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Project Report

Articulating generative AI information literacy competencies: An ACRL Framework–driven model for academic libraries

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Abstract

Responding to the rapid rise of generative AI (GenAI) use in academic research, this project addresses the growing need for GenAI literacy in higher education by articulating a set of core GenAI information literacy (IL) competencies aligned with the *ACRL Framework for Information Literacy for Higher Education* (2015). The project drew on a targeted review of emerging GenAI literacy scholarship, mapping identified competencies to the Framework and refining them through iterative synthesis supported by ChatGPT-assisted prompting and human evaluation. Human oversight and disciplinary judgment remained central throughout the process. The resulting ACRL-aligned competency model situates GenAI literacy within established IL principles, providing a foundation for instruction, consultations, and campus-wide GenAI literacy initiatives. The article also discusses early implementations of the competencies at Georgetown University through a train-the-trainer initiative, course-integrated instruction, and workshops.

Keywords
academic libraries; ACRL; artificial intelligence; higher education; information literacy; library instruction; prompt engineering

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1. Introduction

Since OpenAI (2022) released ChatGPT, academic libraries and higher education have wrestled with the implications of generative artificial intelligence (GenAI) for teaching, learning, and research (McBride, 2025; McMurtie, 2023). GenAI's emergence has been met with conflicting responses ranging from enthusiastic embrace to cautious scepticism to heated resistance (Baytes & Ruediger, 2025; McMurtie, 2023). In spite of initial reluctance, college campuses have been moving to integrate GenAI as faculty grapple with whether and how to engage GenAI in their academic work, how to teach and assess student learning in an environment where GenAI tools are widely available, and how to respond to students' growing reliance on GenAI outputs (How AI is changing higher education, 2025). Academic libraries, in particular, have regarded GenAI as both a novel technological tool and an emerging information resource, recognising its potential disruption to the ways in which academic libraries function and questioning how they can best prepare campus communities and themselves to engage ethically and responsibly with GenAI (Ayinde et al., 2026; Bridges et al., 2024).

In light of this shifting landscape, our project aims to equip instructional librarians in critical, ethical, and IL-grounded GenAI literacy in order to support responsible GenAI use across campus communities. We contend that IL is a necessary prerequisite for GenAI IL and that the ACRL Framework for Information Literacy for Higher Education (2015) provides the foundation for informed, responsible use of GenAI. Since the Framework predates GenAI's public emergence, it must be extended to demonstrate how it applies to these new tools reshaping the information landscape. We posit that, to equip campus communities effectively, we need clearly articulated competencies to ground and centre our instruction. Correspondingly, using the ACRL Framework as an organising principle for bringing together disparate visions for GenAI competence, our project proposes a coherent set of GenAI IL competencies grounded in the Framework's threshold concepts, developed through a targeted review of GenAI literacy scholarship and structured mapping to the Framework using a GenAI tool alongside human editorial insight and critical thinking, and designed to support instruction, faculty consultation, and campus-wide GenAI literacy initiatives.

2. Institutional and team background

Georgetown University is a Private R1 university located in Washington, D.C. Enrolling 18,185 FTE in 2024, with 7,770 FTE graduate students, 2,962 professional students, and 7,452 FTE undergraduate students (Office of Assessment and Decision Support, 2024), Georgetown serves students across eleven schools and multiple campuses. Georgetown University Library delivers its services through a multi-library system. The authors of this article are affiliated with two of those libraries: the Joseph Mark Lauinger Memorial Library on Georgetown's Hilltop Campus and the Capitol Campus Library, which includes the School of Continuing Studies Library Services and is located on the Capitol Campus.

As a Library, we recognise the transformative and disruptive nature of GenAI and, like many institutions, are grappling with how it will impact our work. Given the radical implications of GenAI on the research landscape, the library is strategically focused on enhancing GenAI literacy among students and faculty and promoting the integration of GenAI technologies into the research process and library services and operations. As part of this larger goal, the

Library's Instruction Coordinating Committee and Generative AI Working Group were tasked "to integrate AI into instruction services as appropriate to empower users in AI-assisted research methodologies and enhance their AI literacy skills" (Georgetown University Libraries Generative AI Working Group, 2025), with a subgroup formed to complete this initiative.

The team included the three authors—Melissa Jones, Lauinger Library's Literature Liaison and Reference Librarian; Melissa Netzband Wathen, School of Continuing Studies Library Services' Public Services Librarian; and Ladislava Khailova, Director of the School of Continuing Studies Library Services—and Beth Campolieto Marhanka, Lauinger Library's Head of Outreach and Engagement. In fulfilling its charge, the team determined that articulating core GenAI IL competencies was necessary before offering instructor training or developing curricular materials. Framing this work required engagement with the growing body of scholarship examining how GenAI is reshaping information practices, instructional models, and ethical frameworks within librarianship.

3. Literature Review

3.1 Situating GenAI Within Established Information Literacy Theory

As GenAI transforms the information landscape, librarians grapple with teaching new tools, making sense of their possibilities and limitations, and understanding the ethics of their use. In response, many librarians have turned to the ACRL Framework for Information Literacy for Higher Education (2015) as their conceptual anchor (Ali & Wilson, 2025; Archambault, 2023; Caico et al., 2024; Hervieux & Wheatley, 2024; Hovious, 2024; James & Filgo, 2023; Ko & Chiu, 2024; Lopes et al., 2023; Matthews & Bartley, 2025; Ndungu, 2024). Since its adoption, the Framework has served as the foundational document for library instruction, shaping how librarians conceptualise authority, information creation, and research practices. As such, the Framework provides a fitting lens for engaging GenAI critically, supporting its ethical and effective use while situating it within established information ecosystems rather than treating it as an entirely novel or isolated resource (Ali & Wilson, 2025; Lopes et al., 2023; Matthews & Bartley, 2025; Ndungu, 2024; Schmidt et al., 2025).

