL education.

Manabat, A.R. (2021), "Bringing MIL into the margins: Introducing media and information literacy at the outskirts", *International Journal of Media and Information Literacy*, Vol. 6 No. 1, pp. 156-165.

Argued that in isolated areas new to Internet access, media literacy is especially critical, and should be given added focus in overall IL efforts. In addition to increased media literacy instruction in classes, 36 students, along with 16 teachers at Loyola College of Culion (LCC) in the Philippines attended seminar-workshops whose scenario-based instruction focused on misinformation, disinformation and mal-information concepts. Based on questionnaires given before and after the seminars, attendees saw significant improvement in media literacy awareness, and especially noted the value of the workshops.

Mandrek, B. (2021), "Delivering literacy programmes for the academic excellence of the undergraduate students.", *Library Philosophy and Practice*, Vol. 2021.

Reflected on the role of IL in the academic success of students and examined the different aspects comprising information literacy. While largely a literature review on IL, the author argued for constant assessment of practices and increase in student outreach to make sure the library, in physical and electronic form, is helping to create the successful student.

Mannion, C.M. (2021), "From face-to-face to flipped: strategic adaptation of library instruction during a pandemic", *Public Services Quarterly*, Vol. 17 No. 2, pp. 73-86.

Detailed the process of converting an in-person IL program for freshman core courses to a virtual one due to the COVID-19 pandemic at New York University, Shanghai. Using the SWOT (strengths, weaknesses, opportunities, threats) framework to guide decision-making, the author identified three core learning outcomes and developed three self-paced tutorials to address them, resulting in useful follow-up synchronous workshops, additional videos and group consultations.

Martin, J. (2021), "Social science librarianship: An examination of current trends and collaborations", *Public Services Quarterly*, Vol. 17 No. 2, pp. 116-121.

A column which examined current literature through descriptive annotation. In this column, articles are discussed which address data literacy, librarian consultation for systematic reviews, library space renovations and application of the ACRL *Framework* to sociology.

Matonkar, P.V. and Kumar, M. (2021), "Assessment of information literacy among the students of PES's Rajaram and Tarabai Bandekar College of Pharmacy", *Library Philosophy and Practice*, Vol. 2021.

Surveyed bachelor's and master's pharmacy students ( $n = 263$ ) at a university in India on their information-seeking behaviors and IL skills. Found that most students were not aware of search strategies, citation styles or citation management tools, but most were at least somewhat aware of copyright laws. Although students rated their IL skills as good to average in terms of searching for and citing information, their actual information literacy skills were found to be low.

McCartin, L., Markowski, B. and Evers, S. (2021), "Developing an assessment plan for information literacy learning outcomes: Process and planning", *College and Research Libraries News*, Vol. 82 No. 1, pp. 32-44.

Described the development of a program-wide assessment plan to evaluate student learning outcomes (SLO's) for 100-level information literacy courses. Highlighted how an assessment plan can be flexible, and work to assess both course level and library wide SLO's. Concluded with major recommendations for program-wide assessment, including being open to rewriting SLOs, not skipping the pilot phase, and to focus on evaluating one SLO at a time.

McGuinness, C. (2021), *The Academic Teaching Librarian's Handbook*, Facet Publishing, London.

Reflected on various aspects of being an academic teaching librarian and offered ideas on developing one's own sense of self in the profession. Included information on terminology of IL, using technology in libraries, and other foundational concepts. This is followed by chapters which focus on gaining a sense of self in the profession, developing a teaching philosophy, personal values and leadership philosophy.

Medaille, A., Beisler, M., Tokarz, R.E. and Bucy, R. (2021), "Honors students and thesis research: A study of information literacy practices and self-efficacy at the end of students' undergraduate careers", *College and Research Libraries*, Vol. 82 No. 1, pp. 92-112.

Presented results from in-depth interviews with honors thesis students ( $n = 11$ ) at a large university. Examines the possible connections among conceptual IL skills (as articulated in the ACRL *Framework*) and self-efficacy. Implications included focusing on the affective aspects of learning and sustaining tenacity throughout the research process.

Mercer, K. and Weaver, K.D. (2021), "Evaluative frameworks and scientific knowledge for undergraduate STEM students: An illustrative case study perspective", *Science and Technology Libraries*, Vol. 40 No. 1, pp. 65-81.

Analyzed two case studies to illustrate best practices for Science, Technology, Engineering and Math (STEM) librarians on focusing on evaluative frameworks for IL. Authors compared two journal articles with the RADAR framework for appraising scientific information. Both articles covered COVID-19 but one article was retracted while the other was misinterpreted and later clarified by the authors. Authors concluded students need structure to understand the contextuality of information that builds over time and included considerations for librarians on how to address these concerns.

Mesagan, F.O., Furfuri, M.I., Mole, A.J.C. and Ihekwoaba, E.C. (2021), "Expected competencies for effective provision of online public access catalogue in Nigerian University Libraries", *Library Philosophy and Practice*, Vol. 2021.

Studied skills expected of library staff users ( $n = 21$ ) at Nigerian university libraries of OPACs (Online Public Access Catalogs). The authors used descriptive surveys with random sampling and found that most librarians have skills to use OPACs. However they also found key difficulties in implementing OPACs as these libraries include regular power outages and high purchase costs.

Mishra, M. and Panda, K.C. (2021), "Information use skills of users at five state agricultural universities: A study", *Library Philosophy and Practice*, Vol. 2021.

Survey of IL and ICT levels at five of India's oldest State Agricultural Universities using a questionnaire. Findings showed that these students ( $n = 350$ ) are under-utilizing many of the library resources and lack the basic computer knowledge in operating and finding e-resources and databases. They did find that print resources are more utilized than digital ones.

Morin, L. (2021), "The first-year library instruction one-shot: A place for caring", *Communications in Information Literacy*, Vol. 15 No. 1, pp. 95-103.

Described feminist pedagogy and ethics of care within first-year one-shot instruction. Focuses on first-year instruction, as new students can be most in need of caring within a new academic environment. Argues librarians when utilizing feminist pedagogy can create a positive impact on students and offers suggestions on what caring in the classroom and library instruction can look like.

Moruf, H.A. (2021), "Relevance of information literacy skills in librapreneurship education for graduates' self-reliance: A review", *Library Philosophy and Practice*, Vol. 2021.

Explored the concept of "librapreneurship" and its connection to information literacy and LIS graduate education through a literature review. The review tracked librapreneurship opportunities for graduates of LIS programs, the benefits and challenges of librapreneurship education, and how information literacy can support librapreneurship. Author argued that librapreneurship education should be more integrated into Nigerian library schools, which

they believe will increase employment opportunities and improve the perception of the profession.

Moser, L., Guggemos, J. and Seufert, S. (2021), "Improving a MOOC to foster information literacy by means of a conjecture map", *International Journal of Learning Technology*, Vol. 16 No. 1, pp. 65-86.

Used a conjecture map to evaluate the use of i-MOOC as a tool for developing IL skills in digital learning settings. Found that even without prior experience with online courses, instructors were able to effectively use a MOOC to foster growth in IL skills. While these methods and findings may not be transferable to other contexts, the researchers highlighted the potential benefit to research design through the application of conjecture mapping and quantitative analysis.

Murphy, M., Perrill, E., Gaal, A., Kelly, C. and Simmons, M. (2021), "Editing Wikipedia, discovering inquiry: Collaboration in a modern and contemporary African art history course", *Art Documentation*, Vol. 40 No. 1, pp. 64-79.

Discussed a semester-long scaffolded Wikipedia editing project created by a librarian and art history professor with the goal of teaching students IL concepts like authority, bias and representation while also helping students see themselves as art information creators and contributors. To support students through the scaffolded project, instructors gave six workshops with research and Wikipedia editing skills, required 1:1 meetings and provided additional tutorials in the course management system. Authors found that in contrast to traditional research papers, where students can struggle brainstorming a research topic, throughout this Wikipedia project students exhibited an interest in pursuing scholarly inquiry and were often frustrated by the limitations in Wikipedia's article format, which requires descriptive or factual writing.

Naveed, M.A. and Mahmood, M. (2021), "Correlatives of business students' perceived information literacy self-efficacy in the digital information environment", *Journal of Librarianship and Information Science*.

Examined the perceived IL self-efficacy of undergraduate business students ( $n = 350$ ) and correlations with sociodemographic and academic variables at a university in Pakistan. Found low self-efficacy for advanced IL skills overall, explained by lack of formal IL instruction in the curriculum. Age, class standing, computer proficiency and English language proficiency all presented significant mean differences, where perceived self-efficacy increases in correlation with higher values. Concluded that the Pakistani Higher Education Commission, institutions and information professionals should collaborate to develop an IL curriculum across disciplines.

Ndumbaro, F. and Kassim, M. (2021), "The use of OPAC query logs to support evidence-informed information literacy (IL) training at The University of Dar es Salaam", *Information Development*.

Examined the effectiveness of IL programs through analysis of OPAC (Online Public Access Catalog) queries. Authors used qualitative and quantitative analysis, course material analysis and comparisons of the previous analyses to determine the efficacy of IL instruction in Tanzania. Authors identified some areas for additional IL instruction including switching from simple to advanced search and emphasizing use of keywords instead of long search phrases/sentences.

Nierenberg, E. and Dahl, T.I. (2021), "Is information literacy ability, and metacognition of that ability, related to interest, gender, or education level? A cross-sectional study of higher education students", *Journal of Librarianship and Information Science*.

Explored metacognitive divide between higher education students' perception and reality of their own information literacy, and factors influencing it. Students ( $n = 760$ ) at three levels of higher education (undergraduate, Masters, PhD) estimated their IL both before and after being tested on skills, and results showed metacognition increase as educational level rises.

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Study suggested testing itself improves both metacognitive accuracy and interest in information literacy, so IL education efforts may be most effective in period following testing.

Nierenberg, E., Låg, T. and Dahl, T.I. (2021), "Knowing and doing: The development of information literacy measures to assess knowledge and practice", *Journal of Information Literacy*, Vol. 15 No. 2, pp. 78-123.

Used a knowledge test and source evaluation measure to compare what students ( $n = 268$ ) know and do when evaluating and using information sources. Provided a thorough evaluation of the validity and reliability of both measures. Found a significant relationship between quality components of source evaluation and IL knowledge.

Nowicki, R. (2021), "Starting from (sort of) scratch: Strategies for developing a long-term and sustainable online library instruction plan", *Journal of Library and Information Services in Distance Learning*.

Described a process for keeping track of historical, current and in-process online learning objects at San Diego State University library that accomplished several goals. The process, a workbook of spreadsheets, maps learning objects to learning outcomes across the curriculum, displays transparent progress to stakeholders and made reuse easier. This case study comes from the context of a library with one online learning librarian creating this structure for themselves and for other librarians.

Nwagwu, W.E. and Donkor, A.B. (2021), "Personal information management behaviors of university faculty – Aspects of print versus electronic", *Libri*, Vol. 71 No. 2, pp. 183-202.

Surveyed faculty members ( $n = 235$ ) at six universities in Ghana, with a subset ( $n = 18$ ) providing qualitative interviews, to examine personal information creation and storage practices in print and digital media. Found task-based personal information creation and information overload created challenges for faculty members' re-finding behavior, which was exacerbated by a lack of deliberate archiving activity. While faculty members valued computer literacy as important to the management of personal information, their characterization of computer literacy ignored many tools that aid in these processes.

Nzomo, P., McKenzie, P., Ajiferuke, I. and Vaughan, L. (2021), "Towards a definition of multilingual information literacy (MLIL): An essential skill for the 21st century", *Journal of Library Administration*, Vol. 61 No. 7, pp. 897-920.

Investigated impact of language in information literacy efforts with multilingual and English as a Second Language (ESL) university students, with an eye toward defining Multilingual Information Literacy (MLIL). Interviews international and ESL students ( $n = 19$ ) and librarians ( $n = 8$ ) about student awareness of IL programs and participation in them. Participants agreed that language and IL skills share similarities, and MLIL should emulate current language- and personally-specific IL models in creating a special IL model for English-challenged users.

O'Hara, I. (2021), "Feedback loops: Algorithmic authority, emergent biases, and implications for information literacy", *Pennsylvania Libraries: Research and Practice*, Vol. 9 No. 1, pp. 8-15.

Explored the nature and effects of algorithmic bias rooted in traditional Western knowledge hierarchies on users' experience of using algorithms and their perceptions of knowledge. Described and explored the notion of algorithmic authority and problematized the lack of transparency created when algorithms used for finding information are increasingly under the control of private corporations. Explored the use of Critical Information Literacy frameworks to address gaps in knowledge about algorithmic bias and described one potential activity for supporting students in comparing and critically analyzing search results from a variety of algorithmic sources.

O'Neill, B. (2021), "Do they know it when they see it?: Natural language preferences of undergraduate students for library resources", *College and Undergraduate Libraries*, Vol. 28, No. 2, pp. 219-242.

Explored the terminology preferences and understandings of undergraduate students for library resources described using natural language vs library jargon described verbally and visually. An online survey of undergraduates at a large public university ( $n = 233$ ) yielded both qualitative and quantitative data. Results showed wide variance in students' preferred terminology for library resources and preferred terms often differed from terms used by librarians or their peers. These results were not affected by previous IL instruction received by the student.

Obaro, G.O. and Umusor, G. (2021), "Information literacy skills as a correlate to the use of library resources among polytechnic students in Delta State Nigeria", *Library Philosophy and Practice*, Vol. 2021.

Surveyed polytechnic students ( $n = 16,050$ ) in Delta State, Nigeria to explore the relationship between IL skills and use of library resources. Found that while students had low levels of IL, there was a significant relationship between those skills and their use of library resources. The authors suggested the need for greater collaboration between librarians and teaching staff to improve students' IL skills.

Ocran, T.K. and Afful-Arthur, P. (2021), "The role of digital scholarship in academic libraries, the case of University of Cape Coast: Opportunities and challenges", *Library Hi Tech*.

Utilized descriptive survey design and data gathered from interviewing faculty lecturers ( $n = 278$ ), this study assessed the role of academic libraries in digital scholarship at the University of Cape Coast in Ghana. Results indicated that faculty appreciated digital scholarship and its role in facilitating information literacy training for students. Study also highlighted challenges faculty faced including inadequate access to facilities, digital tools and platforms and open access to materials.

Olakunle, S.A. and Olanrewaju, P.S. (2021). "Relationship between information literacy skills and research productivity of researchers in Nigeria, and the mediating role of socio-economic factors", *Libres*, Vol. 29 No. 1, pp. 51-76.

Examined the relationship between IL competencies, socio-economic conditions and research productivity among academic researchers ( $n = 610$ ) in South West Nigeria. Participants submitted complete *ILS, Socio-economic Factors and Academic Research Productivity Questionnaires* which gathered data about subjects' IL skills and behaviors, research productivity, socio-economic status. Results indicated a significant correlation between IL skills and research productivity with socio-economic factors such as age, salary, academic rank and work experience having significant moderating effects on productivity despite IL skill level.

Osman, H. (2021), "The impact of teaching IL on academic performance of students of School of Public Health (SPH) of University of Health and Allied Sciences (UHAS)", *Library Philosophy and Practice*, Vol. 2021.

Surveyed undergraduate students ( $n = 54$ ) in the School of Public Health at the University of Health and Allied Science in Ghana to explore IL skills and identify the impact of IL teaching on academic performance. Found a positive relationship between competency in IL and academic performance. Librarians teaching IL courses faced multiple barriers, including inadequate technology and institutional support.

Osman, H., Tesh, E.K. and Ahlija, S.A. (2021), "The importance of information literacy skills for the effective use of electronic resources by faculty of the university of health and allied sciences, Ho, Ghana", *Library Philosophy and Practice*, Vol. 2021.

Argued that student academic success largely depends on faculty's IL in order to find and disseminate up-to-date information in their field. Questionnaire responses of faculty members ( $n = 120$ ) from four schools at University of Health and Allied Sciences in Ghana were evaluated to assess how faculty used print and electronic sources of the library. While faculty used the library fairly frequently, a nuanced reading shows an overreliance on print, indicating opportunity for increased IL training.



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Oxford, M.C. (2021), *Inclusion of information literacy in English coursework at a California community college*, Ed.D. Thesis, University of Southern California, Los Angeles, CA.

Qualitative interviews with community college English faculty ( $n = 9$ ) on their knowledge and motivations for including IL in English coursework. 88% of the participants lacked basic knowledge about library resources such as electronic access to periodicals though all faculty felt IL was an important joint teaching effort with librarians. The thesis concluded with information on organizational factors impacting the adoption of IL by faculty with professional development and competing priorities (such as implementing California Assembly Bill 705) as the greatest barriers.

Pan, D., Budd, S., Bruehl, M. and Knight, J.D. (2021), "Tracking information literacy in science students: A longitudinal case study of skill retention from general chemistry to biochemistry", *Journal of Chemical Education*, Vol. 98 No. 12, pp. 3749-3757.

