The Query Search Method:
An inquiry-based approach for reference and information services

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ABSTRACT

This paper presents an inquiry-based pedagogical approach to teaching the reference interview and query search process for the reference course in the library and information science (LIS) curriculum. The Query Search Method (QSM) is a methodology grounded within a theoretical framework that synthesizes the tenets of literacy studies, critical librarianship, and librarian practitioner inquiry. In the reference course at two ALA-accredited library science programs, the QSM was employed as an iterative search process that actively applies advanced search techniques with online public access catalogs, subscription databases, bibliographic networks, web-based search engines and other online resources. The QSM can be taught in reference courses to fortify pre-service librarians with strong search skills that incorporate social skills that are socio-culturally competent with a critical lens and are immediately usable across various platforms, bridging the gap between library users' access to and use of contemporary technologies as literate citizens in an interconnected digital world.

ALISE RESEARCH TAXONOMY TOPICS
reference transactions; ontologies; pedagogy; sociology of information.

AUTHOR KEYWORDS
methodology; pedagogy; professional practice; reference; research.

INTRODUCTION

During this Information Age, we, the librarians, must apply the time-honored practice of reference services to utilize various technologies across multiple platforms, print, digital, and oral, to meet library users' information needs. These technologies are presented via varying interfaces and hierarchies of access to materials. In light of the diverse technologies needed for enacting the information search process for the reference course in library science programs, teaching the reference interview must incorporate a blended approach to operationalizing an equitable engagement for the librarian and the library patron. The reference interview skill set has become more intricate than ever for librarians working directly with diverse populations in communities worldwide.

The reference interview is a librarian-patron social interaction involving multimodal literacy practices culminating in a mutual learning event that carries a power dynamic that can be inequitable if misperceived (Tanner, 2017). Indeed, the librarian gains new knowledge as well as the patron during the reference interaction (Hollands, 2006; Tuominen, 1997). Although the reference interview is a learning event, it involves a power dynamic between the librarian and patron that must be acknowledged and mediated. The librarian carries power embedded with the library being an institution, and the patron carries the power of knowledge of the source for and motivation of their query. This power dynamic is also informed by the multilayered identities of the humans involved in the interaction – issues of race, ethnicity, gender, heritage, and geoculture all play a role in how the reference interview is facilitated and experienced by both the patron and the librarian. The sociocultural human aspect of the reference interview with the technological skills required for database searching necessitates a strategic sense-making approach for researching patron's queries. The Query Search Method (QSM) incorporates the patron's voice and agency with the librarian's interpretation of the question, negotiated and mediated via applying Boolean expressions with Subject Headings and Natural Language strings. Thus, the Query Search Method incorporates all the social, contextual, and technological processes that happen during the reference interview into a cogent space for analysis and resolution.

CONCEPTUAL FRAMING

In Maxfield's (1954) seminal paper, "Counselor Librarianship," he discusses the ideal principles for a successful reference interview: acceptance, understanding, communication, and collaboration. These values still hold today. The common thread that connects these behavioral stances is empathy. The concept of empathic care towards library patrons is inspired by the healthcare field, where empathy of care is an assignation ascribed to caregivers' cognitive, behavioral, and emotional empathy that, when emoted to others, lowers stress and burnout for the care providers as well (Wilkinson et al., 2017; Han & Kim, 2021). Librarianship, as an informational caring field, requires librarians to exercise empathy of care to perceive all queries as meaningful and all patrons as in need of care. Empathy is crucial for a holistic librarian identity construct.

During these historical times, we all are being asked to be more mindful of how we communicate, approach, perceive, and interact with one another. Information professionals are being held accountable to work as gracefully as possible with library users, fellow staffers, and

one another across libraries and across all the aisles of social and political lenses. This collective mindfulness emphasizes the reference interview as a keystone of information service that involves a larger picture of professionalism that must be present if library services continue to be meaningful and helpful to the communities we serve in this digital era of the twenty-first century. When librarians have a solid ethos for reference services, that ethos edifies their professional identity.

With this LIS professional ethos in mind, The Query Search Method (QSM) is a holistic approach to reference services grounded within a theoretical framework that synthesizes the tenets of New Literacy Studies, critical librarianship, and librarian practitioner inquiry. When these three perspectives are brought together, they provide a robust framework for understanding and improving librarian practice. The QSM, or Query Search Method, is a tool that can be used to implement this framework. The QSM is a collaborative approach to reference work that emphasizes the importance of understanding the patron's query in its social and cultural context.

New Literacy Studies (NLS).

New Literacy Studies (NLS) is a theoretical framework focusing on social and cultural aspects of literacy. NLS emphasizes the importance of understanding literacy as a practice embedded in specific social and cultural contexts and shaped by societal power relations. Specifically, New Literacy Studies, when applied to the LIS ethos, positions library *patrons* as the experts in the reference interview because the patron is the one who brings their knowledge to engage with the librarian on the search journey to meet the patron's information need, *and* to edify the librarian's professional learning and development (Asselin & Doiron, 2013; Irvin & Reile, 2018; Ranger, 2019).