Accordingly, this project centres the ACRL Framework as the organising structure for articulating what constitutes proficient and ethical engagement with GenAI in academic libraries and higher education. We selected the Framework not only for its foundational role in library pedagogy but also because it offers a coherent conceptual basis for identifying the knowledge, dispositions, and practices students need to use GenAI proficiently and responsibly. Framed in these terms, our guiding inquiry became: What competencies should library instruction cultivate to support ethical, critical, and informed engagement with GenAI?

3.2 Studies selected for mapping competencies to the ACRL framework

Asking similar questions, scholars and educational organisations have articulated competency models to delineate the knowledge and skills needed to responsibly use GenAI in educational contexts. To adapt this emerging competency-based guidance to library instruction, we conducted a targeted literature review, focusing on guidelines published in Fall 2024 and earlier that address IL and critical thinking in higher education, particularly within academic libraries. We excluded frameworks centred primarily on workforce development or institutional policy formation. This selection process yielded fourteen core sources (Annapureddy et al., 2025; Archambault, 2023; Caico et al., 2024; Fenske & Otts, 2024; Hervieux & Wheatley, 2024;

Hibbert et al., 2024; Hillier, 2023; James & Filgo, 2023; Ko & Chiu, 2024; Lopes et al., 2023; MLA-CCCC, 2024; Ng et al., 2021; Tenório et al., 2023; UNESCO, 2024). We then systematically mapped the sources' competencies onto the ACRL Framework, synthesising their collective recommendations into a unified set of GenAI IL competencies (please see the Methodology section below for detail).

While many of the mapped competencies emerged within academic libraries (Archambault, 2023; Caico et al., 2024; Fenske & Otts, 2024; Hervieux & Wheatley, 2024; James & Filgo, 2023; Ko & Chiu, 2024; Lopes et al., 2023), others came from higher education more broadly (Annapureddy et al., 2025; Hibbert et al., 2024; Hillier, 2023; Ng et al., 2021; Tenório et al., 2023), or from professional organisations (MLA-CCCC, 2024; UNESCO, 2024). They each identified slightly different competencies but tended to articulate concerns over increasing basic knowledge of GenAI, using critical thinking skills, and developing a robust ethical awareness of GenAI, all aimed at empowering students to use GenAI efficiently and responsibly. Scholars emphasised that the need for responsible GenAI use depends on sustained human judgment rather than technical proficiency alone (Annapureddy et al., 2025) and that human intelligence and creativity must never be neglected while learning to use GenAI (Fenske & Otts, 2024; MLA-CCCC, 2024; UNESCO, 2024). Additionally, they acknowledged the need to prepare for and grapple with the ongoing prevalence of GenAI (Hillier, 2023; Tenório et al., 2023).

While non-librarian scholars tended not to address the ACRL Framework, librarian scholars often brought the Framework to bear on their engagement with GenAI (Archambault, 2023; Caico et al., 2024; Hervieux & Wheatley, 2024; James & Filgo, 2023; Ko & Chiu, 2024; Lopes et al., 2023). These engagements focused on specific AI tools (Fenske & Otts, 2024; James & Filgo, 2023; Lopes et al., 2023), assignment design (Caico et al., 2024), instructional resources development (Ko & Chiu, 2024), and algorithmic bias (Archambault, 2023).

Several scholars applied the full ACRL Framework to the question of GenAI, though with differing conclusions and emphases. Hervieux and Wheatley (2024) argued that academic libraries require a dedicated AI literacy framework to adequately support teaching and learning in an era of widespread GenAI use, contending that existing IL frameworks, including the ACRL Framework, do not fully account for the technical and ethical complexities introduced by these technologies. By contrast, James and Filgo (2023) offered a more targeted analysis, examining frame by frame how ChatGPT specifically aligns—or fails to align—with established IL constructs. Lopes et al. (2023) took a pedagogical approach, investigating how the ACRL Framework supports librarians teaching critical thinking to students using GenAI tools. They proposed active learning strategies for engaging ChatGPT that map to all six Frames (Lopes et al., 2023). Finally, Ko and Chiu (2024) took an inductive approach, discussing how academic library LibGuides address GenAI and subsequently mapping that content onto the ACRL Framework.

3.3 Continuing scholarship on the ACRL framework and GenAI

Beyond the studies we selected for mapping competencies, scholars have continued to debate the role of the ACRL Framework for teaching GenAI literacy. The evolving conversation and our deepening understanding of GenAI in teaching and research contexts will necessitate ongoing review and revision of our project's outcome. More specifically, recent studies have critically explored the application of IL to LLM-powered GenAI tools and have argued that the Framework serves as a guide for engaging GenAI ethically and critically. Matthews and Bartley (2025) analysed the relevance of the Framework to questions of "authority, creation, value, discourse

orientation, and strategy" (p. 259)—excluding Research as Inquiry—and supplemented their analysis with practical tools, including a decision-making flowchart, a cross-level use case toolkit, and a rubric grounded in non-GenAI-specific IL competencies. Similarly, Ali and Wilson (2025) proposed five AI Literacy Posit Statements—Bias Awareness, Data Quality, Digital Divide, Ethical Considerations, and Privacy Concerns—that map across multiple Frames, underscoring their interconnectedness, a pattern also evident in our own competency mapping. Alternatively, Hovious (2024) reworded each Frame to emphasise challenges posed by GenAI, transforming them into Authority Is Unknown, Information Creation as an AI Prompt, Research as Verification, Searching as Strategic Prompt, Scholarship as an AI-Generated Conversation, and AI-Generated Information Has What Value.