Described a longitudinal study examining early exposure to IL for long-term student success at the University of Colorado, Denver. The survey data of undergraduates in biochemistry-based courses ( $n = 228$ ) throughout three academic years found that once an IL foundation is established, IL performance and sophistication increased throughout the academic career.

Pauwels, N.S., De Meulemeester, A., Romagnoli, A., Buysse, H. and Peleman, R. (2021), "Medical and health informatics services during and after the COVID-19 pandemic should be virtual, tailored, responsive and interactive: A case study in Belgium", *Health Information and Libraries Journal*, Vol. 38 No. 1, pp. 66-71.

Described changes to services at the Ghent Knowledge Center in Belgium as a result of the COVID-19 pandemic, such as creating an online information hub with daily reviewed resources for researchers and clinicians, offering virtual IL instruction sessions and supporting research data management. Recommended including active learning strategies in virtual instruction sessions to engage learners.

Pichel, J., Last, B., De Ronde, J., Garbaciak, A., Hazen, H. and Jongen, S. (2021), "Information-wise: A case for developing an evidence-informed information literacy programme at Maastricht University", *Journal of Information Literacy*, Vol. 15 No. 1.

Report described the goals, research findings and implementation of an IL program via the Information-Wise Project at Maastricht University (Netherlands). Of particular interest to readers is the development of an IL framework incorporating project-based learning principles in the context of teaching and learning at MU, and the "Do's, Don'ts, and Don't Knows" resulting from the implementation pilot. The project can serve as a roadmap to institutions similarly seeking to implement a new IL program in the current information and technology landscape.

Pinto, M., Fernández-Pascual, R., Lopes, C., Antunes, M.L. and Sanches, T. (2021), "Perceptions of information literacy competencies among future psychology professionals: a comparative study in Spain and Portugal", *Aslib Journal of Information Management*, Vol. 73 No. 3, pp. 345-366.

Compared psychology majors' perceptions of IL competencies at six universities in Spain and Portugal, with the goal of establishing a foundation for future Pan-Iberian curricular programs. Students rated 26 key information literacy competencies, with results confirming hypotheses of overall similarity between countries, though Portuguese students placed a higher value on evaluation aspects of IL, while Spanish students valued communication more. While the questionnaire confirmed overall value psychology majors placed on IL, authors were alarmed by the low value both countries place on the library as a source of IL, which to the authors indicated the need for libraries to work more closely with students in early years of university education.

Pinto, M., Caballero Mariscal, D. and Segura, A. (2021), "Experiences of information literacy and mobile technologies amongst undergraduates in times of COVID. A qualitative approach", *Aslib Journal of Information Management*, Vol. 74 No. 2, pp. 181-201.

Presented the takeaways from focus group conversations with Information Science and Education undergraduates that investigated student perceptions of IL and mobile technologies, and how the switch to online learning during the COVID-19 pandemic affected these perceptions. In these conversations, students emphasized searching for information is the most important IL skill and believed they were information literate, though were aware they had room for improvement and emphasized the need for IL to be embedded further into the curriculum. For mobile technologies, students said teachers' technical skills need to be improved, and instructors' lack of technical competencies became even more apparent during online teaching in the pandemic. Authors advocate for more commitment by the university to foster IL and support mobile technologies for students and faculty.

Pinto, M., Sales, D. and Fernández-Pascual, R. (2021), "Understanding ethics and quality in information literacy: A multidimensional approach", *portal: Libraries and the Academy*, Vol. 21 No. 4, pp. 835-858.

Survey of Spanish college students from five universities ( $n = 892$ ) using the IL-HUMASS (Information Literacy Humanities and Social Sciences) and EVALCI (Evaluation of Information Competencies) measures to assess student understanding of information quality and information ethics. Seniors scored higher than juniors overall. There were also significant differences between degree programs where students in psychology had lower efficacy.

Pinto, M. Sales, D., Fernandez-Pacual, R. and Caballero-Mariscal, D. (2021), "Exploring social sciences students' perceptions on information literacy and the use of mobile technologies in higher education", *College and Research Libraries*, Vol. 82 No. 5, pp. 662-682.

Surveyed social sciences undergraduate students ( $n = 1,390$ ) to measure their perceptions of IL threshold concepts and skills, ICT and mobile technologies, and patterns related to their program of study. Researchers found a greater perceived importance of IL at the personal level than university wide, poor familiarity with the ACRL *Framework* and significant variability in responses related to ICT and mobile devices. In response to these findings, the authors recommended greater integration of IL subjects in degree curricula and additional focus on mobile information literacy.

Poole, K. (2021), "A flipped classroom approach to teaching search techniques for systematic reviews to encourage active learning.", *Journal of Information Literacy*, Vol. 15 No. 1, pp. 68-83.

Described and examined the reasoning for and process of transitioning a 3-h in-person library session to a flipped approach. Factors considered were an increase in student interest, a wide diversity of learner skills, information fatigue and limited time to cover all topics necessary for students to be successful. Study included active learning elements, lesson plans, learning outcomes, activities and learner feedback. The resulting flipped classroom allowed learners to develop metacognition, increased their time to develop recognition of challenging elements and allowed facilitators front load threshold topics to support in-person learning.

Pothier, W.G. (2021), "Using digital badges in business information literacy instruction: a case study", *Journal of Business and Finance Librarianship*, Vol. 26 No. 1-2, pp. 1-5.

Case study described the use of digital badges in a foundational level course for first-year business students at the University of New Hampshire. Awarded via the completion of online modules, the approach enabled the business librarian to successfully reach large numbers of students, impart workforce development skills and inculcate business IL concepts and library resources. The project also strengthened collaboration with the business school faculty and will lead to the development of "stackable" modules to further develop students' business IL skills.

Prasetyawan, Y.Y., Heriyanto, Arfa, M. and Shuhidan, S.M. (2021), "Lecturers perceptions of students' information literacy: identifying their roles in supporting students' information literacy", *Library Philosophy and Practice*, Vol. 2021.

Presented a qualitative study at an Indonesian university that investigated lecturers' perceptions and support of students' information literacy. Authors conducted semi-structured interviews with lecturers ( $n = 18$ ) and noticed that lecturers understood information literacy in two ways: first, as a set of skills students need to have (i.e. finding and evaluating information), and second, as a cognitive ability that supports other academic literacies, like academic reading and writing. Authors emphasized the importance of academic reading and writing skills as a part of IL, with lecturers pinpointing language barriers for students as a problem since most research is in English.

Puren, C. (2021), "Information literacy in a social action-oriented approach: From communicative competence to informational competence", *English Scholarship Beyond Borders*, Vol. 7 No. 1, pp. 50-62.

Explored the role of IL in English Language learners and the Common European Framework of Reference for Languages (CEFR) guidelines. The author argued that many French textbooks on learning English focus exclusively on a communicative lens and therefore neglect key aspects of IL such as identifying when you do not have enough information to communicate or should not speak up. Presented suggestions for revised CEFR guidelines.

Ramzan, M., Bhatti, R. and Naeem, S.B. (2021), "Relationship between students' information literacy skills and availability of digital information resources in universities library of Azad Jammu and Kashmir", *Library Philosophy and Practice*, Vol. 2021.

Explored the availability of digital resources in academic libraries in Azad, Jammu and Kashmir; IL skills of students ( $n = 600$ ) at these institutions; and the relationship between IL competency and access to digital resources through university libraries. Questionnaires were gathered from postgraduate students enrolled at public universities in Azad, Jammu and Kashmir to assess their IL competency and their level of access to digital resources through their library. A statistically significant relationship was found between more advanced information literacy skills and the availability of digital resources.

Ray, E. and Feinberg, D.E. (2021), "Deepening understanding: Adding privacy into a library and information studies course", *Serials Librarian*.

Described the experiences of librarians integrating data privacy topics into an information studies course at the University of North Florida in a 1-unit, 16-week course. Students (primarily first-year college students) responded to the module and were highly engaged according to the authors. Librarians used the module to impart lessons on the consequences of online IL and the balance between data privacy and security.

Revez, J. and Corujo, L. (2021), "Librarians against fake news: A systematic literature review of library practices (Jan. 2018–Sept. 2020)", *Journal of Academic Librarianship*, Vol. 47 No. 2.

A systematic review of the literature surrounding library practices against fake news from 2018 to 2020, looking at the strategies and methods librarians used. The review found that most academic libraries focus on IL instruction as the main strategy toward fighting fake news, as well as approaching fake news from a critical thinking perspective. Suggestions made included developing and broadening IL to include not only authority-based evaluations but also emotional-based reactions to fake news in a post-truth world.

Richards, M. (2021), "Is 'just Googling it' good enough for first-year students?", *College and Undergraduate Libraries*, Vol. 28 No. 1, pp. 85-104.

Analyzed citation patterns of first-year undergraduate students to ascertain if students favored open-web or library-provided resources for use and access. Found that 70% of citations could be found on the open web compared to 57% accessible through the library. 43% of citations' content could only be found on the open web compared to the 30% that could only be found through library resources. This overlap in access and use by first-year students suggested that there is a need for IL instruction focusing on transferable concepts and skills across information systems.

Ridley, M. and Pawlick-Potts, D. (2021), "Algorithmic literacy and the role for libraries", *Information Technology and Libraries*, Vol. 40 No. 2.

Examined algorithmic literacy and its role in libraries. Argued that libraries and librarians should gain awareness and understanding of algorithmic literacy and include it in their information literacy instruction. Authors provided a working definition, examples of how it can be used in libraries, how it can be applied within the ACRL *Framework* and why it should be considered a part of the profession's construct of information literacy.

Roberts, L. (2021), "This is just what we do: PhD students on becoming scholars in a community of practice", *Communications in Information Literacy*, Vol. 15, pp. 75-94.

Presents the data from a small qualitative study of early-career education PhD students ( $n = 9$ ) and their development of information literacy skills and writing within a community of practice (CoP). Found that community plays a large role in students' learning and the development of their professional identities. The author argued that librarians should look at research and writing more broadly and recognize the social nature of learning and research so that they can become more integrated into these communities of practice.

Roth, A., Singh, G. and Turnbow, D. (2021), "Equitable but not diverse: Universal design for learning is not enough", *In the Library with a Lead Pipe*.

Highlighted the need to move beyond Universal Design for Learning (UDL) and instead adopt more inclusive approaches that support Equity, Diversity and Inclusion (EDI) in the development of learning objects. Researchers encouraged systematic review of existing learning objects and the use of continuous feedback from learners. Concluded with proposed guidelines that encourage use of topics relevant to a diverse student body, offer multiple modes of delivery to foster inclusivity and address the needs of various types of learners, and consciously employ person-centered language.

Rowe, J., Leuzinger, J., Hargis, C. and Harker, K.R. (2021), "The impact of library instruction on undergraduate student success: A four-year study", *College and Research Libraries*, Vol. 82 No. 1, pp. 7-18.

Four-year study of English composition students ( $n = 10,147$ ) across 72 different sections at the University of North Texas comparing student success indicators of the 34.8% who attended library instruction sessions with those who did not. Found that students attending library instruction sessions were almost three times more likely to pass the course and had a 34.3% higher likelihood of retention, while non first-generation undergraduates receiving library instruction had a 16.7% higher likelihood of a GPA increase. Authors suggested further research regarding library instruction and student success within the first-generation undergraduate population.

Sachs, D.E. and Duffy, M.J. (2021), "The drama of information literacy: Collaborating to incorporate information literacy into a theatre history curriculum", *College and Undergraduate Libraries*, Vol. 82, No. 2, pp. 194-218.

Presented a year-long study on integrating IL instruction into a theater history course series. The study used pre- and post-tests to measure students' knowledge of choosing research topics, primary sources, interlibrary loan, recognizing and choosing resource types, and choosing appropriate search tools. Authors emphasized the importance of ensuring IL instruction for theater students is geared toward practical applications students can use in their future as theater professionals.

Safdar, M. and Idrees, H. (2021), "Assessing undergraduate and post graduate students' information literacy skills: Scenario and requirements in Pakistan", *Library Philosophy and Practice*, Vol. 2021.

Described a study at a university in Pakistan to discover the IL skills of undergraduate and postgraduate students ( $n = 329$ ), their opinion of the IL requirement and their suggestions for IL course content. Found that the majority of students lack confidence in their IL skills, strongly favor a required IL course, and preferred the course to cover aspects of

library resources, general research, and disciplinary research. The authors emphasized the importance of IL curricula as a contributing factor to student success in developing countries such as Pakistan.

Safdar, M. and Idrees, H. (2021), "How do faculty members rate students' information literacy skills and where do students rank themselves? A Pakistani perspective", *Library Philosophy and Practice*, Vol. 2021.

Interviewed teaching faculty ( $n = 20$ ) and surveyed students ( $n = 310$ ) in Pakistan to identify perceptions of IL competencies and skills and their differences based on student discipline or age. The results showed that controlling for discipline or age resulted in similar student perceptions, while faculty interviews revealed that they perceived students' skills as lacking in knowledge of library resources and services, online indexes and databases, and the IL-related skills of finding, evaluating, managing, and using information. As a result, researchers emphasized the importance of comprehensive IL programs and increased awareness of IL skills for both students and faculty.

Sakhawat, M., Tariq, M. and Shahzad, K. (2021), "Impact of information literacy skills of librarians on research productivity of faculty members of University of Agriculture, Faisalabad", *Library Philosophy and Practice*, Vol. 2021.

Evaluated faculty members' IL skills and librarians' role in faculty research productivity through IL programming. Faculty members and librarians had moderate IL skills; however, while librarians had sufficient resources, they did not offer ongoing IL training or workshops to faculty members. The researchers identified possible barriers to the development of IL skills including lack of support from professional library organizations, lack of funding, institutional information policies or faculty workload.

Sakhawat, M., Tariq, M. and Shahzad, K. (2021), "Role of librarians' information literacy skills to enhance research culture: A case study of University of Agriculture Faisalabad", *Library Philosophy and Practice*, Vol. 2021.

Investigated the role of libraries to enhance IL/research productivity of faculty ( $n = 231$ ) at University of Agriculture Faisalabad in Pakistan. Used quantitative questionnaires analyzed by SPSS, the authors' experiment showed library professionals are vital in promoting research culture (and IL) overall. However, library professionals face barriers in performing their IL roles.

Sampsel, L.J. (2021), "Teaching the Google Books Ngram viewer and JSTOR Text Analyzer in the graduate music bibliography course: Benefits, issues, and challenges", *Notes*, Vol. 77 No. 4, pp. 539-561.

Explored the inclusion of Google Books Ngram Viewer and JSTOR Text Analyzer in graduate music bibliography courses as an introduction to more advanced research methods in digital humanities. The authors described Ngram Viewer and Text Analyzer as less intimidating resources that can help students value the effort required to use library information retrieval tools over Internet search engines. In addition to introducing students to digital humanities research methods, these tools also provided opportunities for instructors and students to engage with topics related to the ACRL *Framework*, text mining and analysis, and advanced research and digital scholarship.

Sampsel, L.J. and Taft, S.A. (2021), "Teaching APA style (seventh edition) in the graduate music bibliography course", *Music Reference Services Quarterly*, Vol. 24 No. 3, pp. 158-174.

Detailed the changes in referencing for music scores and other audiovisual materials from APA's 6th edition to the 7th edition. The authors provided supplementary APA instructional materials such as the APA's *Style Blog* and Purdue University's Online Writing Lab. Finally, a short assignment description where music graduate students cite different types of sources using APA as an example classroom activity is provided.

Sari, M.S., Sunarmi and Mawaddah, K. (2021), "The effect of scaffolding of information literacy on the botanical literacy of prospective biology teachers", *Journal Pendidikan IPA Indonesia*, Vol. 10 No. 2, pp. 253-259.

Applied an experimental method with non-equivalent group design across students ( $n = 120$ ) in the Biology Education Program of Malang State University to determine the impact of scaffolding IL on botanical literacy. Scores from the experimental class where scaffolding was applied demonstrated significantly higher scores than the control class. Authors used this data to quantitatively demonstrate that scaffolding IL not only empowers biology teachers with facilitating higher impact lessons but also increased biology students' scientific literacy skills through higher-level thinking which promotes conceptual understanding in biology topics and IL competencies.

Saulnier, J., Johnson, C.M. and Whalen, K. (2021). "Scaffolded research assignment analysis for a required first year course", *The Journal of Academic Librarianship*, Vol. 47 No. 1.

Quantitative study drew from sets of final research papers and Library Research Assignments (LRAs) ( $n = 445$ ) to examine the effectiveness of library instruction in fostering information literacy skills through scaffolded assignments. Researchers created a rubric and rated components like topic development, citation quality, annotated bibliographies and outlines. Found that 58% of the sources from LRAs were used in final papers and that students overwhelmingly chose scholarly sources over popular Internet sources. Study contributed key ideas for cultivating the relationship between general education courses and IL instruction and demonstrates the value of librarians and instructors working together on programmatic assessment.