Shirley Brice Heath (1983) and Brian Street (1984) inform us that in community life, ways of knowing are literacy events that involve more than the rote practices of reading and writing. Indeed, with libraries as community-based spaces, those practices are social, contextual, and multimodal between the patron, the librarian, and the library space (Bloome et al., 2019; Bloome et al., 2022; Pahl & Rowsell, 2006; Rowsell et al., 2018). Patrons are citizens who walk into the library with their funds of knowledge in place (González et al., 2006).

From a New Literacy Studies (NLS) perspective (which is an area of study in the field of education), we have to consider that, during the reference interview, the patron's ways of presenting and sharing their knowledge in the form of a question is a sociocultural practice that conveys a literate experience (Houtman, 2013; Pahl & Rowsell, 2006). This consideration is an empathic way to understand the reference interaction as a sociocultural literacy event (Bloome et al., 2022; Heath, 1983; Street, 1984).

Critical librarianship.

Critical theory helps LIS to interrogate the imbalance of power dynamics and social justice within human interactions, relationships, and systemic structures in librarianship (Leckie et al., 2010; Leung et al., 2021; Mehra, 2019). Based on critical theory principles, critical librarianship acknowledges that the power dynamic between librarian and patron is not just information-based but is a holistic consideration of how identity, heritage, and socio-cultural norms play a role in the

interactional exchange of the reference interview (Barr-Walker & Sharifi, 2019; Hines & Ketchum, 2020). Critical librarianship posits that libraries are not neutral institutions but are shaped by the same social, political, and economic forces that shape society (MacDonald & Birdi, 2020). Thus, it can be said that librarian identity and praxis are also shaped by societal forces that allow space for implicit bias and inequity.

The Query Search Method (QSM) embraces the tenets of critical librarianship to reframe the librarian mindset with an understanding that the power dynamic between librarian and patron is simultaneously fluid and equal. Thus, the QSM is a reference services approach that is based on inclusivity and equity. The method promotes critical thinking and social justice within the librarian-patron dynamic by acknowledging the patron's knowledge, unpacking their queries, collaboratively developing search strategies, and sharing answers/resolutions that are a participatory outcome of the patron's information need. By approaching the reference interview with an exploratory mindset, librarians are repositioned as inquiry-based learners instead of as data-based experts.

Practitioner inquiry.

Practitioner inquiry is a form of action research practitioners conduct in their workplaces. It is a way of learning about and improving practice through reflection and strategic action. The realm of practitioner inquiry ensures that librarians maintain and sustain a critical inquiry-based stance because the model makes reflectivity requisite for librarian practice as a means through which librarians situates themselves as a learner during the reference interview (Irvin, 2022b). Practitioner inquiry is also collaborative; it is not a solo journaling practice. Practitioner inquiry requires that educators engage in reflective work that is within a community of practice so that professional learning is collaborative in sharing ideas, resources, and expertise while being communal within workplace environments that share an institutional mission, vision, and geoculture (Irvin, 2022a; Kuhlthau et al., 2015).

The educative aspect of learning in libraries is informal because library interactions occur beyond the traditional classroom. Librarian practitioner inquiry focuses on the local context in which the librarian practices and services their community (Irvin, 2022a). Thus, as informal learning spaces, libraries exist in a context where, for the librarian, the workplace "generate[s] local, practice-based knowledge that is deeply contextualized and meaningfully embedded in a specific milieu" (Ravitch, 2014, p. 5). One of the vital outcomes of the reference interview is the knowledge learned by librarians because "research is embedded in inquiry learning" (Maniotes & Kuhlthau, 2014, p. 11). Transformative learning occurs when librarians gather as communities of practice within public, school, or academic settings to research and reflect upon their professional practice collaboratively. Practitioner inquiry's value lies in librarians' better understanding of practice and improving the impact of information services on their communities.

Thus, the QSM can improve librarian practice in several ways. First, it can help librarians better understand their patrons' needs. Second, it can help librarians to develop more effective search strategies. Third, it can help librarians to promote critical thinking and information literacy with patrons. The QSM is a valuable tool for librarians committed to providing high-quality reference services. It is a way of connecting with patrons deeper and helping them find the information they need to make informed decisions. When New Literacy Studies, Critical

Librarianship, and Librarian Practitioner Inquiry are coalesced and synthesized, the theoretical underpinnings of the Query Search Method beckons a renewed approach to teaching library science students reference and socioculturally adaptive information services practices.