Importantly, scholars lack consensus on whether the existing Framework should be extended to include GenAI literacy (Ali & Wilson, 2025; Ndungu, 2024; Schmidt et al., 2025) or whether an alternative framework is needed to make sense of IL and critical thinking for GenAI (Araujo & Schneider, 2025; Coleman, 2024; Kautonen & Gasparini, 2024; Lo, 2023; Montesi et al., 2025; Wu & Li, 2025). Along these lines, multiple scholars have proposed additions to the Framework. Ali and Wilson (2025) argued the ACRL Framework needs expansion to address major risks associated with GenAI related to bias, data quality, the digital divide, ethics, and privacy. Ndungu (2024) likewise identified significant overlap between GenAI literacy and media and information literacy (MIL) programmes, mapping GenAI-related knowledge practices and dispositions to the Framework and positioning libraries as central leaders in delivering scalable, ethical GenAI literacy instruction. Carpenter (2025), like Archambault (2023), addressed algorithmic bias but argued the ACRL Framework alone is insufficient for teaching students how to engage with GenAI as a tool, proposing distinct GenAI literacy competencies and relabelling Searching as Strategic Exploration as "Input Dictates Output" and Research as Inquiry as "Prompting as Exploration" to better accommodate GenAI within the Framework. Schmidt et al. (2025) simultaneously argued for the validity of the Framework as is and for bringing in an alternative framework to engage with GenAI. They demonstrated that the ACRL Framework remains foundational for teaching IL skills related to GenAI while advocating to combine it with Lo's (2023) CLEAR Framework for effective prompting techniques for GenAI tools.

Beyond efforts to adapt or expand the ACRL Framework, several authors have proposed alternative models for conceptualising GenAI literacy. Drawing on critical IL (CIL), Araujo and Schneider (2025) argued for cultivating a distinctly critical lens through which individuals evaluate and ethically engage AI-generated content, emphasising seven dimensions (concentration, instrumental, taste, relevance, credibility, ethics, and critique) and foregrounding the ethical and critical considerations CIL brings to addressing structural inequities related to gender, race, ethnicity, and class. By contrast, Wu and Li (2025) critiqued the ACRL Framework's lack of a clear definition of information and propose an "Eight Pillars" model that situates IL alongside related literacies: academic, AI, computer, digital, search, multimedia, network, and academic library literacy, thereby embedding traditional library concerns within a broader, multi-literacy ecosystem. Other scholars adopted more operational approaches: Lo (2023) introduced the above referenced CLEAR Framework for Prompt Engineering, emphasising critical thinking in crafting prompts that are Concise, Logical, Explicit, Adaptive, and Reflective, while Kautonen and Gasparini (2024) developed the B-Wheel process model, rooted in design-thinking and the Bauhaus tradition, to guide libraries in integrating GenAI into workflows and operations. Taken together, these models range from politically and theoretically

expansive reconceptualisations of IL to targeted instructional and organisational frameworks, underscoring the diversity of approaches emerging in response to GenAI.

Other scholars proffered frameworks specifically aimed at assessing GenAI literacy. For example, Montesi et al. (2025) introduced the AILIS 1.0 framework, contending that library and information science requires a structured approach that goes beyond IL, which they argued fails to adequately address GenAI-specific issues such as algorithmic opacity and bias. AILIS 1.0 is a diagnostic tool that integrates a technical understanding of GenAI along with usage, ethical reasoning, and critical evaluation (Montesi et al., 2025). Along similar diagnostic lines, Wang et al. (2023) developed the AI Literacy Scale (AILS) based on four constructs: awareness, usage, evaluation, and ethics. Begun as a theoretical framework, AILS was tested for validity and reliability that resulted in a 12-item instrument for self-assessing competence in using GenAI.

Additionally, several GenAI frameworks that both intersect with and diverge from our approach were authored by major library and higher education organisations and published upon the completion of our mapping project (ARL, 2024; ACRL, 2025; Elon University & AAC&U, 2025; DEC, 2025). The ARL's Research Libraries Guiding Principles for Artificial Intelligence (2024) offers a values-based policy framework addressing ethics, transparency, privacy, licensing, and scholarly access, clarifying why responsible GenAI engagement matters for research libraries while omitting pedagogical outcomes. In comparison, the ACRL's AI Competencies for Academic Library Workers (2025) are explicitly staff-facing, outlining ethical, analytical, and applied competencies, organised around Framework-informed mindsets, to guide professional evaluation and adoption of GenAI technologies. Extending the competency-based approach to students and faculty, the Digital Education Council's AI Literacy Framework (DEC, 2025) identifies five dimensions—Understand AI and Data, Critical Thinking and Judgement, Ethical and Responsible Use, Human-Centricity, Emotional Intelligence, and Creativity, and Domain Expertise—and distinguishes levels of engagement ranging from awareness to strategic leadership. Its emphasis on discipline-specific AI application, however, differs from our focus on GenAI as an information system universally shaped by questions of authority, creation, and value. Finally, Elon University and AAC&U's A Student Guide to Navigating College in the Artificial Intelligence Era (2025) adopts a pragmatic, student-centred orientation focused on academic integrity, career preparation, and applied AI skills rather than conceptual competency development. Taken together, these frameworks address institutional values, professional practice, strategic leadership, and applied student guidance, whereas our project concentrates on articulating conceptually grounded GenAI IL competencies designed for direct integration into library instruction and research support.