Scharf, D. and Dera, J. (2021), "Question formulation for information literacy: Theory and practice", *Journal of Academic Librarianship*, Vol. 47 No. 4.

Claimed that MLIS programs neglect teaching question formulation as a vital component of the research process, and it is therefore often left out of university IL efforts. As a result, students often rely on habits formed in secondary school, forming a thesis too early in research and looking only for evidence to support it, rather than broadening their exploration. Proposed a learning model (QF-IL) in which librarians lead students to formulate questions throughout the research process, thereby deepening their involvement with the topic and research materials.

Schumacher, S. (2021), "Ethical decision-making and visual literacy Instruction in architecture", *portal: Libraries and the academy*, Vol. 21 No. 2, pp. 317-338.

Presented a five-step process for planning, implementing and assessing visual literacy ethics instruction for architecture students. Highlighted the complexity of teaching visual literacy concepts and emphasizes how library instruction can equip students to enter the scholarly conversation by evoking real-world contexts. Concluded with discussion of how librarians can help students build better models for using and sharing visual materials that can extend beyond the classroom and into the workplace.

Schvaneveldt, N., Stone, S.M., Brody, E.R., Clairoux, N., Lubker, I.M., Nevius, A.M., Porcello, L. and Bissram, J.S. (2021), "Aligning information literacy and evidence-based dentistry concepts in a rubric to improve dental education", *Medical Reference Services Quarterly*, Vol. 40 No. 2, pp. 236-248.

Described the development of a rubric aligning IL learning outcomes with American Dental Education Association and Association of Canadian Faculties of Dentistry competencies. Each of the seven dental competencies is mapped to the steps in evidence-based dentistry, a major and minor ACRL *Framework* frame, and suggested learning outcomes organized by the six levels of Bloom's Taxonomy (i.e. remembering, understanding, applying, analyzing, evaluating and creating). The authors suggested that this rubric can be used to inspire new ideas for instruction and highlighted how librarians can support evidence-based practice at multiple levels throughout the curriculum.

Scoulas, J.M. (2021), "STEM undergraduate students: library use, perceptions and GPA", *Performance Measurement and Metrics*, Vol. 22 No. 2, pp. 137-148.

Used data from a 2018 student survey of students to examine the differences of library use, perceptions and grade point averages among STEM and non-STEM students. Results demonstrated that STEM students who had never used the library had a lower mean GPA than students, both STEM and non-STEM who used library resources. This study may be useful for libraries seeking to demonstrate the impact of using library resources on student achievement.

Seng, C., Carlon, M.K.J. and Cross, J.S. (2021), "Undergraduate information literacy self-efficacy: A cross-sectional study of Cambodian provincial universities", *Information Research*, Vol. 26 No. 3.

Examined self-efficacy of IL in provincial Cambodian universities to determine if there were any differences by sex, academic year, faculty and university. Used questionnaires of students ( $n = 1009$ ) and authors concluded that while there were no differences in sex, there were differences based on supporting funds and infrastructure of the institutions.

Sermisri, N., Sukkamart, A. and Kantathanawat, T. (2021), "Thai information and communication technology student teacher complex problem-solving skills", *Cypriot Journal of Educational Sciences*, Vol. 16 No. 5, pp. 2209-2222.

Examined complex problem-solving skill variables that Thai education professionals ( $n = 214$ ) teaching information and communication technologies (ICT) believed to be important when developing skills among student teachers in one Thai teaching university. Using a qualitative questionnaire, authors found that perceived IL, analytical thinking, self-control, knowledge application and planning ability are the most important variables for developing complex problem-skills.

Sewell, A. (2021), "Creating a choose-your-own-adventure library orientation", *Journal of New Librarianship*, Vol. 6 No. 1, pp. 23-32.

Presented an alternative orientation style to in-person orientations as a result of uncertainty of in-person activities during the pandemic, using an easy to learn software called Twine. Detailed the process of learning and creating a new kind of virtual activity to introduce students to the library. Elements like burnout, engagement and accessibility design were considered while creating this game, which received positive feedback in its pilot.

Shahzad, K., Iqbal, M.M.Y., Khan, A. and Idrees, H. (2021), "User satisfaction about information literacy skills and training needs among university students of Islamabad, Pakistan", *Library Philosophy and Practice*, Vol. 2021.

Surveyed students ( $n = 300$ ) enrolled in a Pakistan university engineering program to determine their perceptions of IL. Questionnaire captured students' opinions of their own IL skills and how important structured IL programs would be. While students overall believed that their own skills are high, they almost uniformly agree that IL literacy is critical for success in their field, and that they would benefit from increased IL training.

Shamsaei, M., Mangolian shahrbabaki, P., Ahmadian, L., Farokhzadian, J. and Fatehi, F. (2021), "Assessing the effect of virtual education on information literacy competency for evidence-based practice among the undergraduate nursing students", *BMC Medical Informatics and Decision Making*, Vol. 21 No. 1.

Examined whether virtual education can significantly boost IL competency needed for implementing critical Evidence-Based Practices (EPB) in Iran's undergraduate nursing programs. Survey compared student ( $n = 80$ ) IL skills, such as online searching, in a control group receiving no virtual education with that of an intervention group whose in-person education is supplemented with electronic resources, including tutorials, hands-on exercises, videos, etc. While virtual elements did boost some aspects of IL, including use of search operators, they had no effect on knowledge of information resources and developing search strategy, suggesting that virtual education can only be a helpful supplement to face-to-face instruction.

Shepard, A.L. and Milewski, S.D. (2021), "Social work prep: Using Canvas modules to provide baseline library and social work program knowledge", *Journal of Library and Information Services in Distance Learning*, Vol. 15 No. 1, pp. 2-17.

Described the development of eight LMS modules to support both undergraduate and graduate social work students at the beginning of their program in using library resources and understanding social work as a discipline. An online learning librarian, social work librarian and the social work program directors collaborated on modules that include a pre- and post-test and covers ethical conduct, search strategies, evaluating sources, APA citation, writing a literature review and research help.

Shin, Y. (2021), "Change and impact of library instruction classes during COVID-19", *Texas Library Journal*.

Examined how the Lamar State College–Port Arthur pivoted to online library instruction during the COVID-19 pandemic using video tutorials and synchronous instruction and evaluates student impact with this new mode of instruction. Student feedback on instruction videos and synchronous online instruction was overwhelmingly positive, with all participants stating that class was beneficial and almost 65% stating that the class was extremely helpful. Additionally, the study highlighted the need for faculty to actively collaborate with teaching librarians to embed IL in courses.

Shire, W. and McKinney, P. (2021), "Web 2.0 tools and information literacy instruction in UK university libraries: Hype or reality?", *Journal of Information Literacy*, Vol. 15 No. 2, pp. 124-149.

Examined how United Kingdom university librarians use Web 2.0 tools in IL efforts. Study surveyed librarians ( $n = 111$ ) of varying ages and experience, then interviewed three of low, medium and high experience, to determine initial reluctance to Web 2.0 tools, if acceptance had grown, and how they perceive the value and limitations of online tools such as YouTube, Facebook and LibGuides. Concluded that while use has increased and virtually all librarians value Web 2.0 tools, librarians remain wary of over-dependence on such tools, particularly with students who are uneasy with online tools.

Shobirin, M.S.H. and Safii, M. (2021), "The library's adaptation strategy towards the information-seeking behaviour patterns of the 2019 outstanding students in Universitas Negeri Malang (UM)", *Library Philosophy and Practice*, Vol. 2021.

Described library's IL strategies based on the information-seeking behaviors of students who were a part of the 2019 UM Outstanding Student Competition. Of the students ( $n = 18$ ), interviewed the authors found five strategies: (1) improving discoverability (online and in-person); (2) outreach; (3) programming; (4) IL on library policies and roles; and (5) remediation between journals and programs.

Shoeb, M.Z.H. (2021), "Evidence of improved students' perceptions towards online research: Pre and post assessment study of information literacy and research support", *Global Knowledge, Memory and Communication*, Vol. 70 No. 8/9, pp. 842-857.

Explored the effects of one-shot library orientation sessions given to undergraduate and graduate students at a private university in Bangladesh on students' perceptions of their research process. Freshmen, senior and graduate students ( $n = 128$ ) were given a questionnaire both before and after library orientation to assess their online research habits and attitudes toward research. Results indicated that at all levels students' perceptions and online research habits are altered by participation in IL instruction.

Singh, J. and Grizzle, A. (2021), "The e-artists media and information literacy model for managing access to quality information", *DESIDOC Journal of Library and Information Technology*, Vol. 41 No. 4, pp. 245-249.

Described IL developments in the e-ARTISTS (Explore, Assimilate, Reflect, Truncate, Integrate, Share, Transform and Sensitize) model in India to combat misinformation in commercial media. Authors also described different literacy models including Big6, Empowering 8, the Seven Faces of IL, and the Five Laws of Media and IL.



Singh, R. and Kumar, S. (2021). "Information literacy competency levels of social science researchers: A diagnostic study", *Library Philosophy and Practice*, Vol. 2021.

Described the Information Literacy Competency (ILC) of social science researchers ( $n = 520$ ) working toward PhDs at several Universities in India. Data was gathered on subjects' competencies with information need, access, evaluation, use and use ethics using a multiple-choice survey. Subjects across universities scored highest in Information Use Ethics and lowest in Information Access.

Singh, R. and Kumar, S. (2021), "Information literacy competency of researchers in social sciences: An assessment from diverse perspectives", *Library Philosophy and Practice*, Vol. 2021.

Assessed levels of IL competencies of social science researchers in India which included a demographic questionnaire for gender, age and subject studied. Found that the users were weak in determining the extent of their information and identifying appropriate sources. The study also discovered a lack of familiarity with effectively using Boolean operators, and that the students used odd combinations of connectors.

Slack, A.J. (2021), "Creating a YouTube style channel to provide information literacy instruction videos for undergraduate nursing", *Medical Reference Services Quarterly*, Vol. 40 No. 4, pp. 383-395.

Case study of a new health science librarian's embedded approach to online asynchronous instruction during the pandemic using instructional videos. Included the results of a survey of students ( $n = 16$ ) on the perceived usefulness of the videos and their research confidence levels, and a survey of faculty ( $n = 6$ ) on their use and perceptions of the videos, which were not generalizable but overall positive. Described the use of features in the Kaltura video platform, such as organizing videos into channels, including timestamps and tags, and implementing quiz questions.

Sommer, M., Kohnen, A.M., Ritzhaupt, A.D. and Hampton, J. (2021), "Investigation of the validity evidence of the information literacy self-efficacy scale (ILSES) among undergraduate students", *Communications in Information Literacy*, Vol. 15 No. 1.

Used confirmatory factor analysis (CFA) to test the validity and dimensionality of the Information Literacy Scale Self-Efficacy Scale (ILSES), developed in 2006. Administered the scale to undergraduates in education courses ( $n = 253$ ) and concluded that the ILSES mostly does not measure what it purports to measure; that it has poor construct validity. Proposed a modified version with four of the ILSES' original seven factors that better align with the factors that the ILSES is intended to measure, along with other methods for measuring information literacy self-efficacy.

Soroya, S.H., Iqbal, M.M.Y., Soroya, M.S. and Mahmood, K. (2021), "Predictors of information literacy self-efficacy among medical students: PLS-SEM analysis", *Library Hi Tech*, Vol. 39 No. 2, pp. 670-689.

Surveyed Pakistani medical students ( $n = 201$ ) using the Information Literacy Self-Efficacy Scale (ILSES) developed by Kurbanoglu *et al.* (2006). Found that use of emotions and the ability to appraise emotions in others were correlated to higher IL efficacy. English proficiency and the number of IL sessions attended also correlated to higher IL skills. The authors recommended the creation of required IL courses for medical students as a result.

Sowers, K.L. and Meyers, S. (2021), "Integrating essential learning outcomes and electronic portfolios: Recommendations for assessment of student growth, course objectives, program outcomes, and accreditation standards", *New Directions for Teaching and Learning*, Vol. 2021 No. 166, pp. 43-57.

Described four case studies of implementing institutional learning outcomes through electronic portfolios in four different courses at Stockton University (New Jersey): a first-year seminar, a required undergraduate course in education, an upper-level course on writing for health and a graduate education course. Identified both barriers and benefits of using

e-portfolios to accomplish instructional learning outcomes. Described how students created a representation of work for post-college audiences like graduate schools and employers.

Stadler, D., Rojas, A., Perrenod, W. and Keyes, C. (2021), "Using a scaffolding approach to integrate the information cycle into a library instruction course: A review and small case study", *Journal of Education for Library and Information Science*, Vol. 62 No. 2, pp. 119-136.

Review and case study which examined how academic libraries implement the information cycle in library instruction. Further investigated the techniques used by librarians at a New York City community college to help students determine credibility of information sources through a scaffolding approach combined with small-group learning. Argued that through instructor and classmate feedback as well as higher recognition of the information cycle, students developed an understanding of information and modified their heuristic approach toward identifying, evaluating and using information.

Stokes, P., Priharjo, R. and Urquhart, C. (2021), "Validation of information-seeking behaviour of nursing students confirms most profiles but also indicates desirable changes for information literacy support", *Journal of Documentation*, Vol. 77 No. 3, pp. 680-702.

Replication study of undergraduate nursing students ( $n = 86$ ) to confirm internal and construct validity of profiles used to describe students' information-seeking processes based on their personality, learning approach and IL self-efficacy. The results of the study confirmed six profiles: deep adventurer, deep explorer, strategic detector, strategic all-rounder, strategic collector and surface coordinator. Each profile is mapped to the level of confidence, personality, and associated information processes, as well as academic skills and requirements for transitioning to practice. Although surface learners relied more heavily on professional networks, this is an important skill for teams-based approaches to nursing, and the authors recommended tailoring instruction to the various learner profiles.

Strader, C.R. (2021), "Cataloging to support information literacy: The IFLA Library Reference Model's User Tasks in the context of the Framework for Information Literacy for Higher Education", *Cataloging and Classification Quarterly*, Vol. 59 No. 5, pp. 442-476.

Compared the user tasks in the IFLA Library Reference Model (LRM) for cataloging of find, identify, select, obtain and explore with each of the ACRL *Framework's* frames. Presented guiding questions for cataloging to encourage description that supports information literacy outcomes. Concluded with the argument that cataloging can support IL and is a vital component as it relates to the frame Searching as Strategic Exploration.

Subaveerapandian, A. and Maurya, A. (2021), "Digital media and information literacy: A way to paperless society", *Library Philosophy and Practice*, Vol. 2021.

A mixed-method survey of world ranked university libraries ( $n = 60$ ) to assess if paperless and all digital learning could be adopted for a paperless society. Found that digital media literacy is a way toward a paperless society and that a majority of the libraries surveyed were in favor of both.

Sweet, C. (2021), "Overdue: Incorporating social justice into the Framework for Information Literacy for Higher Education", *College and Research Libraries News*, Vol. 82 No. 5, pp. 210-213.

This column argued in favor of revising the 2016 ACRL *Framework* in order to more explicitly include values related to social justice in it. The author described the growing prominence of conversations related to social and racial justice in academia, librarianship and American culture in the wake of the #MeToo movement and the 2020 uprisings for racial justice and argued that updating the framework to reflect societal changes is essential for maintaining its relevance and compliance with professional standards of ethics. Addressed potential roadblocks for updates including the lack of official review calendar for the *Framework* and limited bandwidth for the work this would require among librarians in the face of global pandemic.

Syam, A., Rakib, M., Jufri, M., Utami, N.F. and Sudarmi. (2021), "Entrepreneurship education, information literacy, and entrepreneurial interests: An empirical study", *Academy of Entrepreneurship Journal*, Vol. 27 No. 1.

Study at SMK Negeri 1 Makassar (Indonesia), a national vocational school, to examine the effect of family instruction (such as family values) and of library IL instruction on students' ( $n = 73$ ) entrepreneurial interest. Found that family instruction has some influence on entrepreneurial interest, while both IL instruction and family and IL instruction had significant positive influence. Of special interest is the definition of IL in the context of entrepreneurial interest, where the ability to find, evaluate and use information is viewed as a critical component of achieving freedom, personal dreams and independence.

Tallolli, S.B. and Mulla, K.R. (2021), "The perspectives of engineering college librarians on information literacy programmes for user empowerment", *Library Philosophy and Practice*, Vol. 2021.

Surveyed engineering college librarians ( $n = 82$ ) in the Bengaluru region of India to understand how information literacy programs are currently being conducted, evaluated and perceptions of their effects. Of the respondent libraries, 89% conducted programming at the beginning of the academic year with 34% providing programming multiple times of the year, as needed. Only 68% were conducting post-program assessment, primarily via survey, despite 94% either agreeing or strongly agreeing that assessment should occur.