THE QUERY SEARCH METHOD (QSM)

The Query Search Method frames reference services as a comprehensive literacy practice in form and action. The QSM evinces an inclusive paradigm where the patron's knowledge and curiosity, coupled with the librarian's knowledge and curiosity, creates an inclusive space where the reference interview becomes an oral document for experiencing, processing, and creating memory (Turner, 2012). The method is a series of socio-cognitive literacy events in which knowledge is shared between the librarian and the patron (Asselin & Doiron, 2013; Bloome et al., 2022). This collaborative knowledge building is enacted when the patron comes to the librarian and presents a query. We say "presents a query" instead of "ask a question" because we recognize that when members of the reading public walk into the library, they bring a multi-layered identity construct from which the question is an outcome and a representation of their humanity. Thus, the patron is the expert on the question, seeking to share their expertise of what they know and do not know with an information professional to arrive at an analyzed, authoritative resolution (Labaree & Scimeca, 2021). Because people walk with their understandings and literacies (i.e., ways of reading and knowing), questions are more than questions in a library context – they are queries.

The Query Search Method is based on the following principles:

- Patrons should be seen as experts on their questions.
- Questions are more than questions; they are queries.
- Librarians should be seen as learners, not experts.
- The reference interview should be a collaborative process.

The Query Search Method is comprised of the following steps:

1. Greeting the patron and establishing rapport.
   a. Unpacking the query (*search matrix*).
   b. Restating the query.
2. Developing a *search strategy*.
   a. Noting reference interview outcomes.
   b. Discerning resources to consult.
3. Conducting research (*search process*).
   a. Evaluating the results.
4. Presenting the *answer/resolution*.
   a. Following up and closing the interaction.

The QSM differs from a traditional reference interview in that it emphasizes the process's collaboratively reciprocal nature with the patron's role as an expert. The QSM also considers that questions are often more than just questions; they are queries that reflect the patron's unique understandings and literacies.

The librarian *greets the patron* when they listen to the query. Upon hearing and responding to the query, the librarian's mind immediately begins to deconstruct (i.e., "unpack") the query into keywords or phrases heard that are restated to the patron as a means of establishing rapport while embarking upon a mutually agreed understanding of the question and possible resources to consult to discover the answer. This in-the-moment cognitive response involves identifying keywords from the query and connecting like-terms / synonyms that emerge as the librarian and patron engage in a sociocultural exchange known as the reference interview. The reference interview, thus, is a collaborative exchange between the librarian and the patron.

Unpacking the query helps the librarian and the patron agree to a mutual understanding of the query. The librarian combines keywords and synonyms to build Boolean expressions and a data pool of terms for preliminary searching and more profound research. Using early Boolean expressions to search online public access catalogs (OPACs), databases, and web-based platforms allows the librarian to work with the patron to strategize a path for finding an answer to the query. These steps are cognitive and immediate. However, in the LIS classroom, we have the space and place to explore the nuances of the reference interaction so that we can understand the impact our work has across social and digital interfaces to help people learn more about the power of information gathering and discovery.

Once we have an early data pool of keywords and phrases and use them to build Boolean, we can also identify subject headings from the OPACs and databases we consult. Identifying subject headings adds to our data corpus of terms that help us to engage in the (re)search process. Rearticulating the query as Natural Language opens possibilities for searching semantically with databases and search engines as well. This rich data pool can be presented as a search matrix (Figure 1).

Figure 1
Search Matrix for the Query Search Method (QSM)

Sample Query: What is appropriate men's attire for a ball?

Key Terms	Subject Headings (OneSearch & LOC)	Boolean	Natural Language
attire / clothing	Men's clothing	menswear AND encyclopedia	etiquette book on formal menswear
man / men / menswear	Men's apparel	menswear AND "social life" AND "fashion manual"	best formal menswear for New York
fashion / style	Customs, etiquette & folklore	etiquette AND (dictionary OR encyclopedia)	formal menswear tailor or boutique in NYC
formal / gala / wedding	Etiquette	fashion AND (menswear NOT attire)	
dictionary / encyclopedia	Grooming for men		
East Coast / NYC	Men—social life and customs		
boutique			
etiquette			

The search matrix thus starts with collecting key terms that describe the query. These terms may also come directly from the reference interview (honoring the patron), such as *East Coast, clothing,* and *gala.* Key terms may come from the librarian's knowledge, such as synonyms for the patron's terms, *boutique* and *formal,* or recognizing that the query focuses on *etiquette* and answers most likely would come from a *dictionary or encyclopedia.*

Once key terms are established, the librarian will consider how these terms are described in systems such as LOC subject headings or the local catalog system (like *OneSearch*) such as the subject heading, *Men – social life and customs.* Subject headings should be identified for ease of finding information and for the librarian to recognize when the information found aligns with the initial query.