In more detail, by building on the ACRL Framework's established structures, our project clearly articulates the necessary intersections among IL, GenAI, and critical thinking. Rather than create an alternative framework (ACRL, 2025; Araujo & Schneider, 2025; ARL, 2024; DEC, 2025; Elon University & AAC&U, 2025; Kautonen & Gasparini, 2024; Lo, 2023; Montesi et al., 2025; Wang et al., 2023; Wu & Li, 2025) or apply only selected Frames (Boyle, 2025; Carpenter, 2025; Wetzel & Kani, 2024), our project embraces the entire Framework as meaningful for using GenAI ethically and effectively. By adding GenAI specific competencies to each of the six Frames, we demonstrate the Framework's suitability for teaching key GenAI skills.

4. Methodology

4.1 The mapping of selected scholarship

In order to develop a coherent set of GenAI IL competencies anchored in the ACRL Framework, we employed a methodology consisting of collaborative concept mapping of the selected scholarship and iterative synthesis supported by the use of a GenAI tool and human oversight. More specifically, as discussed in detail in the Literature Review, we selected fourteen sources (Annapureddy et al., 2025; Archambault, 2023; Caico et al., 2024; Fenske & Otts, 2024; Hervieux & Wheatley, 2024; Hibbert et al., 2024; Hillier, 2023; James & Filgo, 2023; Ko & Chiu, 2024; Lopes et al., 2023; MLA-CCCC, 2024; Ng et al., 2021; Tenório et al., 2023; UNESCO, 2024) articulating specific competencies or frameworks for ethical and effective GenAI use while paying particular attention to their implementation in IL instruction. The selection process allowed us to confidently ground our project in the current conceptualisations of GenAI literacy in the field.

Following the initial literature review, we collaborated on a mapping activity to extract competencies from the selected articles and align them with the ACRL Framework. Each team member was assigned a subset of the literature and tasked with first analysing it for key GenAI literacy concepts or skills and then mapping them to one or more ACRL Frames. We used a shared spreadsheet to document the results, with the individual columns covering the emerging competencies, suggested mappings to the Frames, related rationale, and source citations. As expected in a multi-author interpretative environment, we encountered variations in how we justified alignments, reflecting both our differing readings of the scholarship and the intentionally overlapping character of the ACRL Frames themselves. This resulted in some initial inconsistencies in granularity. To resolve these inconsistencies, the team engaged in repeated discussions to identify specific points of divergence and their underlying assumptions, with one team member proceeding to manually group the resulting key themes, labelling them with competency and Frame identifiers. These steps helped us refine our collective understanding of how the ACRL Framework could be meaningfully extended to support GenAI literacy.

4.2 ChatGPT-assisted refinement of competencies

To move from the mapping spreadsheet to a coherent and applicable set of GenAI IL competencies, we utilised ChatGPT 4.0 for our initial synthesis and editorial support tool. The decision to integrate GenAI in this phase was pragmatic as well as methodological. The spreadsheet captured GenAI concepts at varying levels of specificity across the fourteen competency lists and their related sources, and the resulting volume of information and redundancy would have made any manual consolidation very time consuming and laborious. ChatGPT enabled us to work at scale while maintaining consistency across the Frames (i.e., comparable granularity and competency structure). Importantly, the bot was not used to generate new GenAI IL competencies; rather, it was employed to combine and refine the competencies that already organically arose through our scholarship review and mapping process, with the spreadsheet serving as our controlling source document.

The ChatGPT prompting process was led by a team member who developed substantial expertise in the area by completing an applied GenAI certificate at Georgetown University. Her prompting strategy incorporated several well-tested complementary techniques to manage complexity and strengthen uniformity. First, the team member applied Pyramid Prompt Priming, defined as a structured prompting approach that moves from broad contextual grounding to

increasingly specific instructions (Prompt Engineering Institute, 2025). More particularly, at the foundation level, she confirmed ChatGPT 4.0's understanding of the ACRL Framework by asking the bot to summarise its key principles. The tool was instructed as follows: "You are an academic librarian specialising in information literacy. Summarise the basic tenets of the ACRL framework for information literacy." Since the depth of ChatGPT's answer signalled that the bot did not need any additional context about the Frames, the prompter moved on to the refinement level of the Pyramid. Here, the model was provided the spreadsheet and asked to extract and articulate a list of GenAI competencies aligned to a specific ACRL Frame, one Frame at a time. For instance, in relation to the first Frame, the bot was prompted to:

> Consider the information you provided about the Framework in the context of the attached spreadsheet. Utilising the text in column B of the sheet, please create a list of GenAI competencies related to the Authority is Constructed and Contextual Frame. Make sure to remove any duplicates. Use academic language.