Tang, Y. (2021), "Help first-year college students to learn their library through an augmented reality game", *Journal of Academic Librarianship*, Vol. 47 No. 1.

Reflected on an augmented reality game created for library orientations geared toward first-year students. Authors shared the process of creating, implementing and challenges encountered, as well as what changes can be and need to be made for future iterations. Students reported the game was more effective than a traditional tour because of how it engaged the user, making them feel more comfortable asking for help.

Tardiff, A. (2021), "Ignatian information literacy: Applying the Ignatian pedagogical paradigm to library instruction", *Jesuit Higher Education*, Vol. 10 No. 1, pp. 77-87.

Described IL one-shot informed by the five steps of Ignatian pedagogy, creating an iterative process. The author flipped the classroom with a LibGuide introducing students to the CRAAP test, lateral reading and discussions on worldview during class before the traditional one-shot IL instruction on how to conduct library research, and culminated with students evaluating information sources and completing a worksheet. Author shared successful implementation (54 out of 57 students achieved Satisfactory or higher) and positive professor feedback. They proposed the development of the "Have a CCOW: Investigate Claims, Credentials, Objectives, and Worldview" test to replace CRAAP.

Thakur, R.A., Gupta, S., Shukla, R. and Sharma, D. (2021), "The SCONUL seven pillars of information literacy: Core model' to test the skills of LIS students, University of Jammu, India", *Library Philosophy and Practice*, Vol. 2021.

Presented results of a self-reported IL competency survey to BA and MA LIS students ( $n = 48$ ) guided by the SCONUL Seven Pillars of IL. Students disclosed weaknesses in controlled vocabulary and citation styles but felt more confident with copyright and searching for information. Students at the master's level felt they could strategically organize searches with greater confidence than students at the BA level.

Thomas, P., Jones, M.F. and Mattingly, S. (2021), "Using Wikipedia to teach scholarly peer review: A creative approach to open pedagogy", *Journal of Information Literacy*, Vol. 15 No. 2, pp. 178-190.

Described an assignment created collaboratively by librarians and biology instructors at the University of Kansas aimed at teaching students about the peer review process. The assignment guides undergraduate students through the process of drafting, receiving feedback and resubmitting a draft of an article, in this case for Wikipedia. The main

challenges were the assignment's timing, with students having to turn in a long piece of writing mid-semester; the authors described their open-pedagogy approach and how they would change the assignment's timing in the future.

Thomas, S.L. (2021), "Piloting a programme of training in the use of electronic resources at a university library: Lessons learned", *Journal of Electronic Resources Librarianship*, Vol. 33 No. 1, pp. 50-59.

Reflected on a newly implemented pilot program for electronic resources using workshops. Some lessons learned were basing the training on relevant research projects and assignments to help make training more meaningful, recognizing the varying levels of computer literacy skills, and adjusting or offering support in and outside of the workshops.

Thompson, L. (2021), "Fashioning the framework: Information literacy for fashion studies", *Art Documentation*, Vol. 40 No. 2, pp. 304-315.

Discussed how the ACRL *Framework* can be incorporated into IL instruction for fashion studies, which is a relatively new and interdisciplinary field in the academy. Provided background on fashion study research methods and direction on how each frame can be applied. Author argued that the *Framework's* emphasis on disciplinary context can complicate the frames' application in fields as interdisciplinary as fashion studies.

Tomaszewski, R. (2021), "A STEM e-class in action: A case study for asynchronous one-shot library instruction", *Journal of Academic Librarianship*, Vol. 47 No. 5.

Using a post-instruction student survey ( $n = 454$ ), the author compared three instructional models: an in-person workshop, and a set of four asynchronous video modules, delivered either during lab or as a pre-lab assignment in an introductory biology major's course. Regardless of the delivery model, students rated the experience positively and reported having greater confidence in their literature searching after instruction. Pros and cons of each model are identified and used to propose an ideal one-shot library workshop.

Tsai, M.J. and Wu, A.H. (2021), "Visual search patterns, information selection strategies, and information anxiety for online information problem solving", *Computers and Education*, Vol. 172.

Study used eye-tracking technology on university student volunteers ( $n = 46$ ) to examine the relationships among learner's visual search patterns, information anxiety and OPIS (Online Information Problem Solving) task performance in web searching. Results reflected that eye movement, information anxiety and task performance were significantly related to OPIS. Recommended further study in analyzing eye-tracking data against lag sequential analyses (LSA) to better understand online learner search and information processing patterns.

Ukwoma, S.C., Osadebe, N.E., Okafor, V.N. and Ezeani, C.N. (2021), "Unveiling the veiled: Wikipedia collaborating with academic libraries in Africa in creating visibility for African women through Art + Feminism Wikipedia edit-a-thon", *Digital Library Perspectives*, Vol. 37 No. 4, pp. 449-462.

Assessed the participation of a Nigerian academic library in Art + Feminism Wikipedia edit-a-thons, meant to bolster entries on African woman and participants' information literacy skills. Found that content was created for women in a variety of fields and the articles received more than 8 million views over two years. A major factor inhibiting article creation and improvement was the notability and verifiability policy of Wikipedia that requires citations to published sources, which are not always available for African women.

Umesh, M. and Sujatha, H.R. (2021), "Assessment of information literacy skills and competencies among the undergraduate students of Kuvempu University: A study", *Library Philosophy and Practice*, Vol. 2021.

Surveyed undergraduate students' ( $n = 847$ ) IL competencies and library use at Kuvempu University in India. All surveyed respondents visited the library several times a week and the majority visited to return books, read textbooks or study. Half of students believed they had

necessary information literacy competencies to be successful in their studies. The authors concluded with suggestions to maintain student satisfaction with the library such as ongoing library orientation programming.

Usova, T. and Laws, R. (2021), "Teaching a one-credit course on data literacy and data visualisation", *Journal of Information Literacy*, Vol. 15 No. 1, pp. 84-95.

Described the development and implementation of a one-credit undergraduate course on data literacy and visualization that would allow students to become effective consumers and producers of data visualizations, while learning relevant software and improving their communication skills. Based on student feedback, the authors discussed future directions given the contextual challenges of expanding to a traditional 3-credit course.

Valenti, S.J. and Lund, B.D. (2021), "Preparing the instructional librarian: Representation of ACRL roles and strengths in MLS course descriptions", *College and Research Libraries*, Vol. 82 No. 4, pp. 530-547.

Content analysis of the descriptions of MLS courses ( $n = 107$ ) in library instruction compared to the themes in the *ACRL Roles and Strengths of Teaching Librarians* guidelines. The researchers found that teacher and instructional design were most represented thematically in course descriptions. Few courses directly addressed the advocacy or leadership roles from the ACRL document. Suggestions for improving MLS course offerings are provided.

Valero Gisbert, M.J., Cabassi, N. and Longhi, E. (2021), "Serious games for learning information literacy: The teacher's point of view", *International Information and Library Review*, Vol. 53 No. 2, pp. 170-175.

Described facilitating student learning and critical thinking skills by using game-based learning, from the teacher's perspective. The authors created a game with a narrative structure which guides students through analysis and critical thinking of sources. While further assessment and feedback are needed, the game can be used for multiple disciplines and adapted.

Van Abel, K. (2021), "Business research toolkit: The creation of an online, asynchronous business information literacy course", *Journal of Business and Finance Librarianship*, Vol. 26 No. 1-2, pp. 67-80.

Described the Business Research Toolkit (BRT) program at the Collat School of Business, University of Alabama at Birmingham. As a 7-week online, asynchronous, elective and non-credit bearing course, the BRT provided students interactive business IL instruction in five core and four elective modules. The author offered strategies for developing your own toolkit program and considerations for administering it.

Verma, M.K. and Shukla, R. (2021), "Information literacy skills among the masters' students of social sciences departments of Mizoram University and Tezpur University: A comparative study", *DESIDOC Journal of Library and Information Technology*, Vol. 41 No. 5, pp. 374-384.

Compared the IL skills of social sciences master's students ( $n = 522$ ) enrolled at two universities in India. Found a lack of significant difference between the two universities' students' IL skills and satisfaction with their library orientation programming. Both groups of students showed a preference for print resources and a need for improvement in the areas of fair use and plagiarism.

Vorobel, O., Voorhees, T.T. and Gokcora, D. (2021), "Language learners' digital literacies: Focus on students' information literacy and reading practices online", *Journal of Computer Assisted Learning*, Vol. 37 No. 4, pp. 1127-1140.

Proposed that annotation and social bookmarking tools are valuable assets in assessing online IL of English as Second Language (ESL) students. Authors observed online information practices of ESL students ( $n = 5$ ) at a two-year college over a semester, then used interviews and qualitative analysis to determine how students search for and assess

information, with special attention given to how they annotate, share, and evaluate comments made through annotation and bookmarking software. The study noted that ESL students face language and comprehension barriers that challenge traditional information literacy efforts, and annotation and social bookmarking can be valuable tools in engaging students and shaping instruction.

Wagner, S., Mann, E. and Marshall, A. (2021), "Toward a thoughtful assessment practice: Using reflection to guide library instruction assessment", *Reference Librarian*, Vol. 62 No. 1, pp. 23-33.

Examined three different student feedback forms to evaluate IL instruction. The authors noted questions asking for the most beneficial part of a one-shot session yielded positive and constructive feedback, however, each form yielded some vague or contradictory comments from students regardless of question wording. The authors concluded with guiding questions and suggestions for those creating their own student feedback forms.

Wang, H. (2021), "Understanding the challenges faced by Chinese international graduate students in acquiring information literacy: the impact of internet censorship", Master's Thesis, University of Windsor, Ontario, Canada.

Analyzed IL skill acquisition of Chinese international graduate students studying in Canada with considerations for the impact of online censorship in China. Found that students lacked formal IL training during undergraduate study in China and their information behaviors and practices reflected that they had been impacted by Internet censorship. This was evidenced by participants' own reflections on the fears and heightened costs for using certain information and the limited availability of useful information.

Weber, E. (2021), "You can improve: Using the Framework in how to read workshops", *College and Research Libraries News*, Vol. 82 No. 7, pp. 310-313.

Explored the role of critical reading in the research process and how instruction librarians are positioned to teach reading comprehension in a broader context of literacy. Examined undergraduates' major academic challenges and discussed how librarians can effectively teach lateral reading for news and social media, and skills for breaking down scholarly articles and textbook chapters. Highlighted how frames within the ACRL *Framework* can apply to reading skills.

Weiss, A.P., Ahmed A., Garcia, E.P. and Kirakosian, A.T. (2021). "Toward a comprehensive model of fake news: A new approach to examine the creation and sharing of false information", *Societies*, Vol. 11 No. 3.

Building upon research on faculty attitudes toward fake news, the article discussed a proposed comprehensive model for defining fake news and identifying its creators and users. Authors' fake news model is focused on reconciling the two sides of the fake news relationship, examining how producers become consumers and consumers become producers. Concluded that heavy focus on critical thinking and IL within higher education contexts is not enough to combat fake news. Rather, much more attention should be paid to understanding users' and fake news creator's motives, backgrounds, behaviors and circumstances.

Wema, E.F. (2021), "Developing information literacy courses for students through virtual learning environments in Tanzania: Prospects and challenges", *IFLA Journal*, Vol. 47 No. 4, pp. 559-569.

Literature review examined the potential use and challenges of using online learning environments in order to influence universities in Tanzania to develop virtual learning to facilitate the teaching of information literacy courses to students and faculty. The literature review revealed the need for these courses in Tanzanian higher education to relieve workload of librarians and highlights challenges which include lack of commitment and cooperation among administrators and lack of staff expertise.

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Willms, N. and O'Brien-Jenks, K. (2021), "Easier, less stressful, and better results': Sociology and criminal justice majors' experience of library research before and after library instruction", *Teaching Sociology*, Vol. 49 No. 1, pp. 58-72.

Described the collaboration between an instruction librarian and sociology professor on integrating IL instruction into an undergraduate sociology research methods course. After completing a literature review assignment, students ( $n = 14$ ) wrote reflective essays on the process detailing their frustration and confusion with the research process prior to IL instruction. Within their essays, students expressed greater clarity and speed after receiving library instruction and their annotated bibliographies demonstrated success using a rubric measuring IL.

Wishkoski, R., K. Strand, Sundt, A. and Meter, D.J. (2021), "Case studies in the classroom: assessing a pilot information literacy curriculum for English composition", *Reference Services Review*, Vol. 49 No. 2, pp. 176-193.

Assessed the introduction of Case-Based Learning (CBL) in boosting information literacy competencies in undergraduate English Composition classes. Compares performance of control class ( $n = 90$ ) receiving established IL instruction with that of experimental group participating in weekly CBL sessions, involving scenarios and questions as a way to learn specific information literacy skills. Study suggested dependence on CBL does not automatically boost IL competency and can distract students focused on class performance, but in limited use may be helpful in illustrating some key concepts.

Wright, L.B. (2021), "Assessing library instruction: A study of the relationship between attendance, retention, and student success", *Journal of Academic Librarianship*, Vol. 47 No. 5.

Analyzed anonymized student data ( $n = 4,668$ ) to examine the impact of IL instruction on first-time, full-time freshmen across three cohorts (2015-2017). Using Chi-square and binomial logistic regression, found a small but statistically significant relationship between IL instruction and retention, and IL instruction and GPA. The author noted that the findings have limited generalizability, but the statistical model is sound, and the method can be used to examine appropriate IL interventions to support student success beyond first-year retention.

Wu, P.J., Hou, H.Y. and Huang, C.C. (2021), "Applying talent quality-management system (TTQS) to enhance information literacy, learning motivation, and computational thinking competency of nursing undergraduates", *Sustainability*, Vol. 13 No. 12.

Examined the pedagogical application of a talent quality-management system (TTQS) with freshmen nursing students in a programming course at National Taichung University of Science and Technology (Taiwan). Found that TTQS is a learner-centered model which facilitated computational thinking and information literacy skills for students, and particularly enhanced instructors' ability to adjust pedagogy to meet learners where they are. Suggested further research with more visual interactive software and game-based information systems where the findings can be generalized and more broadly applied in other disciplines.

Xing, W. and Wang, X. (2021), "Understanding students' effective use of data in the age of big data in higher education", *Behaviour and Information Technology*.

Deployed an online questionnaire to Chinese university students ( $n = 242$ ) which were analyzed using social cognitive theory and Partial Least Squares (PLS) to identify factors that impact students' usage of data. Discussed big data, learning analytics and the increased interest from students relating to the topics and usage in university administration and pedagogical practices. Concluded that students may be encouraged to use data through university-wide promotion, continued improvement in data quality, through data literacy instruction, and support of student data privacy and digital identities.

Yadav, S. and Kumar, M. (2021), "information-seeking behavior of undergraduate students of English discipline: A comparative study of Miranda House College and Vivekananda College, University of Delhi", *Library Philosophy and Practice*, Vol. 2021.

Investigated the information-seeking behavior and library use of English undergraduate students at two colleges in the University of Delhi through surveys of students and librarians. Results found students make use of limited sources when seeking information, often sticking to sources they know and not engaging with library resources. The authors emphasized the need for outreach and IL instruction to improve research skills and spread awareness of library resources.

Yap, J.M. and Manabat, A.R. (2021), "Are we in-sync? Students' virtual instructional experience and perceived information literacy skills in time of pandemic", *Internet Reference Services Quarterly*.

Post-session satisfaction survey of students who attended or viewed virtual instruction sessions ( $n = 137$ ) at a university in Kazakhstan during the Fall 2020 semester, as well as a follow-up survey on their perceived improvement of IL skills using the SAILS skill sets and data gathered from reference analytics. Although overall satisfaction with the workshops was high, sessions could have been more interactive. Students rated themselves as moderate users in searching for and evaluating sources.

Yesmin, S. and Ahmed, S.M.Z. (2021), "Infodemic surrounding COVID-19: Can LIS students recognize and categorize 'problematic information' types on social media?", *Digital Library Perspectives*.

Investigated LIS students' ( $n = 114$ ) IL in Bangladesh about infodemics (rapid increase in information volume on a problem, making a solution more difficult) and related terminologies on COVID-19. Most students were unable to answer definitions or task-based questions (<35%) in the survey.

Young, A. (2021), "A librarian and biochemist's experience building a collaborative partnership in the classroom and beyond", *Issues in Science and Technology Librarianship*, Vol. 98.

Described collaboration in academia of how to develop IL-based relationships starting from simple reference interactions. The author argued these types of relationships can open conversations on open resources and supportive partnerships.

Younger, K., Branstiter, C. and Bobkowski, P. (2021), "From passive participants to active learners: Open educational resources as a vehicle to move beyond one-shot library instruction", *Journal of New Librarianship*, Vol. 6 No. 1, pp. 84-126.