Using the gained data pool of terms to more fully describe the query, the librarian seeks to construct Boolean expressions. Searching by subject headings or single key terms is an option, but when applied, a Boolean expression like **menswear AND "social life" AND "fashion manual** is more precise and effective for getting to the heart of the query. Finally, the librarian should be able to sum up the matrix with a nuanced knowledge and understanding of the query: *We are looking for an etiquette book on formal menswear.*

The search matrix becomes the tool through which the librarian documents the patron's knowledge regarding the query and adds data to include the librarian's emerging understanding of the query. The matrix is also helpful for engaging with various knowledge systems when a query needs to be rephrased to find relevant information. The matrix can be best used to further the search process by honoring the patron's and librarian's knowledge. For student librarians, the search matrix is a powerful tool to use with the reference interview because it is a step-by-step representation of how the librarian deconstructs queries within their brain. The matrix affords student librarians a profound understanding of how the reference interview directly impacts the outcome of meeting the patron's information needs.

A *search strategy* is articulated from the search matrix before initiating the search process. At this stage, the reference interaction opens space to renegotiate the query. The search strategy is a critical inquiry approach with questions such as: What new information has come from the reference interview? Which reference resource would be best for this query? Why is that source good for this query?

The *(re)search process* is a negotiating process where the search strategy is applied to identify the most effective search inputs and outcomes from the sources the librarian and patron are consulting. The articulation of the search process can be documented to keep track of the depth of the collaborative research practice and to have information to follow up with the patron to ensure they are satisfied with the reference experience. The search process also entails the student librarian reflecting on what worked for them (and what did not) and what new knowledge they gained for future practice.

The *query's resolution* may be *an* answer that leads toward *the* answer that meets the patron's information need. When discussing answers and resolutions, we prefer to say that we resolve queries instead of answering them because answers can change. An answer can meet the information needed to help a patron be on the right track for their information search process. Sometimes, a resolution is a more significant outcome because the librarian has helped the patron to understand their query better. We recognize that answers can be definitive with ready reference and directional queries. At the same time, with research-oriented queries, readers' advisory, and imposed queries, the librarian's research more often reveals a resolution to a search instead of offering a solid, straight, complete answer.

Follow-up can be accomplished in two ways: the closing question and referral. The closing question can be: Does this work for you? Is this information helpful? Does this help to resolve your query? If the patron is satisfied, all is well. If they are not, the librarian refers the patron to another resource, library, or community-based service or entity. This referral process confirms that queries are more often resolved than answered.

Our pedagogical approach to the QSM.

The Query Search Method is taught via Query Set assignments in the reference course. Query Sets are a series of 5-10 reference interview scenarios (depending on the size of the class) that coincide with reference resources presented in the course text (i.e., Cassell & Hiremath (2023) and Wong and Saunders (2020) are popular reference texts for LIS programs). In a graduate-level library science reference course, two or three Query Set assignments (5-10 queries for each set) can cover the reference resources to be learned while exposing students to practice resolving real-life reference scenarios. Instructor feedback on the Query Sets is an essential responsive, reflective, critical, and collaborative aspect of the inquiry-based learning process for the QSM.

The QSM employs an iterative search process in the reference course that actively incorporates outcomes from reference interviews to building Boolean expressions for working with online public access catalogs, subscription databases, bibliographic networks, and web-based search engines. The Query Search Method can be taught in LIS reference courses to fortify pre-service librarians with strong contextualized search skills that are immediately usable across various platforms, bridging the gap between library users' access to and use of contemporary technologies as literate citizens in a multimodal media-rich global society.

METHODOLOGY: TEACHING WITH THE QSM

We have employed the Query Search Method in the introductory reference course since the spring of 2019, where the conceptual framework of New Literacy Studies - Critical Librarianship - Practitioner Inquiry has been synthesized into the methodology. We teach on a 15-week semester cycle. During weeks 1-4, we teach the history and ethics of reference, Kuhlthau's information search process (ISP), and the reference interview. We look to the American Library Association's resources, such as the *ALA Code of Ethics,* the *RUSA Guidelines for Behavioral Performance of Reference and Information Service Providers* for competencies to be applied to reference services. We have the students use the latest edition of the premier reference texts; most recently, we have been employing the renowned Cassell and Hiremath (2023) to assign resource chapters to coincide with assigned queries.

We approach the ISP from an inquiry-based perspective so that students understand that *the reference interview is an interaction* as opposed to a transaction and that, as librarians, they, too, are experiencing the information search process alongside the library patron. Through reflective questions posted on the discussion forum, we help students become aware of their positionality as learners in the reference interview experience as much as the patron is the expert. We position the patron as the expert because they are coming to a stranger, the librarian, with what is known as 'the question': a librarian does not know the question until the patron asks it. Therefore, the patron is the expert in the reference interaction. Students learn to embrace their positionality as librarians who are learners experiencing the continuum of the information search process.

Once students are introduced to the ISP, we present the six-step process of the reference interview: establishing rapport, unpacking the query, developing a search strategy, embarking upon the search process, closing the interview with the resolution or answer to the query, and following up with the patron in appropriate ways. When teaching the steps of the reference interview, we synthesize that process with the ISP to have students understand that they have to look at the whole interaction contextually in terms of understanding that the patron is a whole human being whose question represents multiple layers of identity, heritage, and sociocultural context.