After the bot generated draft GenAI competency lists for all six Frames, the team member proceeded to the precision level, using targeted prompts to reduce overproduction and improve clarity. For instance, the model was asked to consolidate the initial list of fourteen competencies related to a single Frame into three to five higher-level competencies with accompanying descriptions.

The Pyramid Prompt Priming technique was paired with Prompt Chaining, described as iteratively building on the GenAI tool's prior output rather than restarting from scratch (Little, 2023). The team member structured the prompts in a way to ensure that outputs from one round of her interaction with the model became inputs for the next round, enabling a dialogue-like sequence of competency consolidation and alignment checks. Additionally, the prompter incorporated Reflexion Prompting and Tree-of-Thought Prompting to promote bot self-correction (Prompt Engineering Institute, 2025a; Yao et al., 2023). In relation to the former, the bot was asked to self-critique its work and revise accordingly—for example, by taking the role of a second expert in IL reviewing a specific portion of the analytical work against the source spreadsheet. In Tree-of-Thought Prompting, a rather complex technique, the model was instructed to generate multiple reasoning paths by acting as a team of experts simulating an internal deliberation before settling on the best option. For instance, ChatGPT was prompted as follows:

> Three experts with exceptional logical thinking skills are collaboratively working on a task using a tree of thoughts method. Each expert will share their thought process in detail, taking into account the previous thoughts of others and admitting any errors. They will iteratively refine and expand upon each other's suggestions, giving credit where it's due. The process continues until a consensus is reached. The task for them to work on is to review the attached document listing the six sets of GenAI competencies as aligned with the ACRL Frames. They need to reduce the number of any duplicate or heavily overlapping competencies and aggressively aim at conciseness. The resulting number of GenAI competencies for each ACRL Frame should be between 3 to 5 but does not have to be the same from Frame to Frame.

Responses to review-based prompts like these allowed the team to establish a baseline quality control that could be further built upon through additional human oversight in the form of deliberate redundancy reduction prompts and stylistic and precision prompts.

4.3 Human-GenAI collaboration model

As outlined above, throughout the prompting process, the project relied on a planned division of labour between the human expert and GenAI, with the project's team retaining firmly the responsibility for conceptual authority and evaluative judgment. The chatbot's primary contributions lay in pattern recognition, related synthesis, redundancy removal, and linguistic standardisation. ChatGPT 4.0 thus functioned strictly as an assistive tool rather than an autonomous decision-making agent or author because all of its outputs were initiated, constrained by, and grounded in source material provided by the human user.

The human-led oversight continued once ChatGPT proposed its "final" list of competencies. The team conducted a line-by-line hand verification of the GenAI-refined competencies and their descriptions against the original mapping spreadsheet, ensuring close correspondence to the reviewed literature and balance across key areas of GenAI literacy. In other words, we assessed whether certain competencies, such as ethics and prompt engineering, were over- or underrepresented, while also confirming their alignment with the intent and language of the ACRL Frames. We made corresponding manual-edits as needed. Additionally, we integrated explicit references to the scholarly sources that informed each competency and its description. In this sense, the team's human contributions centred on disciplinary judgment and IL expertise, including interpretive decisions and pedagogical framing. In the end, we found that ChatGPT significantly increased our efficiency and productivity in the GenAI IL competency compilation process, while also providing a consistent style to the draft. However, our human oversight was even more crucial, as it supplied the overall architecture and resulted in additional validation and refinement, ultimately ensuring that the produced competencies were streamlined yet comprehensive and true to the literature review we conducted.

5. Output: GenAI competencies framework aligned with the ACRL framework

5.1 Overview of the final competencies structure

The project's resulting framework reflects the balance between the outlined GenAI-supported synthesis on one hand and sustained human guidance, evaluation, and refinement on the other. Although the ACRL Framework articulates knowledge practices and dispositions rather than prescriptive competencies, our project builds on the Framework's threshold concepts to formulate context-specific GenAI IL competencies aligned with each of the six Frames. In doing so, the competencies intentionally retain elements of the Framework's conceptual orientation while simultaneously articulating applied, observable proficiencies that can inform instruction and assessment. The section below is organised by Frame, with three to four GenAI IL competencies under each, accompanied by their appropriate concise descriptions and references to the reviewed scholarship.

Collectively, the competencies foreground several interconnected key themes that recur across the Frames. They focus on the contextual aspects of authority in GenAI generated content; the process-oriented and iterative character of information creation and research while integrating GenAI; ethical and legal considerations of GenAI tools enriched research, such as bias,

intellectual property, and data practices; strategies for participation in GenAI-related scholarly dialogue; and the role of prompt engineering and GenAI tool selection when integrating the models into scholarly inquiry and learning. By anchoring these key themes within the ACRL's knowledge practices and dispositions, our framework positions GenAI literacy not as a replacement for guidelines for traditional research competency building, but as an extension of established IL principles within a GenAI-mediated environment.