Described the creation process of a journalism OER textbook, *Be Credible*, incorporating disciplinary specific IL concepts and instruction in the text. The authors detailed which chapters correspond to which ACRL *Framework* concepts. The creators also employed open pedagogical practices and shared how students contributed to the iterative OER text with suggestions for others embarking on similar projects.

Yu, C. and Zhao, C.G. (2021), "Continuing the dialogue between writing experts and academic librarians: A conceptual model of information-based academic writing in higher education", *Journal of Academic Librarianship*, Vol. 47 No. 6.

Proposed a socio-cognitive process-oriented conceptual model for information-based academic writing (IBAW), which explored the interplay between information practices and higher-education writing in three dimensions: process, individual and social. The authors identified three pedagogical implications, including knowledge construction and critical information use concepts in writing curriculum, IL concept integration in discipline-specific writing and scaffolding for writing and IL instruction. This IBAW model served as a practical example of the ACRL *Framework* within a particular context, higher-education writing, with dimensions and factors that reflect the concepts found within the framework's frames.

Zakharov, W., Li, H., Fosmire, M., Pascuzzi, P.E. and Harbor, J. (2021), "A mixed-method study of self- and peer-assessment: Implications of grading online writing assignments on scientific news literacy", *College and Undergraduate Libraries*, Vol. 28 No. 1, pp. 67-84.



In order to provide an opportunity for constructive feedback in large enrollment classes, instructors trained students in an introductory STEM course to use a rubric for peer- and self-assessment of four writing assignments. Researchers found that self-assessment scores were statistically different from the paired average peer assessment scores across all four assignments, and that inter-rater reliability between peer assessors neither met the desired threshold nor increased significantly across assignments. Based on these findings as well as qualitative assessment of high discrepancy submissions, the authors emphasized the importance of certain considerations and actions when training students in application of the rubric as well as areas for improvement.

Zeeshan, M., Siddique, N. and Idrees, H. (2021), "What is the understanding of the students about the need and importance of information literacy (IL) program and IL skills", *Library Philosophy and Practice*, Vol. 2021, pp. 1-9.

Surveyed graduate students ( $n = 306$ ) at Lahore University of Management Sciences in India to determine attitudes about IL programs and to establish needs for IL efforts. Students were questioned about how much IL training they have received, if they see the need for additional IL training and what kind of IL training they think they need. Found that students have very little IL training, but they see the need for it, and rather than pick out certain elements to highlight, they want IL training in all competencies.

Zeigen, L. and Hamilton, A. (2021), "Evolving librarian engagement in undergraduate medical education student research and scholarship", *Medical Reference Services Quarterly*, Vol. 40 No. 3, pp. 337-346.

Described the evolving strategies for library instruction and individual research consultations used for undergraduate medical student scholarship projects. In its most recent iteration, students completed four reflective search exercises in a one-credit introductory course throughout the term and librarians provided two workshops on searching and citation management, direct feedback on assignments and optional hour-long research consultations. The librarians planned to assess students using the Fresno Test for competences in evidence-based medicine in the future.

Zerr, D. and Maddison, T. (2021), "Creation of an online library instruction course for faculty", *Canadian Journal of Academic Librarianship*, Vol. 7.

Described the transition of a course for new faculty at a polytechnic university in Canada from face-to-face to an online format. Explained how the librarians teaching the course ("Introduction to Research and Writing") took the opportunity to revise the course using levels of Bloom's Taxonomy to create their instructional plan. Assessment of learning was measured through quizzes and discussion and assessment of the course through student surveys. Also described the logistical and technical aspects of creating and maintaining an online course.

Zhang, X. (2021), "Using drama-based pedagogy to support college students' information literacy development: How do the students feel about it?", *Research in Drama Education*, Vol. 26 No. 4, pp. 582-598.

This case study described student response to the use of drama-based pedagogy to develop IL competency in an argumentative writing class at a Chinese university. College sophomores ( $n = 22$ ) participated in an activity in which they collected information and used it to present a drama to the class. Subsequent recorded interviews, biweekly reflections and essays as well as researchers' notes were analyzed, and researchers concluded that the drama-based pedagogy assignment increased students' motivation and interest in completing the exercise and gave students valuable experience in practicing IL skills.

Zhao, S., Zhou, G., Fallis, J., Pillon, K. and Luo, R. (2021), "Information literacy skills: Investigating differences between native and non-native English-speaking students", *Journal of Academic Librarianship*, Vol. 47 No. 5.

Surveyed native and non-native English-speaking students ( $n = 122$ ) at a Canadian university using the Beile Test of Information Literacy for Education (B-TILED). The results showed that native English speakers had significantly higher levels of IL skills around search strategy, knowledge of e-resources and copyright. However, there were no differences when it came to citation practices or use of academic databases between the two groups. The authors concluded with recommendations for library orientation programs targeted to international students.

Zhu, S., Yang, H.H., Wu, D. and Chen, F. (2021), "Investigating the relationship between information literacy and social media competence among university students", *Journal of Educational Computing Research*, Vol. 59 No. 7, pp. 1425-1449.

Surveyed Shanghai university students ( $n = 1843$ ) using an IL test designed by the authors in a previous study as well as a social media competence scale. Participants had high levels of technical competency and an understanding of information ethics, however, they had lower evaluation and content creation skills. IL competency was a predictor of social media competency, and the authors recommended further study of IL in informal learning environments to understand its relation to social media.

Zou, D., Zhang, R., Xie, H. and Wang, F.L. (2021), "Digital game-based learning of information literacy: Effects of gameplay modes on university students' learning performance, motivation, self-efficacy and flow experiences", *Australasian Journal of Educational Technology*, Vol. 37 No. 2, pp. 152-170.

Explored flow theory in game design to increase IL efficacy and engagement at a Hong Kong university. Using the RPG Maker MV, authors had students ( $n = 90$ ) play the game in solo, competitive and collaborative modes that asked participants five IL topics: using Google and Google Scholar; using the university library's search platform; using the databases, evaluating quality of information; and reading academic articles. In pre- and post-game analysis using ANOVA, authors concluded collaborative and competitive modes had highly effective learning motivations.

Zou'bi, R.A. (2021), "The impact of media and information literacy on acquiring the critical thinking skill by the educational faculty's students", *Thinking Skills and Creativity*, Vol. 39.

Examined the impact of media and information literacy (MIL) and the effect on critical thinking skills of students using a quantitative study. Results found that students had a hard time distinguishing media with misleading content including poor language and grammar skills, public figures or scientific facts or the use of satire and sarcasm. The study provided instructors with a clearer understanding of what and how MIL training can improve to create strong MIL and critical thinking skills.

### *Everyday*

Ayob, A.H., Musadek, B.F.M. and Wan Hussain, W.M.H. (2021), "Measuring the effectiveness of e-government in Malaysia: Does information literacy matter?", *International Journal of Sustainable Society*, Vol. 13 No. 1.

Analyzed data from the 2020 Malaysian National Public Survey on use of government websites and the relationship between social influence, political trust and web security as moderated by IL. Greater frequency of government websites resulted in higher perceived usefulness regardless of demographic controls. However, IL had no statistically significant effect on trust or influence.

Behre, J.I. (2021), "Young adults seeking, encountering, and evaluating sexual health information online", Master's Thesis, University of Maryland, College Park, MD.

Studied gaps in literature of LGBTQ + friendly language for young adults (18-24 years old) seeking online, sexual health information. Findings showed online information of the available popular literature is unreliable. Author noted that young adults struggle to apply

critical evaluation to everyday lives that they can apply in academia, suggesting increased IL to apply theory to practice.

Brooks, C.F. (2021), "Popular discourse around deepfakes and the interdisciplinary challenge of fake video distribution", *Cyberpsychology, Behavior and Social Networking*, Vol. 24 No. 3, pp. 159-163.

Qualitative analysis of articles from popular news and magazine outlets to explore public discourses around deepfakes. Used iterative coding and focused on patterns of storytelling to examine how the topic of fake videos is discussed in nonacademic contexts. Concluded that given both the negative social and technical impacts of deepfakes, the solution to combating them is multidimensional and must thereby address a reevaluation of systems as well as of legal and behavioral tools.

Bryanov, K. and Vziatysheva, V. (2021), "Determinants of individuals' belief in fake news: A scoping review of determinants of belief in fake news", *PLoS ONE*, Vol. 16 No. 6.

Scoping review explored personal and systemic factors which affect individuals' perception of "fake news" through a synthetic analysis of articles ( $n = 26$ ) presenting experimental research into individuals' susceptibility to "fake news." Authors described three groups of factors: messaging characteristics, individual cognitive styles and information literacy, and the presence of systemic interventions such as the presence of warning notifications encouraging users to consider the possible presence of "fake news." Concluded with recommendations for future researchers in this area to expand the range of stimuli applied and web platforms examined.

Choi, J.R., Straubhaar, J., Skouras, M., Park, S., Santillana, M. and Strover, S. (2021), "Techno-capital: Theorizing media and information literacy through information technology capabilities", *New Media and Society*, Vol. 23 No. 7, pp. 1989-2011.

Examined digital media capabilities in adults by categorizing into three factors of basic, intermediate and advanced capabilities. Through mailed surveys of adults ( $n = 643$ ) in the Austin, TX area based on previous surveys of the same population, authors found basic technological capabilities are key toward advancing technology capital that facilitate social mobility.

Das, I. (2021), "An assessment of gathering information by the farmers of Assam: A survey", *Library Philosophy and Practice*, Vol. 2021.

Examined the information gathering practices and information literacy needs of farmers ( $n = 197$ ) in Assam. Agricultural workers were surveyed using a semi-structured questionnaire to assess their information needs, strategies for finding information, common information sources and challenges related to finding information. Findings suggested there is a dearth of information available to this population related to agricultural work and technology and that this population struggles with both finding and evaluating necessary information.

de Vicente Domínguez, A.M., Bañares, A.B. and Sierra, J. (2021), "Young Spanish adults and disinformation: Do they identify and spread fake news and are they literate in it?", *Publications*, Vol. 9 No. 1.

Surveyed representative young adults ( $n = 500$ ) in Spain on their understandings of IL and fake news. While over 70% of participants viewed IL education and media literacy as important, around the same percentage were unaware of ever receiving any formal curriculum in IL. Nearly all participants reported encountering or receiving fake news with smaller percentages admitting to sharing it or not verifying information before sharing on social media. The authors concluded with suggestions on a formal IL curriculum to combat fake news.

Fikadu, A.A. and Gebre, G.G. (2021), "Evidence from Fogera district in Ethiopia on configuration of farmer's information literacy conditions that explain better productivity performance of the horticultural crops", *Agriculture and Food Security*, Vol. 10 No. 1.

Compared information literacy knowledge to farm productivity in Ethiopia through fuzzy-set Qualitative Comparative Analysis (fsQCA). Surveyed farmers ( $n = 80$ ) for their horticultural information sources (government agricultural extension offices, NGOs, media and peer groups) and found that only 42.5% were satisfied with their information access. The authors found the link between information literacy practices and farm productivity to be complex and not causal with suggestions for continued information literacy education for Ethiopian farmers.

Hardy, J. (2021), "Queer information literacies: Social and technological circulation in the rural Midwestern United States", *Information Communication and Society*, Vol. 24 No. 1, pp. 102-117.

Reported on interviews, historical research, and participatory observations to identify and better understand the information practices of LGBTQ+ people. The author described queer IL not as a process taught through formalized education, but through a community framework where information circulates through spaces and formed communities. This framework conceptualized social networks where nodes and relationships are vital for facilitating the spread of information.

Haynes, D. and Robinson, L. (2021), "Delphi study of risk to individuals who disclose personal information online", *Journal of Information Science*.

Identified areas lacking consensus among experts relating to the individual risks associated with online disclosure of information to explore topics for further research. Experts lacked consensus relating to interfaces' need for user information, personalized ads, information disclosure through online connections, personal information accuracy and responsibility, and user attitudes regarding online privacy. Further research on these topics, as well as further investigation of expert opinions, could aid in the exploration of individual online privacy risk.

Hirsh, K. (2021), *Where'd you get those nightcrawler hands? The information literacy practices of cosplayers*, Ph.D. Thesis, The University of North Carolina, Chapel Hill, NC.

Studied the IL of cosplayers to leverage interest-driven IL in formal settings for IL instructors. Using informational interviews with active cosplayers ( $n = 10$ ), research found interest-driven IL in the cosplay space required the presence of peers within the space. Peers acted as direct information sources but also pointed to other information resources and communities, while encouraging information evaluation and creation during the process.

Ibrahim, M.M. (2021), "Boko-Haram insurgency: A conceptual framework for information sharing strategies of members of vigilante in Adamawa State, North-east, Nigeria.", *Library Philosophy and Practice*, Vol. 2021.

Study of members of a vigilante group ( $n = 1400$ ) in the state of Adamawa in northeast Nigeria focusing on information sharing strategies against Boko-Haram. Using the Information Behavior Model and information poverty theory, the author used questionnaires and interviews to collect data. Findings revealed overcoming poor Internet access, lack of ICT technology and online places for information are critical in establishing effective information sharing across groups.

Igwebuike, E.U. (2021), "Media and information literacy as a panacea for national integration in an era of hate speech in Nigeria", *DESIDOC Journal of Library and Information Technology*, Vol. 41 No. 4, pp. 240-244.

Analyzed interviews with Nigerian participants ( $n = 72$ ) from six different geopolitical zones on their understanding of media information literacy (MIL) and perception on its role in civic society. The participants, while largely not aware of MIL competencies, believed that critical thinking in evaluating information would help stem hate speech on social media. The author concluded with policy recommendations to curb hate speech and a call for librarians to increase MIL instruction.

Inskip, C. and Donaldson, S. (2021), "Exploring effective information use in an insurance workplace", *Journal of Information Literacy*, Vol. 15 No. 2, pp. 45-77.

Authors conducted semi-structured interviews with practitioners and students in the context of insurance workplaces with staff members ( $n = 18$ ) at a large insurance firm in London and undergraduate students ( $n = 6$ ) at University College London intending to enter the insurance field after graduation. Used a framework developed by researcher Marc Forster to organize results (derived from analysis of interview transcripts) to compare how each group articulated IL competency at different levels. The article drew on several theories and studies of workplace IL to frame and contextualize participants' responses.

Jaeger, P.T. and Taylor, N.G. (2021), "Arsenals of lifelong information literacy: Educating users to navigate political and current events information in world of ever-evolving misinformation", *Library Quarterly*, Vol. 91 No. 1, pp. 19-31.

Examined the need for a comprehensive and unified approach to IL across all library types, treating it "as a sociopolitical issue of the highest importance" and advocating for movement beyond the profession's traditional neutrality, in order to withstand the threat that disinformation and misinformation pose toward citizenry, their communities and societies as a whole. Proposed that librarians infuse critical IL into each touchpoint with patrons rather than focus on generalized one-off sessions, educate patrons on the nature of contemporary news and its tendency to echo chamber through social media algorithms, and eliminate duplication of effort across all library types in instruction methodology. Reminded librarians to continue their own education and IL training as the pandemic and its corresponding infodemic have demonstrated that LIS professionals do not necessarily remain immune to the effects of disinformation and misinformation.

Jang, M., Aavakare, M., Nikou, S. and Kim, S. (2021), "The impact of literacy on intention to use digital technology for learning: A comparative study of Korea and Finland", *Telecommunications Policy*, Vol. 45 No. 7.

Compared digital literacy (DL) and IL of "digital natives" in Korea and Finland to see impact on their willingness and intention to use digital technology for learning. Survey of 20–39-year-olds ( $n = 394$ ) measured factors related to ease with technology, ability to use it to find and evaluate information, and overall information-seeking behavior. While deeply ingrained digital use behaviors had the greatest impact on willingness to use new digital learning technology, IL had impact on Finns only, suggesting those advocating implementation of new learning technologies should focus on DL behaviors as a path to success.

Jones-Jang, S.M., Mortensen, T. and Liu, J. (2021), "Does media literacy help identification of fake news? Information literacy helps, but other literacies do not", *American Behavioral Scientist*, Vol. 65 No. 2, pp. 371-388.

Survey of Americans ( $n = 1299$ ) examining the relationship between different literacies (digital, information, media, news) and the ability to correctly identify fake news on Facebook regarding 2016 U.S. politics. Found that IL – the only literacy tested, not self-reported – presented a significant positive relationship with fake news identification. Proposed increasing IL instruction and further studies which recognize that efforts to combat fake news should go beyond educating individuals because of the dissonance between real and self-perceived capabilities.

Juneström, A. (2021), "An emerging genre of contemporary fact-checking", *Journal of Documentation*, Vol. 77 No. 2, pp. 501-517.