The New Literacy Studies aspect of the QSM conceptual framework helps librarians to establish rapport and unpack the query by understanding that the library patron comes to the library with embedded knowledge and literacy practices already in place and that those funds of knowledge are invariably beyond the rote idea of reading and writing (González et al., 2006). Critical librarianship helps us to understand that the patron is entering into a library space that has a history of power dynamics and political dynamics that may be oppressive or at odds with the geoculture or community in which the library resides. Practitioner inquiry comes into play when the librarian closes the reference interaction and then follows up with the patron to make sure that the query has been answered to the best of everyone's ability and to ensure that the librarian has reflected upon the services that have been provided that they have been effective or needs improvement. Practitioner inquiry also helps the librarian to sustain a probing stance where the librarian is open to their own curiosity to ask critical questions that move the reference interaction forward. The QSM's conceptual framework keeps the librarian and patron in a cooperative reciprocal space of expertise and learning.

The reference course is set up so that students consistently use the discussion forums and the Query Sets to participate in reflective discussions about what they are experiencing in their learning process and report and document immediate impacts on professional practice. On the discussion forum where students are asked at the end of the semester, "What have you learned that has impacted your practice?" students have reported positive outcomes, such as:

> *I agree about the need to slow down and connect. Sometimes with the urgency I feel coming from the patron, I want to dive into the query without doing a thorough reference interview to get a quick resolution to their question. Slowing down has shown me I can still get the patron the information they need, but approaching patrons with a calm and understanding attitude has resulted in repeat patron visits. Seeing patrons return for my help in resolving an issue is rewarding. - Fall 2022*

> *The search methods, including Boolean and advanced search, have been fun to learn. I know some of the search methods supported by Google, but going through that process has helped me not just in this class but in my classroom when I help my own students and colleagues. Without going into a lot of detail, my newfound search skills helped support*

my colleagues and students when my district tried to implement some policies that looked good to some in theory but were not based on research and data. -- Classmate response -- Doesn't it feel super rewarding to be able to start applying what we've learned in a real world context like our current jobs? It's great that you've been able to show off your research skills at work! - Spring 2023

I have actually found myself using Boolean expressions at my current workplace, and it has helped me with my professional work in many ways. For example, I was tasked with finding inclusive cookbooks to promote our recipe swap at the library. I found a book called, "The Sioux Chef's Indigenous Kitchen," which I personally thought was pretty cool. I anticipate using Boolean expressions more than natural language on our OPACs at work now. - Spring 2023

The actual units of analysis used to support and confirm the QSM's theoretical framework was the Query Sets (QS) assignment. The Query Sets are set up in three parts: one query set is assigned at the beginning, the middle, and then towards the end of the semester. This assignment design allows students to incrementally improve their reference skills as they incorporate instructor feedback. The Query Sets are a series of questions that start simple (QS1) and slowly become more nuanced and contextualized for real-life scenarios in academic, school, and public library settings (QS2 and QS3). Archival queries may also be included depending on the interest of the students that are canvassed from introductions that students share at the beginning of the semester. In other words, if a student expresses an interest in archives during the introductory part of week one, we will incorporate at least one or two queries throughout the semester to address archives. However, we may also focus on specific library settings that are opposite of the students' concentration so that they can broaden their minds about the possibilities for answering and approaching reference questions in library settings. For example, if the class is predominantly school library media concentration students, we will have about 40% of the queries coming from the school media space and then offer 30% public and 30% academic library queries. The query sets are cross-referenced with the course textbook's resource chapters to maintain stability and consistency in the course structure and design.

Three query sets are assigned: QS1, due at the beginning of the semester; QS2, due at midterm; and QS3, due at the end of the semester. Each query set is set up to cover five chapters: three queries are presented for each chapter. All students must answer the first query that is presented for each chapter. Then, students can choose to answer one of the two additional queries per chapter based on their library concentration or the topic of the query itself. Two queries answered per chapter (a total of five chapters) adds up to ten queries per query set to account for a 10-point assignment. Thus, cumulatively, the query sets 30% of the course grade.

When we started teaching the reference course with the QSM in the spring of 2019, the query sets were 15 queries per set, covering five chapters, where students had to answer all queries

assigned. However, in response to student feedback, query sets were reduced to 10 queries per set, with students answering two queries per chapter. Now, post-COVID, where learning styles have been affected by the pandemic's isolation and distal communications, students have been reporting being overwhelmed with answering ten queries per assignment. Considering this concern, we have reduced the Query Set to five queries per set, where three queries are still presented per chapter, and students can pick one query per chapter.

Students must present the query and demonstrate how they deconstructed the question via the search matrix by listing keywords that come directly from the query plus any synonyms and corresponding terms derived from the reference interview. Students then combine the keyword column with early Boolean expressions to do a preliminary search in OPACs or databases to discover subject headings related to the query's topic and context. The second column on the search matrix is then populated with the results from this preliminary search of subject headings. The third column in the matrix demonstrates the student's ability to construct Boolean expressions from the data pool of the first two columns, the keywords and the subject headings (See Appendix 1). In this way, students are taught how to critically approach the search process and work collaboratively with the patron to determine appropriate terms and control vocabulary from OPACs and databases in the form of subject headings that best serve the patron's query.