5.2 The project's GenAI information literacy competencies and descriptions

ACRL Frame I: Authority is Constructed and Contextual

1. **Recognise and evaluate the parameters of GenAI authority**
   - Learners will critically evaluate the bias, credibility, accuracy, and ethical implications of GenAI-generated outputs, understanding the context-dependent nature of authority in GenAI-generated content. (Archambault, 2023; Hibbert et al., 2024; Ko & Chiu, 2024; Lopes et al., 2023; MLA-CCCC Task Force, 2024; Tenório & Romeike, 2023)
2. **Apply verification strategies for GenAI-generated information**
   - Learners will use tools and techniques to validate GenAI-generated outputs, such as cross-referencing sources and identifying inaccuracies, e.g., hallucinations, to enhance credibility and reliability. (Annapureddy et al., 2025; Archambault, 2023; James & Filgo, 2023; Ko & Chiu, 2024; Lopes et al., 2023; MLA-CCCC Task Force, 2024)
3. **Collaborate effectively with GenAI in decision-making**
   - Learners will analyse specific scenarios to determine when human judgment is necessary and where GenAI can enhance decision-making, highlighting the interplay between human expertise and GenAI capabilities. (Annapureddy et al., 2025; MLA-CCCC Task Force, 2024; Tenório & Romeike, 2023; UNESCO, 2024)

ACRL Frame II: Information Creation as a Process

1. **Demonstrate knowledge of GenAI processes and applications**
   - Learners will explain the principles, processes, and applications of GenAI, including model training and data influence, and use this understanding to effectively refine GenAI outputs. (Archambault, 2023; Hervieux & Wheatley, 2024; Hibbert et al., 2024; Hiller, 2023; James & Filgo, 2023; Lopes et al., 2023; Tenório & Romeike, 2023; UNESCO, 2024)
2. **Generate and refine content through iterative prompt engineering**
   - Learners will develop skills to craft, evaluate, and improve prompts, enhancing the quality and relevance of GenAI-generated content. (Annapureddy et al., 2025; Ko & Chiu, 2024; UNESCO, 2024)
3. **Evaluate GenAI tools and address ethical considerations**
   - Learners will critically assess and apply GenAI tools for contextual appropriateness while addressing ethical considerations such as bias, misinformation, data privacy, and environmental impact, using a human-centred critical lens to evaluate the consequences of GenAI applications on human rights, equity, and societal well-being. (Hervieux & Wheatley, 2024; James & Filgo, 2023; Ko & Chiu, 2024; Lopes et al., 2023; MLA-CCCC Task Force, 2024; Ng et al., 2021; Tenório & Romeike, 2023; UNESCO, 2024)

4. **Leverage GenAI for innovation and collaboration**
    - Learners will use GenAI to foster creativity, solve problems, and enhance collaborative processes, emphasising iterative improvement and diverse perspectives. (Hiller, 2023; James & Filgo, 2023; Ko & Chiu, 2024; UNESCO, 2024)

ACRL Frame III: Information Has Value

1. **Analyse the value and impact of AI-Generated Content**
    - Learners will evaluate societal, economic, intellectual and pedagogical implications of GenAI-generated content, understanding its role in reshaping value systems and ethical responsibilities, and understand potential harms that may arise from misuse. (Hervieux & Wheatley, 2024; Hibbert et al., 2024; Lopes et al., 2023; MLA-CCCC Task Force, 2024; UNESCO, 2024)
2. **Understand Intellectual property and scholarly integrity**
    - Learners will interpret and apply concepts of intellectual property, copyright, and plagiarism, maintaining scholarly integrity in GenAI-assisted work, ensuring ethical attribution and avoiding reliance on fabricated or misleading references. (James & Filgo, 2023; Ko & Chiu, 2024; Lopes et al., 2023; UNESCO, 2024)
3. **Apply data literacy principles and ethical data practices**
    - Learners will critically evaluate the legal and ethical implications of data collection, analysis, and management in GenAI systems, recognising the intrinsic value of data as a resource. (Annapureddy et al., 2025; Archambault, 2023; Tenório & Romeike, 2023; UNESCO, 2024)

ACRL Frame IV: Research as Inquiry

1. **Assess GenAI's role in research challenges**
    - Learners will assess the strengths and limitations of GenAI in both addressing complex research challenges and complementing traditional methods. (Annapureddy et al., 2025; Hervieux & Wheatley, 2024; Hibbert et al., 2024; Hiller, 2023; Ko & Chiu, 2024; Ng et al., 2021; Tenório & Romeike, 2023; UNESCO, 2024)
2. **Develop research workflows incorporating GenAI tools and processes**
    - Learners will build proficiency in crafting prompts in order to customise GenAI tools and integrate them into research workflows, applying iterative strategies to ensure quality and relevance. (Annapureddy et al., 2025; Hervieux & Wheatley, 2024; Hibbert et al., 2024; James & Filgo, 2023; Ko & Chiu, 2024; Lopes et al., 2023; MLA-CCCC Task Force, 2024; Ng et al., 2021; Tenório & Romeike, 2023)
3. **Integrate GenAI into iterative research processes**
    - Learners will use GenAI to generate research questions, refine hypotheses, and iteratively adapt strategies, promoting a dynamic and exploratory research process. (Hervieux & Wheatley, 2024; James & Filgo, 2023; Lopes et al., 2023)

ACRL Frame V: Scholarship as Conversation

1. **Engage in ethical and inclusive GenAI discourse**
    - Learners will critically and responsibly participate in scholarly conversations about the role of GenAI, emphasising ethical, inclusive, and equitable use. (Annapureddy

et al., 2025; Hervieux & Wheatley, 2024; Hibbert et al., 2024; MLA-CCCC Task Force, 2024; UNESCO, 2024)