Analyzed sets of fact-checks related to the COVID-19 pandemic on three different fact-checking websites: PolitiFact, FactCheck and snopes.com, with the aim of identifying the unique building blocks of fact-checking as its own media genre. The building blocks identified were access (facilitating public access to accurate information), trust (related to growing distrust of news media) and information poverty (selectivity in deciding which claims to evaluate). Argued that fact-checking constitutes its own genre, apart from journalism and analysis.

Kamada, H. (2021), "When accurate information harms people: Information on COVID-19 infection clusters in Japan", *Cosmopolitan Civil Societies*, Vol. 13 No. 2, pp. 60-72.

Discussed the phenomenon of blame, harassment and mistreatment in reaction to accurate public health information disseminated during the COVID-19 pandemic in Japan, where cultural norms and societal expectations influence some citizens to negatively treat others due to actual or perceived association with infection clusters. Explored the dynamics specific to Japan that contribute to this behavior and how approaches to IL during an infodemic should emphasize ethical uses of information, taking into account the balance between privacy and public health.

Karim, M., Nikou, S. and Widén, G. (2021), "The role of youths' perceived information literacy in their assessment of youth information and counseling services", *Information Research*, Vol. 26 No. 2.

Investigated perceived IL abilities in everyday life through an online survey of people between the ages of fifteen and twenty-nine years old, using a theory-based model. Findings showed that perceived IL abilities have a strong influence on many aspects of IL, including ease of access, reliability, as well as an indirect effect on perceived service quality. Practical implications of this study could provide constructs in the assessment of library service quality as well as emphasizing responsiveness of information services.

Khanina, A., Zimovets, A. and Maksimenko, T. (2021), "The role of media and information literacy during COVID-19 pandemic and post-pandemic period", *International Journal of Media and Information Literacy*, Vol. 6 No. 1, pp. 111-118.

Survey of Internet users ( $n = 70$ ) in Russia to gauge changes to information-related activities and behaviors during the COVID-19 pandemic lockdown and how to manage expectations moving forward. Found that 91.9% of respondents increased their reliance on the Internet for information searching, news gathering and work-related activities by at least 20%, coinciding with distance work adoption – though many expressed an inability to confirm reliability of sources. Recommended implementation of IL instruction beyond the government-led Digital Certificate program in order to foster skills in an environment where distance work becomes the norm.

Le Louvier, K. and Innocenti, P. (2022), "Heritage as an affective and meaningful information literacy practice: An interdisciplinary approach to the integration of asylum seekers and refugees", *Journal of the Association for Information Science and Technology*, Vol. 73 No. 5, pp. 687-701.

Ethnographic investigation over twenty-one months that examined how the preservation of heritage exists as an information literacy practice for asylum seekers in Newcastle-Gateshead, England (United Kingdom). At the intersection of information studies and critical heritage studies, and grounded in ethnographic constructivist theory, this research interrogated how refugee communities seek, use and share information. Methods included sensitizing workshops, participant observations, in-depth audio-recorded and semi-structured interviews. Findings indicated that heritage is an effective and meaningful IL practice. Research had implications for how host societies can create more inclusive practices for asylum seekers.

Li, Y., Zhou, C., Wu, D. and Chen, M. (2021), "Evaluation of teachers' information literacy based on information of behavioral data in online learning and teaching platforms: An empirical study of China", *Library Hi Tech*.

Used data from teachers' ( $n = 1,237$ ) behavior in online learning and teaching platforms in China to predict IL performance using supervised learning models. A comparison of high and low performers showed that teachers in the high performing group perform better in areas including information awareness, knowledge, application and ethics, and security and professional engagement. Encouraged future research using similar methods.

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Lloyd, A. and Hicks, A. (2021), "Contextualising risk: The unfolding information work and practices of people during the COVID-19 pandemic", *Journal of Documentation*, Vol. 77 No. 5, pp. 1052-1072.

The first part of a two-phase study modeling information literacy behaviors of people in the United Kingdom during the first months of the COVID-19 pandemic. Via in-depth interviews with 17 participants, the authors constructed three phases of IL practices: unfolding, intensifying and maintaining. The results detail participants' information behaviors such as evaluating information and assessing personal risk within several contexts, including social and societal.

Maertens, R., Roozenbeek, J., Basol, M. and van der Linden, S. (2021), "Long-term effectiveness of inoculation against misinformation: Three longitudinal experiments", *Journal of Experimental Psychology: Applied*, Vol. 27 No. 1.

Measured the effectiveness of inoculation theory by building resistance against misinformation through three longitudinal experiments. Authors used the inoculation group variable (*Bad News Game*) vs the control group (*Tetris*) and a combination of surveys and posttests. Successfully replicating the inoculation treatment, the experiment showed potential effectiveness against misinformation.

Mahmood, M., Batool, S.H. and Ahmmad, M. (2021), "Investigating digital information literacy In relation with demographic factors: A case of women in Pakistan", *Library Philosophy and Practice*, Vol. 2021.

Survey of Pakistani women ( $n = 291$ ) on their IL skills and its relationship with various demographic factors. Found that education and occupation have a significant impact on IL skills and age, marital status and location do not.

Middleton, L. and Hall, H. (2021), "Workplace information literacy: a bridge to the development of innovative work behaviour", *Journal of Documentation*, Vol. 77 No. 6, pp. 1343-1363.

Mixed-methods study of members ( $n = 410$ ) of three large public sector case study organizations in Scotland, Finland, and England to determine the role of workplace IL in Innovative Work Behavior (IWB). Had the novel finding that workplace IL and information sharing are important factors in stages 2 and 3 of IWB: creating and championing ideas. Suggested further research and attention into the development of workplace IL for workers while recognizing the social conditions necessary to foster information sharing.

Multas, A.M. and Hirvonen, N. (2021), "Let's keep this video as real as possible': Young video bloggers constructing cognitive authority through a health-related information creation process", *Journal of Documentation*, Vol. 78 No. 7.

Nexus, or discourse, analysis of young Finnish YouTube vloggers ( $n = 3$ ) on their IL practices to create health-related information and their construction of cognitive authority using different information sources using interviews, video diaries, and published videos. These vloggers primarily built authority through authenticity, competence, trustworthiness from first-hand experience, embodied knowledge and educational expertise. Highlighted how recognizing oneself as an authority in the information creation process is an integral part of IL, which could be more apparent in the ACRL *Framework*, everyday life information-seeking research and instruction.

Osiński, Z. (2021), "Information literacy of Polish state administration officials in the context of the concept of 'good governance'", *Journal of Information Literacy*, Vol. 15 No. 2, pp. 4-25.

Research on IL in Polish government offices toward the goal of good governance. The first stage identified IL components and deficiencies for state administration employees. The second stage examined the reliability of questionnaires through smaller case studies. Authors concluded employees underestimated current IL practices. However, authors also could not examine the employees own IL skills due to an overly positive perspective.

Robinson, S., Jensen, K. and Dávalos, C. (2021), “‘Listening literacies’ as keys to rebuilding trust in journalism: A typology for a changing news audience,” *Journalism Studies*, Vol. 22 No. 9, pp. 1219-1237.

Using in-depth interviews ( $n = 19$ ) and textual analysis, the study analyzed trust-building initiatives to explore the link between public trust and news literacy. Examined how information literacy practice can be used to revitalize mainstream journalism. Findings revealed four dimensions of news literacy for trust building in public information exchange. Concluded that notion of “listening literacy” has implications for journalists and media platforms that extend beyond K-12 and higher education contexts.

Roll, M.J.J. and Ifenthaler, D. (2021). “Multidisciplinary digital competencies of pre-service vocational teachers”, *Empirical Research in Vocational Education and Training*, Vol. 13 No. 7.

Study employed structural equation modeling to assess digital competencies of pre-service vocational teachers ( $n = 205$ ). Competence model included attitudes toward digitization, information literacy, virtual collaboration and digital problem solving. Concluded that self-assessed multidisciplinary digital competencies can predict achievement in a qualitative-assessed competence test.

Schultheiß, S. and Lewandowski, D. (2021), “How users’ knowledge of advertisements influences their viewing and selection behavior in search engines”, *Journal of the Association for Information Science and Technology*, Vol. 72 No. 3, pp. 285-301.

Investigated users’ ability to differentiate ads from non-ads in search engine environments (for mobile and desktop). Used a mixed-method approach of German-speaking students and non-students ( $n = 100$ ), the authors used interviews, eye-tracking experiments and questionnaires to conclude those with low IL of search-based ads were more likely to click on ads.

Schultheiß, S. and Lewandowski, D. (2021), “Misplaced trust? The relationship between trust, ability to identify commercially influenced results and search engine preference”, *Journal of Information Science*.

Explored the relationship between users’ choice in search engines with their trust of results from the World Wide Web. The authors conducted a survey of German Internet users to examine the assumption that lack of familiarity with search engines leads to higher trust in search results. The results of the survey confirmed the assumption and demonstrated that users with little knowledge of search engines are unable to adequately evaluate search results and are more likely to trust and use Google compared with users who have more knowledge of search engines.

Schvaneveldt, N., Diekema, A.R., Hopkins, E.B.S. and Patterson, B. (2021), “New nurses apply only basic source evaluation criteria but realize their skills are lacking: More sophisticated approaches to teaching evaluation skills are required”, *Health Information and Libraries Journal*.

Survey of recently graduated nurses ( $n = 349$ ) on their self-reported confidence in evaluating sources and the criteria they used, which was graded using a rubric and screened for the presence of outcomes from the ACRL *Information Literacy Competency Standards for Nursing*. Most respondents were moderately confident in their evaluation skills and those who responded to the open response question gave below average responses for how they evaluate information, often using superficial indicators such as date, peer review, or publisher; however, those with a graduate degree were more likely to have a sophisticated understanding of evaluation. Additional, nuanced instruction on evaluating a variety of sources (not just peer-reviewed journal articles) is needed in nursing school, especially since evaluation skills are not learned in the workplace and nurses use a variety of sources for patient education.

Sharma, R.M. and Mandal, S. (2021), “Information literacy education in organic floriculture: Need of the hour”, *Library Philosophy and Practice*, Vol. 2021.



Discussed the information needs of floriculturists ( $n = 336$ ) working in the Kalimpong District of West Bengal, India. Floriculturists were interviewed in-person and researchers used this data to identify needs for information related to pest control, marketing, community organizing and climate among others. Primary sources of information for this subject group were word of mouth and the Internet, suggesting a need for more outreach from government institutions, and libraries to share information and develop IL competencies.

Sharun, S. (2021), "Practicing information literacy: Practicum students negotiating information practice in workplace settings", *Journal of Academic Librarianship*, Vol. 47 No. 1.

Presented findings from in-depth interviews with students ( $n = 6$ ) in practicums in healthcare workplace settings. Authors traced the adaptation of students from academic IL use to workplace IL use, noting similarities and differences and tying them to the ACRL *Framework*. Identified practicums as a unique transitional space to study how IL skills learned in an academic setting are transferred and adapted.

Tarannum, N. and Mondal, P. (2021), "Assessing the computer literacy among the below poverty line (BPL) community of Malda District", *Library Philosophy and Practice*, Vol. 2021.

Used the IFLA IL Empowering 8 model to assess the computer literacy of the below poverty line community of the Malda district in West Bengal, India. The findings revealed inadequate computer literacy skills that would restrict the utilization of information among the population studied. A lack of access to technology, Internet and proper training contributed to undeveloped computer literacy skills.

Walton, G., Pointon, M., Barker, J., Turner, M. and Wilkinson, A.J. (2021), "Information discernment and the psychophysiological effects of misinformation", *Global Knowledge, Memory and Communication*.

An experimental study examining the relationship between levels of 18-24 male participants' ( $n = 48$ ) "information discernment" (a framework conceptualized by one of the authors) and psychophysiological stress responses to disinformation. Participants were evaluated for their level of information discernment, then exposed to a high-stress situation involving disinformation related to religious extremism. Authors' analysis indicated that participants with higher levels of information discernment experienced less negative stress responses; they concluded that those participants are more likely to make more optimal choices in high-stakes information-seeking situations.

Widén, G., Ahmad, F., Nikou, S., Ryan, B. and Cruickshank, P. (2021), "Workplace information literacy: Measures and methodological challenges", *Journal of Information Literacy*, Vol. 15 No. 2, pp. 26-44.

Reflected on three separate (previously published) quantitative studies of workplace information literacy (WIL) in different countries – all of which measured participant knowledge, perceptions, and awareness of IL, rather than outcome achievement – in order to guide future quantitative research in WIL. Highlighted the strengths and pitfalls of quantitative approaches, concluding that research more tightly focused on individual WIL skills would be more informative. Emphasized that due to the contextual and socially constructed nature of work, any established definition of IL used in studies needs to be further customized to each workplace or profession being studied.

Yang, S., Lee, J.W., Kim, H.-J., Kang, M., Chong, E. and Kim, E.-M. (2021), "Can an online educational game contribute to developing information literate citizens?", *Computers and Education*, Vol. 161.

Developed an online education game entitled Trustme! designed for users in Korea aged 20–29 to increase their ability to critically assess online information. Researchers connected IL competency with civic online reasoning and found that the implementation of educational games may improve information discernment and contribute to cultivating information literate citizens. They concluded that using online games may increase skepticism which is

needed for assessing online information and helps to increase access to IL learning for marginalized communities.

Zimu-Biyela, N. (2021), "Information needs of women subsistence farmers in the Dlangubo Village, South Africa", *Libri*, Vol. 71 No. 4, pp. 361-373.

Assessed the expressed and unexpressed information needs as well as the IL skills of women subsistence farmers and livestock keepers ( $n = 66$ ) in rural South Africa. Semi-structured interviews, observation and focus groups yielded qualitative data which was analyzed by researchers using a grounded theory approach to Wilson's model and the farm-to-farmer extension model. Results indicated that farmers' expressed needs primarily relate to information needed to improve farming while there remained an unexpressed need for increased education to allow farmers to develop IL skills. Primary source of information for these subjects were word of mouth with some use of phones, television and radio.

### Health

Adegbilero-Iwaria, O.E., Oluwadare, T. and Adegbilero-Iwari, I. (2021), "A cross-sectional survey of online health information-seeking behavior pattern of undergraduate students in a Nigerian private university", *Library Philosophy and Practice*, Vol. 2021.

Examined information-seeking behavior for health topics on the Internet, across undergraduates (mean age 20.01) ( $n = 304$ ) using a cross-sectional survey. Of those surveyed, 94.1% used the Internet daily and 83.2% for health purposes with the top reason for use being convenience. The majority (67.1%) used Google to search for information relating to skin conditions, sexual/reproductive health and lifestyle changes. Only 38% consulted with health professionals after obtaining online information. Survey found that there is an urgent need to establish information literacy programs relating to online health information at Nigerian colleges and with health practitioners.

Aharon, A.A., Ruban, A. and Dubovi, I. (2021), "Knowledge and information credibility evaluation strategies regarding COVID-19: A cross-sectional study", *Nursing Outlook*, Vol. 69 No. 1, pp. 22-31.

Explored nurses' level of knowledge, information sources and strategies for information evaluation to better understand how Israeli nurses have coped with misinformation around COVID-19. Findings showed that nurses tended to incorporate their own previous experiences and knowledge in information evaluation and exhibited a stronger tendency to apply the criteria of qualifications when judging trustworthiness than compared to laypersons. This study highlighted the need for longitudinal cross-sectional studies across different geographic regions to assess evaluation skills as more evidence-based information about COVID-19 becomes available.

Barbaro, A., Amicarella, S.E., Ferrari, P., Sorcini, I. and Zedda, M. (2021), "Embedded librarians: An innovative experience in health and wellness communication", *Health Information and Libraries Journal*.

Described experiences of librarians implementing a web portal on health for the public at the Istituto Superiore di Sanità (ISS), an organization focused on the scientific/technical aspects of the Italian National Health Service, Rome. Authors detailed the process of creating content, monitoring/debunking fake news, search engine optimization (SEO), social media management and teaching IL.

Chantharacherd, N., Pradubwate, R., Sirawong, N. and Boriboon, G. (2021), "Effectiveness of a training model based on intergenerational and participatory learning to enhance health information literacy for the elderly", *Journal of Public Health and Development*, Vol. 19 No. 3, pp. 89-101.

Validated pre- and posttest of adults ( $n = 30$ ) 60 years or older in Thailand to evaluate the effectiveness of an intergenerational and participatory learning training

program to enhance health IL. The training model was based on simulation, sharing, collaboration and crystallization, and the program included lectures, paired or group work, games, brainstorming and discussion with both the elderly and younger volunteers. Scores improved in all areas of accessing information through smart phones and search engines, evaluating information sources, and communicating and sharing correct information.

Coghill, J.G. (2021), "Using LibGuides to chart the way in a sea of information", *Journal of Electronic Resources in Medical Libraries*, Vol. 18 No. 2-3, pp. 106-111.