The next section of the QSM is where the student articulates their search strategy for populating the search matrix and determining from which reference resources they will approach to conduct their research. The next section of the QSM is where students reflectively articulate what happened during their search process. In the search process, students discuss the outcomes of their research with specific Boolean expressions and how many of those yielded results were relevant and helpful in resolving the query (See Appendix 1). In the search process, students also engage in a reflective inquiry to discuss their learning experience.

For the last part of the QSM, students present their research outcomes to the patron. They learn to address the patron professionally, based on context (i.e., face-to-face, phone, chat, or email) and then present their information by articulating what resources they found, providing book cover images, bibliographic citations of resources, or community-based resources that are credible and appropriate for the query. Students then close out the reference interview demonstration with a professional closing, salutation, and identity as a librarian. Thus, the Query Sets are the unit of analysis for assessing the efficacy of the query search method.

LIMITATIONS

The Query Search Method has been successfully taught to LIS students across two ALA-accredited programs for eight semesters. Most students have been able to embrace the step-by-step inquiry-based data analysis approach to maneuvering reference interactions with this methodology. However, some limitations may be unresolved because every human's brain processes and synthesizes information, interaction, and data differently. Some students see the

search matrix of the QSM as too linear; they would rather navigate the matrix from a left-to-right row-to-row fashion instead of the prescribed up-and-down column-to-column fashion. Either approach can work; however, the overall purpose of the matrix is to gather a pool of data from the reference interview and to document the librarian's sense-making of the query so that they can use the matrix to conduct database and online research strategically.

Some students shared in discussion forums that the QSM is too contextual, not allowing them to explore each part of the reference process. For example, some students want to study the reference resources and not engage in database searching. Some students struggle to grasp the differing contexts and scenarios of conducting reference services in libraries. Some students' biases have been triggered, making them uncomfortable with the diverse scenarios. However, these issues typically emerge with the first query set assigned (QS1) at the beginning of the semester but dissipate by the end of the semester once students have had more practice and instructor feedback from QS2 and QS3.

CONCLUSION

In the LIS reference course, the Query Search Method guides emerging librarians in engaging with the patron, asking the question as a whole person. The QSM also recognizes that information constantly diversifies in mediums, in creation and in access. When looking for answers in a world less structured and ruled by the bibliography, how does one craft their search process to honor digital native systems that do not rely on subject headings? The Query Search Method can be taught so that students develop strong search skills and simultaneously accomplish multiple goals essential for the librarian skill set. Those goals include learning how to navigate the reference interview's information search process (Buba et al., 2021; Kuhlthau, 2008), engaging in the research process, and learning vital search techniques needed for digital citizenship. The information search process is learned during performing in-class reference interviews. Reference sources are learned during the search strategy. Database searching is practiced and explored during the search process. Professional presentations for various platforms (i.e., face-to-face, phone, virtual chat, email) are learned via the answer/resolution stage. The QSM thus bridges the gap between library users' access to and use of contemporary technologies as literate citizens in an interconnected digital world.

Introducing the practice of reference to new LIS students can be an intimidating experience for them because they are being asked to shift their perspectives for the first time from that of a patron to a librarian. The high learning curve of becoming competent in reference services as a sociocultural literacy practice based on an equitable and socially just dynamic is often complicated because no query is guaranteed a clear, easily attainable answer. The QSM substantiates the need for an inquiry-based reflective stance as a tenet of contemporary reference services. By asking students to think through questions critically and to approach reference with the stance of engaging in literacy practices that are social and nuancedly cultural, we ask students to consider not just the

words that make up the question being asked; but, more so, the person asking the question and the stance in which they approach and engage with we, the librarians.

REFERENCES

Asselin, M., & Doiron, R. (2013). *Linking literacy and libraries in global communities.* Taylor & Francis Group. DOI: 10.4324/9781315592480

Barr-Walker. J., & Sharifi, C. (2019). Critical librarianship in health sciences libraries: An introduction. *Journal of the Medical Library Association (JMLA), 107*(2), 258–264. DOI: 10.5195/jmla.2019.620

Bloome, D., Castanheira, M. L., Leung, C., & Rowsell, J. (Eds.). (2019). *Re-theorizing literacy practices: Complex social and cultural contexts* (1st ed.). Routledge. https://doi.org/10.4324/9781351254229

Bloome, D., Power-Carter, S., Baker, W. D., Castanheira, M. L., Kim, M., & Rowe, L. W. (2022). *Discourse analysis of languaging and literacy events in educational settings: A microethnographic perspective.* Taylor and Francis. https://doi.org/10.4324/9781003029779

Buba, A. A., Song, U. M., & Abdullahi, Z. M. (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,* 1-21.