2. **Enhance scholarly collaboration and multidisciplinary learning with GenAI**
   - Learners will use GenAI tools to enhance collaboration, share resources, and apply diverse, domain-specific perspectives to enrich scholarly projects. (Hibbert et al., 2024; James & Filgo, 2023; Tenório & Romeike, 2023; UNESCO, 2024)
3. **Aspire to design GenAI models for research and learning**
   - Learners will participate in the development of GenAI models and applications to advance teaching, learning, research, and scholarly inquiry, ensuring ethical and responsible use in academic contexts. (Annapureddy et al., 2025; Hibbert et al., 2024; UNESCO, 2024)

ACRL Frame VI: Searching as Strategic Exploration

1. **Discern the appropriate GenAI tool for specific tasks**
   - Learners will develop foundational knowledge of GenAI tools and distinguish between types of AI technologies, applying them strategically to advance human knowledge. (Hervieux & Wheatley, 2024; Hibbert et al., 2024; Hiller, 2023; James & Filgo, 2023; Ko & Chiu, 2024; MLA-CCCC Task Force, 2024; Tenório & Romeike, 2023)
2. **Engage in thoughtful, iterative prompt engineering in GenAI tools**
   - Learners will apply current vetted prompt engineering and prompt refining techniques to address complex information needs. (Hiller, 2023; James & Filgo, 2023; Ko & Chiu, 2024; Ng et al., 2021)
3. **Critically evaluate prompt engineering results**
   - Learners will assess the credibility, relevance, and quality of GenAI-generated results, integrating them into broader iterative exploration. (James & Filgo, 2023; Lopes et al., 2023; UNESCO, 2024)

5.3 Innovative character of the GenAI information literacy competencies framework

Building on the body of scholarship, the primary contribution of our GenAI IL competencies framework lies in its attempt to operationalise the ACRL Framework's knowledge practices and dispositions within a GenAI-mediated information environment. Unlike other frameworks, such as the ACRL's AI Competencies for Academic Library Workers (2025), which focus on staff-facing professional development, or ARL's Research Libraries Guiding Principles for Artificial Intelligence (2024), which articulate institutional and policy-level values, our framework is explicitly pedagogical and learner-centred. It translates threshold concepts into articulated GenAI IL competencies that retain the conceptual grounding of the Framework while providing applied guidance for instruction, curriculum design, research consultations, and the development of assessment tools (e.g., rubrics). Collectively, these competencies position GenAI as both an information creation partner and a research tool, while foregrounding the role of human guidance and oversight. The following section examines early implementations and applications of these competencies within the authors' home institution.

6. Implementation

Integrating the project's GenAI IL competencies into practice required adaptation rather than reinvention, as Georgetown University Library's instruction librarians already ground their teaching in the ACRL Framework. We implemented the competencies through student-facing workshops and course-integrated instruction, a Train-the-Trainer programme for library instructors, and collaboration with campus partners.

A recent example of collaboration occurred at the invitation of Georgetown's Center for New Designs in Learning & Scholarship, a pedagogical support resource. The authors of this article, together with Lauinger Library's Data Services Librarian, led a workshop for the School of Continuing Studies' students, faculty, and staff. The session introduced tools such as Elicit, Perplexity, Research Rabbit, and Connected Papers and was structured around our GenAI competencies—particularly the ability to discern the appropriate GenAI tool for specific research tasks (GenAI IL Competency VI.1). Framing the workshop through the competencies enabled us to focus on use cases, ethical considerations, sourcing practices, and tool limitations, while reinforcing the integration of GenAI with traditional research resources (e.g., library databases).

One of the authors also partnered with a Writing Program faculty member to equip students to appropriately choose persuasive sources aligned with their intended audiences. They collaboratively developed an assignment that addresses how "Authority is Constructed & Contextual" (ACRL Frame I) and teaches students how to "Collaborate Effectively with GenAI in Decision-Making" (GenAI IL Competency I.3). During the session, students used a designated GenAI tool, Anthropic's Claude, to identify source types most compelling to a specific audience. Because students had attended a previous library session on traditional research methods, this workshop focused exclusively on applying GenAI to that task. Students developed their topics, refined their arguments, identified target audiences, and read brief preparatory articles in advance (Grammarly, 2026; Zicherman, 2024), ensuring their GenAI engagement responded to authentic information needs. The librarian modelled the assignment and provided sample prompts before students engaged hands-on with the GenAI tool, which surfaced source types they might not otherwise have considered, including CRS reports and city council meeting minutes.

The activity was well-received by the students, and the faculty member reported that students selected far more appropriate sources, resulting in improved persuasive writing. Some caveats included that Claude, like other GenAI tools, generalises the information it provides and may feed into stereotypes and assumptions, and that its constitutional training has, on one occasion, refused to address a student's question. That said, overall, the assignment framed GenAI as a collaborative brainstorming partner while reinforcing students' responsibility for evaluating and selecting authoritative sources.

While these examples illustrate how the project's GenAI IL competencies can be embedded in student instruction, their effective implementation depends on library instructors' fluency with both the competencies themselves and the tools they reference. To build that capacity, we offered a two-part Train-the-Trainer session series for our Georgetown University Library instructor colleagues. In Part I, we targeted both the conceptual underpinnings of the competencies and their practical application, creating space for the librarians to consider how to incorporate them into library instruction lesson planning and learning goal-setting. The session

also allocated time for our instructors to identify their knowledge gaps, enabling them to engage with GenAI in research more effectively. In Part II, we conducted an informal assessment of the library instructors' use of the competencies throughout the Fall 2025 semester, evaluating evolving interactions with faculty and students along with the overall changes in the campus climate on the topic. Through small group discussions and demonstration of the competencies' impact on instruction, the group came together to pinpoint gaps in institutional support and specific resource constraints that either limited or complicated the integration of GenAI into instructional settings.