Advocated for the creation and expansion of LibGuides by health sciences librarians to improve users' health literacy. Described a project initiated in 2016 by health sciences librarians to create supplemental LibGuides connected to regional health conferences and on popular health topics, such as COVID-19. Detailed collaboration with constituents including faculty and marketing staff to disseminate LibGuides.

Farokhzadian, J., Jouparinejad, S., Fatehi, F. and Falahati-Marvast, F. (2021), "Improving nurses' readiness for evidence-based practice in critical care units: Results of an information literacy training program", *BMC Nursing*, Vol. 20 No. 1.

Randomized controlled trial of critical care nurses ( $n = 60$ ) in Iran using a pre- and posttest. After an intervention of three eight-hour instruction sessions on evidence-based practice and search strategies, participants improved in their ability to use different types of sources and search skills.

Fernández-Luque, A.-M., Ramírez-Montoya, M.-S. and Cordón-García, J.-A. (2021), "Training in digital competencies for health professionals: Systematic mapping (2015-2019)", *Profesional de La Informacion*, Vol. 30 No. 2.

Analyzed digital competencies through systematic review of research articles on Web of Science and Scopus databases. Authors described the continued problem of IL training lacking within the health profession despite consistent messages of IL recommendations in the literature.

Fu, S., Chen, X., Zheng, H. and Ou, M. (2021), "Understanding health information literacy of MHealth app users from digital wellbeing perspective: Evidence from regression analysis and FsQCA", *Library and Information Science Research*, Vol. 43 No. 3.

Survey of Chinese young adult mobile health application users ( $n = 5,420$ ) on factors contributing to health IL based on Abeele's digital wellbeing framework. Using fuzzy-set qualitative comparative analysis, results from various configurations of the variables indicated that gender, family income, perceived quality, frequency of use, Internet experience and screen size contribute to higher health IL. Suggested that developers should improve the perceived quality of apps to encourage frequency of use and therefore improve health IL.

Garwood, D.A. and Poole, A.H. (2021), "Vital signs: Health literacy and library and information science pedagogy in the United States", *Journal of Education for Library and Information Science*, Vol. 62 No. 1, pp. 34-67.

Reviewed the courses related to health information literacy in Library and Information Science (LIS) programs ( $n = 53$ ) to determine how well the programs are instilling core competencies in prospective health information professionals. Authors determined five key attributes of health IL (related to location, evaluation, and dissemination of database and print health information), then analyzed course offerings ( $n = 118$ ) to see how many attributes are present in each course. While nearly half of programs had no health-related courses, those that did offer classes seldom touched on more than a couple of attributes, suggesting that LIS programs are not yet adequately preparing students for meaningful participation in health information.

Gu, Y., Kalibatseva, Z. and Song, X. (2021), "Effective use of online depression information and associated literacies among US college students", *Health Promotion International*, Vol. 36 No. 4, pp. 1020-1028.

Study of domain-specific IL abilities of college students seeking depression-related health information online. Undergraduate students ( $n = 192$ ) completed an online survey by answering questions related to depression-oriented case scenarios with 47% of respondents scoring 90% or higher on their responses. While medical literacy and critical health literacy did not predict students' competency in this area, prior experience with depression, enrollment in a health related major and eHealth IL all significantly correlated to effective use of online information about depression.

Holderried, M., Hoepfer, A., Holderried, F., Heyne, N., Nadalin, S., Unger, O., Ernst, C. and Guthoff, M. (2021), "Attitude and potential benefits of modern information and communication technology use and telemedicine in cross-sectoral solid organ transplant care", *Scientific Reports*, Vol. 11 No. 1.

Conducted a structured, questionnaire-based, cross-sectional study focused on patients ( $n = 234$ ) after organ transplant surgery in their attitudes toward literacy and use of eHealth technology in post-operative care in Germany. In the sampling conducted, the majority of subjects use digital technology to search for health-related information and a little over half of the respondents expressed the desire to be able to chat online with their medical provider. Based on the response rate, authors concluded that patients have positive attitudes toward eHealth applications and that the healthcare industry in Germany would benefit from increased telemedicine options for patients, particularly those who undergo organ transplants.

Hurt, E. and McLoughlin, A. (2021), "Facilitating research amongst radiographers through information literacy workshops", *Journal of the Medical Library Association*, Vol. 109 No. 1, pp. 112-119.

Described the development of six IL workshops to help foster more research in the Lancashire Teaching Hospitals National Health Service Foundation Trust, with the library and research departments collaborating together and relying on input from the diagnostic radiography department to determine relevant topics to potential researchers. Pre- and post-IL evaluations ( $n = 10$ ) showed IL self-efficacy score increases ranged from 10 to 89, with a mean score increase of 44. Post-workshop research outcomes included a poster submission, a research project approval, and the creation of another poster. Authors emphasized the adaptability of their work, presenting workshops to a different department and making public their materials for adaptation by other health organizations.

Kampa, P. and Balzer, F. (2021), "Algorithmic literacy in medical students – results of a knowledge test conducted in Germany", *Health Information and Libraries Journal*, Vol. 38 No. 3, pp. 224-230.

Examined algorithmic literacy in prospective physicians through a literature review and applied survey. Presented and analyzed the results of the online survey conducted via Lime Survey across medical students ( $n = 225$ ) attending Humboldt Universität zu Berlin. Survey found that there was a significant difference in students' estimation of knowledge versus correct answers, highlighting a striking knowledge gap in even simple distinctions between algorithm types, search engine algorithms, and the structural components of machine learning algorithms. Authors concluded that this knowledge gap demonstrates that specialized curriculum in digital health is needed in medical schools.

Khan, A., Richardson, J. and Izhar, M. (2021), "Awareness about plagiarism and the effectiveness of library literacy programme towards its deterrence: A perspective of postgraduate resident doctors", *Global Knowledge, Memory and Communication*, Vol. 70 No. 8/9, pp. 732-755.

Surveyed postgraduate residence doctors ( $n = 872$ ) in two teaching hospitals in Peshawar, Pakistan to evaluate resident doctors' awareness, definitions, and familiarity with plagiarism as well as the effectiveness of preventative measures through IL activities. Findings suggested that while respondents were aware of plagiarism as a concept, there was an overall

lack of knowledge regarding citation, anti-plagiarism policies and penalties. As such, researchers recommended increasing collaboration with medical faculty and revise IL programs to include content relating to plagiarism, deterrence and software tools.

Lacey, P. (2021), "Google is goodish: An information literacy course designed to teach users why Google may not always be the best place to search for evidence", *Health Information and Libraries Journal*.

Described the development of IL instruction in reaction to the dominance of Google as an information resource among professionals, especially in the English public health sector. The course covered misconceptions about Google search and Google Scholar, search result biases, search tips, fact checking and background on the Astroturfing phenomenon.

Lee, H.Y., Jin, S.W., Henning-Smith, C., Lee, J. and Lee, J. (2021), "Role of health literacy in health-related information-seeking behavior online: Cross-sectional study", *Journal of Medical Internet Research*, Vol. 23 No. 1.

Survey of US adults ( $n = 614$ ) on their health literacy, information-seeking behavior and access to technology. Found that participants with better health literacy, more education and greater access to technology were more likely to use the Internet to seek health information. Since sociodemographic factors and greater health literacy were related to better health outcomes, disparities in access to technology should be addressed.

Li, C. and Guo, Y. (2021), "The effect of socio-economic status on health information literacy among urban older adults: Evidence from Western China", *International Journal of Environmental Research and Public Health*, Vol. 18 No. 7.

Presented results from older adults ( $n = 812$ ) in Western China on the Chinese Health IL questionnaire. Only 16% of the participants had adequate health IL and financial strain was a predictor of health IL. Use of books, magazines and television were also associated with greater health IL compared to general Internet sites.

Li, Y., Fan, Z., Yuan, X. and Zhang, X. (2022), "Recognizing fake information through a developed feature scheme: a user study of health misinformation on social media in China", *Information Processing and Management*, Vol. 59 No. 1.

Examined characteristic features of medical misinformation, developing scheme of features (exaggeration, intemperate tone, etc.) to educate Chinese social media users. Two groups of users answered questionnaires containing both valid and invalid medical misinformation, after which one group was shown a list of features and the other was not. Those shown the list of features were better able to assess their questionnaires and correct instances of choosing misinformation.

Matthews, B. (2021), "Digital literacy in UK health education: What can be learnt from international research?", *Contemporary Educational Technology*, Vol. 13 No. 4.

Systematic literature review across 12 education and health journal databases examining the international scholarly conversation relating to digital literacy in health programs. Revealed that literature was limited and identified that the level of digital literacy of the educators may contribute to the gaps in digital literacy among students and within classroom instruction. To overcome this gap, the author concluded that institutions must support educators with training, innovation, infrastructure and pedagogical development.

Menard, L. and Misquith, C. (2021), "Providing real-time resources in support of LGBTQ+ and HIV + populations as information experts on the echo hub team: A case report", *Journal of the Medical Library Association*, Vol. 109 No. 4, pp. 631-636.

Examined early information professional participation through embedded librarianship in Project Extension for Community Healthcare Outcomes (ECHO) in Indiana. Over the past three years, librarians provided reference services, information resources and expanded the project. Project ECHO team members reported high satisfaction with the embedded librarians and saw value in having an information professional onsite.

Mercer, K., Weaver, K.D. and Waked, K. (2021), "Navigating complex authorities: Intellectual freedom, information literacy and truth in pandemic STEM information", *IFLA Journal*.

Examined IL through a case study of the Oxford-AstraZeneca vaccine to examine scientific information, misinformation, and fake news spread. Authors challenged librarians' adherence to intellectual freedom when weighed against misinformation and other potentially adverse effects.

Nie, X., Li, Y., Li, C., Wu, J. and Li, L. (2021), "The association between health literacy and self-rated health among residents of China aged 15-69 years", *American Journal of Preventive Medicine*, Vol. 60 No. 4, pp. 569-578.

Examined sample of a 2017 cross-China health survey to examine self-rated health (SRH) as a positive measure of overall health literacy. Sample ( $n = 85,384$ ) looked at representatives of all provinces, attitudes about personal medical issues, chronic diseases, disease prevention, and health management, and overall knowledge of specific medical skills (e.g. first aid). Study confirmed higher health information literacy about personal medical issues yielded more positive SRH, even as a gap in scientific principles showed need for more health education.

O'Connor, S., Zhang, M., Honey, M. and Lee, J.J. (2021), "Digital professionalism on social media: A narrative review of the medical, nursing, and allied health education literature", *International Journal of Medical Informatics*, Vol. 153.

Reviewed literature on digital professionalism (specifically on social media) for healthcare-based students using Braun and Clarke's six phases of thematic analysis of four health-focused databases (CINAHL, ERIC, MEDLINE, PubMed). Authors analyzed articles ( $n = 522$ ) to find positive influences through social media on digital professionalism with future considerations toward setting explicit instructions and expectations through real-world applications.

Oladapo, Y.O., Adeoye, M.O., Tomomowo-Ayodele, S.O. and Adegun, I.A. (2021), "Consumers' health information-seeking behaviour on social media: A case study of Lautech teaching hospital library and Lautech College of Health Sciences Medical Library in Osogbo, Osun State, Nigeria", *Library Philosophy and Practice*, Vol. 2021.

Examined social media behavior of students ( $n = 250$ ) at two medical universities in Nigeria to see how social media can be integrated into health information literacy efforts. Students were surveyed as to how they used social media to find, use, and share health information, and how they thought it should be used in the future. While students largely used social media to share information with each other, they largely excluded social media from their relationship with the health librarian, indicating a great opportunity for librarian outreach in IL efforts.

Petersen, E., Jensen, J.G. and Frandsen, T.F. (2021), "information-seeking for coping with cancer: A systematic review", *Aslib Journal of Information Management*, Vol. 73 No. 6, pp. 885-903.

Systematic literature review following PRISMA and applied across Medline, Emboss, CINAHL and Scopus where authors selected and analyzed existing literature on the information-seeking behaviors of cancer patients and how it served as a coping strategy. Using both qualitative and qualitative approaches, the authors identified information-seeking behaviors in cancer patients with the ability to actively search or browse for information using computer-based information systems as a form of stress relief or distraction. Mental health and well-being were correlated with information behavior and further research should be conducted in the information-seeking behavior of patients facing serious illness, arguing that rather than using PICO, medical science may benefit from applying information science frameworks used in the library field.

Rosenblum, S., Isett, K.R., Melkers, J., Funkhouser, E., Hicks, D., Gilbert, G.H., Melkers, M.J., McEdward, D. and Buchberg-Trejo, M. (2021), "The association between professional

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stratification and use of online sources: Evidence from the National Dental Practice-Based Research Network”, *Journal of Information Science*, Vol. 47 No. 3, pp. 373-386.

Analyzed if there is a difference between professional strata (e.g. hygienists vs dentists) of dental clinicians when searching for information for their practice. Authors found there were differences in dental clinician and their professional information-seeking behaviors. Some results included how dentists prefer highly credible resources (found in journals or other professional literature) than hygienists, and the latter have a greater likelihood of using online resources.

Starcevic, V., Schimmenti, A., Billieux, J. and Berle, D. (2021), “Cyberchondria in the time of the COVID-19 pandemic”, *Human Behavior and Emerging Technologies*, Vol. 3 No. 1, pp. 53-62.

Presented a public health crisis model of cyberchondria, “reassurance-seeking” information behaviors, that fail to alleviate distress and self-perpetuate during the COVID-19 pandemic. Described the unique context of the COVID-19 pandemic and its contributing factors to the problem (e.g. uncertainty over the unknown, fake news, overreliance on social media, public distrust of traditional info sources, information overload, frequency of updates, etc.), and detailed countermeasures for individuals and society to take. IL, specifically online health IL, remains a key necessity in both preventing and dealing with cyberchondria.

Zhang, D., Zhan, W., Zheng, C., Zhang, J., Huang, A., Hu, S. and Ba-Thein, W. (2021), “Online health information-seeking behaviors and skills of Chinese college students”, *BMC Public Health*, Vol. 21 No. 1.

Survey of Chinese college students ( $n = 1,203$ ) on their online health information-seeking behaviors, perceived health IL skills, motivations for seeking online health information, health decision-making and information management, as well as benefits and risks. Although the majority of respondents were not satisfied with their results and were not confident in the trustworthiness of the information they found, they frequently used this information and shared it with friends or family without seeking additional advice from doctors. The authors expressed concern for the susceptibility of those with poor health IL skills to misinformation and self-diagnosis, especially since primary research is often poorly translated from English to Chinese.

Zimmerman, M.S. (2021), “Health information-seeking behavior in the time of COVID-19: Information horizons methodology to decipher source path during a global pandemic”, *Journal of Documentation*, Vol. 77 No. 6, pp. 1248-1264.

Presented the results of a study where participants ( $n = 104$ ) described their health information-seeking behaviors during COVID-19 where the sources were analyzed based on their credibility, and participants also completed an IL assessment, TRAILS. When compared with a previous study conducted by the author in 2019, participants used sources with greater credibility, received more health information passively and used more sources. Concluded with recommendations on health IL education for governments during a pandemic or other public health crisis.

### *Multiple*

Farmer, L.S.J. and Phamle, S. (2021), “Transitioning to college: Impact of high school librarians”, *Journal of Academic Librarianship*, Vol. 47 No. 1.

Analyzed GPA data for all students entering a large comprehensive public university between 2015 and 2019 ( $n = 23,105$ ) for the impact of a high school librarian on future college student success. The sample included over 1,200 California high schools and found a statistically significant correlation between the presence of a high school librarian and the students’ first semester grade point average (GPA), regardless of school socioeconomic status. Data also showed a negative correlation between free or reduced school lunch

eligibility and first semester GPAs; therefore the author argues for the greater hiring of school librarians to address equity gaps.

Foy, C.M. (2021), "Successful applications of diversity, equity, and inclusion programming in various professional settings: Strategies to increase DEI in libraries", *Journal of Library Administration*, Vol. 61, No. 6, pp. 676-685.

Report surveyed Diversity, Equity and Inclusion (DEI) efforts in Science, Technology, Engineering and Math (STEM), corporate and healthcare industries in order to propose implementation strategies for library contexts including IL instruction. Discussed unsuccessful diversity efforts within librarianship, and identified successful starting points by reviewing recruitment, retainment and inclusion strategies from other fields. Concluded by highlighting how the library profession will not entirely fulfill its mission until it is truly representative of the United States' diverse and demographically representative workforce.

Fuchs, C. and Ball, H. (2021), "Making connections for student success: Mapping concept commonalities in the ACRL Framework for Information Literacy, the Common Core State Standards, and the American Association of School Librarians Standards for the 21st-Century Learner", *College and Undergraduate Libraries*, Vol. 28. No. 2, pp. 180-193.