Cassell, K. A., & Hiremath, U. (2023). *Reference and information services: An introduction* (5th ed.). ALA Neal-Schuman.

González, N., Moll, L. C., & Amanti, C. (2006). *Funds of knowledge: Theorizing practice in households, communities, and classrooms.* L. Erlbaum Associates. https://doi.org/10.4324/9781410613462

Han, A., & Kim, T. H. (2021). Effectiveness of empathy enhancement programs for social workers working with older adults: A quasi-experimental study. *Journal of Social Work, 21*(4), 913–930. https://doi.org/10.1177/1468017320940591

Heath, S. B. (1983). *Ways with words: Language, life, and work in communities and classrooms.* Cambridge University Press. https://doi.org/10.1017/CBO9780511841057

Hines, S. S., & Ketchum, D. (Eds.). (2020). *Critical librarianship.* Advances in Library Administration and Organization. Emerald. doi: 10.1108/S0732-0671202041

Hollands, N. (2006). Improving the model for interactive readers' advisory service. *Reference and User Services Quarterly, 45(*3), 205–212.

Houtman, E. (2013, November 6). New literacies, learning, and libraries: How can frameworks from other fields help us think about the issues? *In The Library With The Lead Pipe.*

http://www.inthelibrarywiththeleadpipe.org/2013/new-literacies-learning-and-libraries-how-can-frameworks-from-other-fields-help-us-think-about-the-issues/

Irvin, V. (2022a). Questions learned: Employing practitioner inquiry as a CRT approach to LIS professional development. [CRT Collective - Special Issue]. *Education for Information: An Interdisciplinary Journal of Information Studies, 38*(4), 389–412. doi: 10.3233/EFI-220050

Irvin, V. (2022b). Understanding the librarian identity: The common agency within the diversity of public librarianship. In (B. Mehra, Ed.), *Social Justice Design and Implementation in Library and Information Science* (pp. 47–61). Routledge. doi: 10.4324/9781003129219-6

Irvin, V., & Reile, W. (2018). LINQing librarians for better practice: Using *Slack* to facilitate professional learning and development. *Public Library Quarterly, 37*(2), 166–179. https://doi.org/10.1080/01616846.2017.1396198

Kuhlthau, C. C. (2008). From information to meaning: Confronting challenges of the twenty-first century. *Libri, 58*, 66-73. http://ocacinformationliteracy.pbworks.com/w/file/fetch/30835148/Kuhlthau.FromInformationToMea ning.pdf

Kuhlthau, C. C., Maniotes, L. K., & Caspari, A. K. (2015). *Guided inquiry: Learning in the 21st century.* (2nd ed.). Libraries Unlimited.

Labaree, R. V., & Scimeca, R. (2021). Confronting the "I Don't know": A philosophical consideration of applying abductive reasoning to library practice. *The Library Quarterly (Chicago), 91*(1), 80-112. https://doi.org/10.1086/711636

Leckie, G. J., Given, L. M., & Buschman, J. (2010). *Critical theory for library and information science: Exploring the social from across the disciplines.* Libraries Unlimited.

Leung, S. Y., López-McKnight, J. R., Chiu, A., Ettarh, F. M., Ferretti, J. A., Morales, M. E., Williams, S., Brown, J., Cline, N., & Méndez-Brady, M. (2021). *Knowledge justice: Disrupting library and information studies through critical race theory.* MIT Press.

Macdonald, S., & Birdi, B. (2020). The concept of neutrality: A new approach. *Journal of Documentation*, *76*(1), 333–353. https://doi.org/10.1108/JD-05-2019-0102

Maniotes, L. K., & Kuhlthau, C. C. (2014). The shift: From traditional research assignments to guided inquiry learning. *Knowledge Quest, 43*(2), 8-17.

Maxfield, D. K. (1954). Counselor librarianship at U.I.C. *College & Research Libraries, 15*(2), 161-179. https://doi.org/10.5860/crl_15_02_161

Mehra, B. (2019). The non-white man's burden in LIS education: Critical constructive nudges. *Journal of Education for Library and Information Science (JELIS), 60*(3), 198–207. https://doi.org/10.3138/jelis.2019-0012

Pahl, K., & Rowsell, J. (2006). *Travel notes from the New Literacy Studies: Instances of practice.* (1st ed.). https://doi.org/10.21832/9781853598630

Ranger, K. L. (2019). Ways of learning of information professionals: Concepts, roles, and strategies. In K. L. Ranger (Ed.), *Informed learning applications: Insights from research and practice* (pp. 51-65). Emerald Publishing.

Ravitch, S. M. (2014). The transformative power of taking an inquiry stance on practice: Practitioner research as narrative and counter-narrative. *Perspectives on Urban Education, 11*(1), 5–10.