Overall, these Train-the-Trainer sessions were a way to share expertise on the ever-changing landscape of GenAI, and to equip our library instructor colleagues with the pedagogical tools they need to feel comfortable and confident in conversations on the topic. By providing them with the terminology and grounding and by offering a model for IL-aligned GenAI literacy development, we created a space that positions librarians as leaders in GenAI pedagogy. Our library colleagues have engaged strongly in these training sessions, with robust participation in reflective and breakout activities, and have shown a willingness to continue learning and growing as the institution's relationship with GenAI evolves.

7. Further work

Despite our progress in implementing the GenAI IL competencies, much remains to be done. The rapid evolution of GenAI tools may outpace the competency framework we have created, extending beyond our current understanding. This reality is neither new nor unfounded. Since the adoption of LLMs in everyday life and practice, we have seen exponential growth, adaptation, and educational gains regarding these tools. Staying up to date with the constantly evolving GenAI-enhanced information landscape and the related GenAI IL requirements will remain essential for library professionals seeking to guide the academic community on best practices for the use of GenAI tools in research. This will require periodic revision to the competencies, not just due to new tools and growth within GenAI itself, but also the ever-evolving academic conversation on the topic. There is also the opportunity to create knowledge practices and dispositions for these competencies to further align them with the format and content of the ACRL Framework.

A confounding factor is that many academic librarians are experiencing tensions between faculty and students in their use of the GenAI tools and in their approach to and understanding of them. The variability of these experiences across disciplines, departments, and student bodies is pronounced, marked by passionate debate. Given the diverse reactions and varying levels of GenAI implementation in coursework, building GenAI literacy into our instruction alongside broader IL can feel challenging. In addition, librarians already struggling to fit a complex set of learning objectives into one-shot library sessions are now tasked with incorporating GenAI competencies as well. This is further complicated by the difficulty of translating many of the GenAI concepts into teachable components.

To evaluate the instructional impact of these tensions and changes, there is a need for formal, systematic GenAI-competency assessment. Specifically, we require data on how faculty and students interpret and apply the GenAI IL competencies, how their integration influences GenAI-related learning outcomes, and how competency-based instruction affects research and educational practices more broadly. Such effects may include more transparent and ethical use

of the tools in assignments, faculty rethinking assignment structure and student learning goals, or the emergence of innovative research methodologies. Articulating the impact of integrating these competencies into library and faculty-led instruction will enable a comparative analysis of IL development in courses that integrate GenAI competencies and those that do not.

Beyond measuring instructional impact, it is also important to consider the broader applicability and sustainability of the project's GenAI IL competencies across institutional contexts. Since the competencies are mapped to the ACRL Framework, they are grounded in a shared conceptual language already widely adopted in academic libraries, which facilitates transferability across institutions and instructional settings. This alignment enables librarians to integrate GenAI competencies into existing pedagogical structures rather than introducing an entirely separate framework. At the same time, the competencies remain adaptable to the rapidly evolving GenAI landscape, as their emphasis on threshold concepts extends beyond any single tool. Finally, the methodological underlay is scalable, providing a roadmap for discipline-specific applications that allow for customisation based on discipline scope and applicability.

8. Conclusion

The project's GenAI IL competencies bridge the gap between the ACRL Framework and the unique, evolving landscape of GenAI in higher education. By extending the Framework's emphasis on reflective discovery and ethical knowledge creation, this project provides an adaptable structure for informed GenAI engagement. This approach underscores the critical role academic libraries play in equipping campus communities with the skills necessary to use GenAI both effectively and critically.

Additionally, our project demonstrates the dual value of the GenAI competencies and of a unique methodology that combines human cognitive work with a GenAI collaborative partner to support the synthesis of disparate ideas while retaining human editorial oversight. As the conversation surrounding GenAI in higher education evolves, there is a clear need for continued research into what skills, knowledge practices, and dispositions are necessary for using GenAI responsibly and effectively. Accordingly, the GenAI IL competencies will require continued refinement in light of both the ever-changing GenAI landscape and the emerging scholarly conversation. Achieving this requires deep institutional integration, including faculty training and leadership support, to ensure equitable, ethical, and effective use of these tools.

Declarations

Ethics approval

Ethical approval was not considered necessary in alignment with Georgetown University's guidance on the conduct of ethical research.

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AI-generated content

ChatGPT (OpenAI) was used during the preparation of this manuscript in two ways.

First, Georgetown University sponsored ChatGPT 4.0 was utilised as an assistive synthesis tool during the GenAI IL competency development process, as described in detail in the Methodology section. Based on a spreadsheet of concepts extracted from the reviewed scholarship and mapped to the ACRL Framework, the bot was prompted to help consolidate overlapping ideas, reduce duplication, and generate draft formulations of the individual GenAI IL competencies (with descriptions) aligned with individual Frames. Second, ChatGPT 5.2 was used to support editorial tasks, including improving sentence-level language clarity and conciseness and suggesting occasional transitional phrasing.

In all cases, ChatGPT functioned as a support tool rather than an independent author: all prompts, interpretive decisions, and final revisions were developed, reviewed, and validated by the human authors.

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