Assessed the ACRL *Framework*, *Common Core* State Standards, and the AASL *Standards* for overarching themes and key concepts to bridge the communication gap between school and academic librarians. The content analysis of the documents found that all placed an emphasis on collaboration, community engagement, ethical practices, and the representation and expression of ideas and arguments. Authors advocated for further communication and collaboration between school and academic librarians, which could include practices such as cross-conference attendance, collaborative research projects, communities of practice and projects relating to students transitioning from high school to higher education.

Johnson, M.W. and Lasher, M. (2021), "The community workshop series: A case study for community-engaged learning in LIS", *Library Trends*, Vol. 69 No. 4, pp. 752-767.

Case study of the University of North Carolina, Chapel Hill's Community Workshop Series (CWS), a program that provided digital literacy and computer technology training to community members at local public libraries. Researchers interviewed library managers, analyzed strategic plans and examined MLIS program components to evaluate community digital information literacy needs. Concluded with recommendations for replicating similar student-led community engaged LIS programs.

Kavanaugh, E.B. (2021), "Information literacy, mental health, and lifelong learning: Librarians and health care professionals in academic, clinical, and hospital settings", *Journal of Hospital Librarianship*, Vol. 21 No. 1, pp. 20-35.

Identified intersections between IL and mental health literacy through the review of research literature to explore possible librarian-healthcare professional collaborations in education that prepares students to address patient and practitioner mental health. The author concluded that IL, through an awareness of an information need, how to search for and access information, and the application of information, encouraged mental health literacy and a work environment where practitioners look out for one another and their patients.

Naccarella, L. and Horwood, J. (202), "Public libraries as health literate multi-purpose workspaces for improving health literacy", *Health Promotion Journal of Australia*, Vol. 32 No. S1, pp. 29-32.

Explored the potential of Australian public libraries as health literate multipurpose workspaces with the potential to be key participants in community health literacy initiatives. Advocated for supporting public libraries as Health Literate Organizations based on existing patterns of use by the community, alignment with information literacy mission, the presence of qualified staff to support users in developing their health literacy and free access to the



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Internet and other information resources. Suggested five principles to guide the development of public libraries as Health Literate Organizations.

Porterfield, J.M. (Ed.) (2021), *The Teaching with Primary Sources Cookbook*, ALA Editions, Chicago, Illinois.

Described the use of primary sources to teach IL from archivists, librarians, museum professionals and other educators. Author divided the book into six themes: (1) archival overview, (2) finding aids, (3) primary sources in general, (4) exhibitions, (5) digital collections and (6) K-12 and other instruction. The book was aimed as an introductory and refresher text for IL instructors using primary sources.

Rapchak, M. (2021), "Introducing critical librarianship to information professionals: Using critical pedagogy and critical information literacy in an LIS graduate course", *Communications in Information Literacy*, Vol. 15 No. 1, pp. 140-157.

Examined the application of anti-racist, critical pedagogy theories and methods within a graduate level LIS course focused on critical librarianship. Described the instructor's process of enacting critical pedagogy within the course including having students lead classes, self-grading work and centering class sessions on discussion. Based on positive results, advocated for increased integration of critical pedagogy in LIS course work.

Shehata, A. (2021), "Health Information behaviour during COVID-19 outbreak among Egyptian library and information science undergraduate students", *Information Development*, Vol. 37 No. 1, pp. 417-430.

Examined the health and information literacy competencies and behaviors of Egyptian LIS undergraduate students ( $n = 161$ ) during the early COVID-19 pandemic. Quantitative data was gathered with an online questionnaire administered to subjects. Results indicated generally high health literacy with some room for growth of IL competency among subjects. Subject primarily found and relied on health information from official health websites, family and friends, and social media.

Zhang, S. (2021), "Exploring library GIS instruction to web mapping in the age of neogeography", *Journal of Map and Geography Libraries*.

Explored the opportunities provided by developments in web-mapping technologies for librarians in academic and public libraries to map ACRL *Framework* concepts to GIS education and student need in IL workshops. The author found that using the *Framework* to inform workshop learning outcomes and geospatial IL competencies allowed audiences to explore the broader technology and social contexts of Web GIS and neogeography while connecting to their existing knowledge and experience. From this, libraries – both public and academic – emerged as particularly situated to provide geospatial IL that is responsive to both developments in the field and the diversity of user needs.

### Other

Beene, S. and Greer, K. (2021), "A call to action for librarians: Countering conspiracy theories in the age of QAnon", *Journal of Academic Librarianship*, Vol. 47 No. 1.

Acknowledges that the current state of IL instruction may not effectively assist conspiracy-thinking patrons due to factors such as negative emotions, cult-like indoctrination and groupthink. Explores the necessity and opportunity for librarians to evolve in their practices of IL instruction and patron interaction through an understanding of other disciplines that have developed methods for dealing with conspiracies, paranoia and cognitive dissonance. Emphasizes the importance of connecting rather than combatting, establishing trust and not just pounding counterpoints. Companion website provides additional examples and bibliography.

Bivens-Tatum, W. (2021), "Scholarly conversations, intellectual virtues, and virtue information literacy", *Library Philosophy and Practice*, Vol. 2021.

Explains foundations of VIL (virtual information literacy), an approach to IL that is ethical- and character-based. Authors encourage librarians to use information-seeking-behavior as moments of ethical encounters that enforce intellectual humility and "Scholarship as a Conversation."

Fontanin, M. (2021), "On fake news, gatekeepers and LIS professionals: the finger or the moon?", *Digital Library Perspectives*, Vol. 37 No. 2, pp. 168-178.

Posits that interest in post-truth and fake news increased dramatically after 2016 across all disciplines including LIS though there are many competing definitions. After analyzing the multiple definitions and perceptions related to misinformation the author examines LIS literature on how librarians can find solutions to fake news. Ultimately, they conclude that each librarian will have to find their own way to combat misinformation dependent on their institution and career stage.

Hannah, M.N. (2021), "A conspiracy of data: QAnon, social media, and information visualization", *Social Media and Society*, Vol. 7 No. 3.

Analyzes the use of infographics and information visualization of QAnon in lending this conspiracy movement authority. The author argues that the use of complex data visualization such as clocks and maps packed with information encourages the reader to believe that there are connections in the data. They note that current IL instruction, relegated to K-16 education, is not enough to foster a critical IL in the general population to understand and avoid this kind of misinformation.

Hossain, Z. (2021), "Copyright literacy of library and information science professionals in Bangladesh", *IFLA Journal*, Vol. 47 No. 1, pp. 78-90.

Assesses the copyright literacy of librarians and information science workers in Bangladesh using a quantitative, web-based survey of LIS practitioners ( $n = 59$ ). Analyzes the importance of copyright and basic understanding of intellectual property rights for librarians both as practitioners and as educators. Survey results indicate that competency among Bangladeshi LIS workers related to copyright literacy is moderate compared with workers in other countries with university librarians showing the highest overall competence.

Huvila, I. (2021), "Monstrous hybridity of social information technologies: Through the lens of photorealism and non-photorealism in archaeological visualization", *Information Society*, Vol. 37 No. 1, pp. 46-59.

Uses Haraway's notion of monstrosity and cyborgs and Latour's notion of hybridity to analyze the debate in archaeology between the use of photorealistic and non-photorealistic 3D renderings of the past. Argues that photorealistic renderings are hybrid monsters in that they give a misguided impression of complete knowledge of the past, which the author sees as a potential form of misinformation and does not encourage further reflection on what may be absent or unknown in the model. While non-photorealistic renderings and other information systems can also be considered cyborgs in their interaction between human, technology and object, critical design that attempts to document the decisions made in the process gives viewers the agency to use IL to evaluate the information presented.

Li, Y., Chen, Y. and Wang, Q. (2021), "Evolution and diffusion of information literacy topics", *Scientometrics*, Vol. 126 No. 5, pp. 4195-4224.

Presents the findings of a topic model dynamic analysis of IL articles published between 2005 and 2019 and indexed in Web of Science to discover trends, evolution and diffusion of IL. Identifies nine global topics (learning and education, library service, new digital technology, teacher ICT, health information, Internet use, medium literacy, evaluation, computer skill) and six temporal local topics (ability, technology, field, people, place, application). Finds increasing correlation between IL and education and identifies Computer Science as a discipline for future IL integration focus, but notes that IL research overall is insufficient and calls for further data-driven research and exploration. Readers will benefit from reviewing the

tables and figures which present detailed analysis of IL-related terms, particularly their popularity and diffusion within various disciplines.

Liu, F. and Zhang, Q. (2021), "A new reciprocal teaching approach for information literacy education under the background of big data", *International Journal of Emerging Technologies in Learning*, Vol. 16 No. 3, pp. 246-260.

Describes a reciprocal teaching model in which paired individuals interact via virtual reality technology in the context of the "Rain Classroom," an intelligent teaching tool that supports blended learning. Researchers evaluated this approach to teaching information literacy via pre- and post-surveys of participants ( $n = 120$ ) at a large public library in Shandong Province, China. Using an evaluation method based on fuzzy mathematics and data mining, the researchers found that this reciprocal teaching model resulted in gains related to learning ability and content mastery.

Lloyd, A. (2021), *The Qualitative Landscape of Information Literacy Research Perspectives, Methods and Techniques*, Facet Publishing, London, United Kingdom.

Explores the qualitative IL research landscape from 2010 to 2020, providing an overview of theories, frameworks, techniques and themes. Includes introductory chapters on the background and contexts of qualitative IL research, with later chapters focusing on specific methods, data collection techniques and research plan development.

Ma, Y. (2021), "Understanding information: Adding a non-individualistic lens", *Journal of the Association for Information Science and Technology*, Vol. 72 No. 10, pp. 1295-1305.

Drawing on the concept of *information ecology* through the lenses of Floridi's infosphere and Capurro's Angeletics, explores the addition of non-individualistic conceptions of information. Specifically describes the benefits of applying a non-individualistic framing to issues of problematic information or misinformation.

Nisha, N.B. and Varghese, R.R. (2021), "Literature on information literacy: A review", *DESIDOC Journal of Library and Information Technology*, Vol. 41 No. 4, pp. 308-315.

Reviews English Language literature on IL from selected databases across an unspecified time frame. The 104 studies are briefly described covering IL standards, assessment and strategies. The authors conclude that IL is an important skill that needs additional incorporation into the curriculum at all levels.

Novikov, A. (2021), "International Journal of Media and Information Literacy: Five-year anniversary", *International Journal of Media and Information Literacy*, Vol. 6 No. 1, pp. 176-181.

On the fifth anniversary of the *International Journal of Media and Information Literacy*, the author analyzes trends in the journal's issues, identifying trends such as media culture and giving a sense of the countries covered. Major trends identified include the effects of the COVID-19 pandemic, UNESCO's combining of information literacy and media education, and an increase in research on media manipulation, disinformation and related topics.

Oliphant, T. (2021). "Emerging (information) realities and epistemic injustice", *Journal of the American Society for Information Science and Technology*, Vol. 72 No. 8, pp. 951-962.

Explores Miranda Fricker's philosophical framework of epistemic injustice in relation to LIS, in particular the studies of information behavior and information literacy. Provides an introduction of epistemic injustice and challenges common framing of library "users" to suggest framing those seeking information as epistemic beings who both know and create knowledge. Suggests epistemic injustice as a paradigm through which IL educators can challenge and address oppressive epistemic practices and dispositions.

Park, H., Kim, H.S. and Park, H.W. (2021), "A scientometric study of digital literacy, ICT literacy, information literacy, and media literacy", *Journal of Data and Information Science*, Vol. 6 No. 2, pp. 116-138.

Analyzed research trends in digital literacy, ICT literacy, IL and media literacy through the application of scientometrics, which included keyword, co-author, and co-citation

analysis. Authors found that this research was published in a variety of fields, with keywords characterized by topics related to education level, pedagogy, learners' perspectives and literacies. Information literacy was found to be the most frequently co-occurring keyword ( $n = 660$ ) in the authors' dataset.

Pattar, V.D. and Patel, V. (2021), "Bibliometric analysis of Communications in Information Literacy (CIL) journal during 2007-2018", *Library Philosophy and Practice*, Vol. 2021.

Analyzed 12 volumes of *Communications in Information Literacy* (CIL) for publishing frequency, author collaboration and other insights for an influential open access publication on IL. The researchers found that a typical CIL article is single authored (56%) by a researcher in the United States (86%). The average article is cited 20 times with references increasing over time for this publication.

Peyton, A. (2021), "Defining information literacy amid 21st century socio-political barriers", *Library Philosophy and Practice*, Vol. 2021.

Discusses IL in the context of historical definitions of literacy, as well as the latter's necessity in social engagement and self-empowerment. Proposes a new definition of IL informed by intersectionality, taking into account the diversity of each individual in their particular society with not just opportunities but barriers, where LIS professionals can help people to learn and also self-discovery.

Repanovici, A., Rotaru, C.S. and Murzea, C. (2021), "Development of sustainable thinking by information literacy", *Sustainability*, Vol. 13 No. 3.

Scientometric study of articles discussing IL and sustainability from Web of Science between 2016 and 2020. The authors note that few articles discuss the role IL has in contributing to sustainable thinking or the environmental role of information technology. They conclude with recommendations for further research and integration of sustainability concepts into IL education at the course and module level.

Righetto, G.G., Muriel-Torrado, E. and Vitorino, E.V. (2021), "'Imbecilization' in the disinformation society: What can information literacy do about it?", *Investigacion Bibliotecologica*, Vol. 35 No. 87, pp. 33-55.

Bibliographic survey examining the importance of information literacy development to increase lifelong learning and decrease societal information dysfunction. Presents factors, definitions, interventions and solutions to information dysfunction and highlights the importance of developing information literacy curricula across all education classifications and training for consumers of information.

Sahoo, J., Sahu, S.C. and Mohanty, B. (2021), "Research on fake news: An empirical analysis of selected library and information science journals", *DESIDOC Journal of Library and Information Technology*, Vol. 41 No. 4, pp. 268-274.

A mixed-methods study assessing published research on fake news to map out the progression of the LIS profession by discovering patterns of research. The study found that fake news is a huge research area in the LIS discipline and was also found paired with IL in search results consistently. It was also found that the US dominates other countries when it comes to research regarding fake news.

Suorsa, A., Bossaller, J.S. and Budd, J.M. (2021), "Information literacy, work, and knowledge creation: A hermeneutic phenomenological point of view", *Library Quarterly*, Vol. 91 No. 4, pp. 457-472.

This theoretical article draws connections between information literacy and theories of knowledge management (specifically knowledge creation) using a hermeneutic phenomenological approach. Argues that the ACRL *Framework* applies to many contexts outside of academia, and particularly to knowledge management and creation in workplaces. Concludes by explicating each of the *Framework's* six frames using these lenses.

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Ul Haq, I., Hussain, A. and Tanveer, M. (2021), "Evaluating the scholarly literature on information literacy indexed in the Web of Science database", *Library Philosophy and Practice*, Vol. 2021.

Analyzed bibliographic records ( $n = 2,551$ ) of IL scholarship indexed in Web of Science (WoS) to identify growth, citation and publishing characteristics. The authors found that publications indexed by WoS had an average growth rate of 58.3, with the period between 2008 and 2020 contributing to the majority of publications (83.22%); however, older publications were found to have a greater citation per paper value than those published more recently. Of the IL research included in this study, country and institution affiliations as well as publishing journals were by majority English-speaking countries.

Wema, E.F. (2021), "Examining entrepreneurship opportunities among Library and Information Science professionals in Tanzania", *Library Philosophy and Practice*, Vol. 2021, pp. 1-28.

Mixed-methods study to explore the entrepreneurship attributes and opportunities of LIS students and professionals ( $n = 30$ ) in Tanzania. Finds that the IL skills of disseminating information and knowledge, facilitating knowledge and information sharing, and synthesizing information are ranked highly among respondents and are highly applicable to entrepreneurship, whereas related technological skills (such as graphic design and building websites/apps) are lacking. Note that profit-making is not traditionally valued by those entering a service profession such as LIS and posits that IL efficacy for both practitioners and learners can be strengthened by targeted entrepreneurship teaching and learning in the LIS curriculum.

Zimmerman, M.S. and Ni, C. (2021), "What we talk about when we talk about information literacy", *IFLA Journal*, Vol. 47 No. 4, pp. 453-467.

Explores ten years of Scopus records ( $n = 3,658$ ) to determine how scholars from disparate cultures discuss IL. Instead of geographic proximity, cultures are grouped according to World Bank listing and presence of life-enriching Sustainable Development Goals (SDG), with publications for each group scanned to determine presence of like IL-related terms. While groups with higher SDG ratings tend to use terms focusing on advanced technology and data science, and those with lower SDG ratings focus on terms related to education and information-seeking, correlations are not exact. Authors believe much more study is needed to overcome the study's limitations before findings are acceptable as valid.

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