Rowsell, J., Kress, G., Pahl, K., & Street, B. (2018). The social practice of multimodal reading. In D. E. Alvermann, N. J. Unrau, M. Sailors, R. B. Ruddell (Eds.), *Theoretical models and processes of literacy* (7th ed.), (pp. 514-532). Routledge.

Tanner, M. (2017). Taking interaction in literacy events seriously: A conversation analysis approach to evolving literacy practices in the classroom. *Language and Education, 31*(5), 400–417. https://doi.org/10.1080/09500782.2017.1305398

Tuominen, K. (1997). User-centered discourse: An analysis of the subject positions of the user and the librarian. *The Library Quarterly (Chicago), 67*(4), 350–371. https://doi.org/10.1086/629971

Turner, D. (2012). Oral documents in concept and in situ, part I. *Journal of Documentation, 68*(6), 852–863. https://doi.org/10.1108/00220411211277073

Wilkinson, H., Whittington, R., Perry, L., & Eames, C. (2017). Examining the relationship between burnout and empathy in healthcare professionals: A systematic review. *Burnout Research, 6*, 18–29. doi: 10.1016/j.burn.2017.06.003

Wong, M. A., & Saunders, L. (2020). *Reference and information services: An introduction* (6th ed.). Libraries Unlimited.

APPENDIX I.

Sample of a Student's submitted Query assignment

QUERY 26.2: As a new technician for the medical library of a research institution, I need to learn medical terminology and lexicon as soon as possible. Can you recommend to me at least three (3) resources I can use to get up to par in my new job? [print and/or web resources]

SEARCH MATRIX:

KW/SYN	Subject Headings *via university OPAC*	Boolean	Natural Language
medical	– Medicine	medicine AND lexicon	medical lexicon for research
terminology	– Health Professionals	medical AND term*	medical or health terminology book
lexicon	– Dictionaries	medicine AND dictionar*	medical dictionary
health	– Glossary	(medical OR health) AND (glossary NOT vocabulary)	medical glossary but not a medical vocabulary

SEARCH STRATEGY: The patron needs a medical lexicon and terminology book. It could also mean a dictionary. I will look for an online dictionary, for easy accessibility and a book and ebook through the university library. From the reference interview, the patron has indicated they would like the resource to be as up-to-date as possible but are willing to accept anything from the past 20 years. **SEARCH PROCESS:** Using *OneSearch* I looked up the phrase "medical terminology". While *OneSearch* returned many results, most of the publications were from before 2000. I limited the results to "books", "created 2000-2017" and "available in the library."

The eighth result was a terminology book found in the University Medical Library:

Essentials of medical terminology
Juanita J. Davies;©2002;2nd edition.
Subject Headings: Terminology as Topic; Medicine; Terminology; Terminology as Topic
● Available at UHM: School of Medicine Main (W 15 D256e 2002)

Get This Item   Locations   **Details**

Title:	Essentials of medical terminology
Edition:	2nd edition.
Author:	Juanita J. Davies
Subjects:	Terminology as Topic; Medicine; Terminology; Terminology as Topic
Publisher:	Australia ; Albany, N.Y. : Delmar Thomson Learning
Date(s):	©2002
Description:	Part I: Basic medical terminology -- Learning medical terms -- Roots of each body system -- Suffixes -- Prefixes -- Part II: Body systems -- Body organization -- The skin (integumentary system) -- The skeletal system -- The muscular system -- The nervous system -- The eyes and ears -- The endocrine system -- The cardiovascular system -- Blood and the immune and lymphatic systems -- The respiratory system -- The digestive system -- The urinary and male reproductive systems -- The female reproductive system and obstetrics.

Finding a source available online was difficult. Most of the online resources were not available to university library users. I searched "medical dictionary" in the OPAC and limited it to "online resources." The first 2 pages were books unavailable, however on the third page I found the Sage Dictionary of Health and Society available online.

ANSWER/RESOLUTION (face-to-face):

Ms. Willis,

Working with you on your query has been a pleasure: *Can you recommend at least three (3) resources on medical terminology or lexicon for my new job?*

Based on our conversation and search process, here are the resources we've determined will be useful to you:

1. Davies, Juanita J. *Essentials of Medical Terminology*. 3rd ed. Australia; Albany, N.Y.: Delmar Thomson Learning, 2002. Print.
   a. Available at University Medical Library: W 15 D256e 2002
   b. Access: call 888-555-xxx to reserve for pick up.

2. White, Kevin, and Ebrary, Inc. *The Sage Dictionary of Health and Society*. London: Thousand Oaks, Calif.: SAGE, 2006. Web.
   a. Access: Available to University users online via your university library card on the library website. Enter book title in the library search bar.

3. *Merriam-Webster Medical Dictionary Online*
   a. https://www.merriam-webster.com/medical
   b. Access: click on link.

If you need additional information or assistance, feel free to contact me at 888-555-xxxx, during regular business hours, Monday-Friday, or email me at: librarian-email@yourlibrary.com.

Thank you for this opportunity to work with you and to help you find the information you need!