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Information literacy as a strand of research literacy: Challenges and competence among graduate students in English language teaching programs

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Abstract

In an era defined by immediate access to vast amounts of information, the capacity to effectively locate, evaluate, and apply credible sources has become an essential competency for academic success. Given its critical role in scholarly work, this study examines how graduate students in an English Language Teaching program comprehend and apply information literacy as novice researchers. Adopting Wilson's (1999) framework on Human Information Behavior, this study primarily aimed to elucidate three key areas: (1) challenges in accessing and evaluating sources, (2) the role of structured guidance in developing information literacy, and (3) student strategies for overcoming barriers. A basic qualitative research design was employed, with data collected through semi-structured interviews. The analysis involved the transcription and systematic coding of the data through inductive thematic analysis. The findings revealed that graduate students perceive themselves as lacking in several critical domains of information literacy and that they developed certain strategies to overcome the difficulties they encountered. Furthermore, the findings highlight the need for more structured and standardized training programs to address these deficiencies effectively.

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INTRODUCTION

Conducting academic research is a complex and demanding endeavor that requires a broad spectrum of knowledge and skills. Along this journey, many novice researchers face significant difficulties, which can sometimes prove so daunting that they abandon their efforts entirely. Among the essential competencies for successful research, information literacy stands out as particularly crucial (Chen et al., 2022; Selvi & Ganesan, 2022; Todd, 2017) as a strand of research literacy. Recognized as one of the essential 21st-century skills for individuals to thrive as effective members of society (Ananiadou & Claro, 2009), information literacy (IL) plays a significant role in the success of researchers. As initially conceptualized by Zurkowski (1974), the construct of information literacy comprises the capacity to adapt information resources to effectively fulfill specific operational requirements. According to the American Library Association's (ALA) comprehensive definition, IL is an ability to learn "how to learn" (1989). This capacity is rooted in understanding how knowledge is organized, the skills to locate relevant information, and the ability to apply that information in ways that enable others to learn. Individuals who are information literate are thereby prepared to undertake a lifetime of learning, for they can more regularly locate and use the information that they will need for whatever purpose or decision at hand (ALA, 1989).

This basic competence aligns closely with the definition of research literacy (RL) given by Groß-Ophoff et al. (2017), as it emphasizes the skills of articulating existing knowledge and research needs, structuring and interpreting the problem of research, critically evaluating the credibility and expertise of sources, and synthesizing efficiently. As Beaudry and Miller (2016) suggested, literacy in research involves the ability to identify, interpret, analyze, and engage with research, communicate the findings clearly, and use them within an educational and professional context. Moreover, the ability to identify a range of research tools and to track existing studies as well as assessing their contribution to the existing body of literature are also prominent competencies in this area (Beaudry & Miller, 2016). In this respect, individuals with research literacy are expected to proficiently employ strategies for obtaining information, starting from recognizing the need for it, while overseeing all facets of the research process within their area of expertise. The interaction between IL and RL emphasizes the robust connectivity of these competencies for a total impact: each independently contributes to the goal of producing informed, flexible researchers capable of navigating information ecologies with subtlety, ultimately allowing them to extend knowledge within their discipline of concern. To this end, novice researchers rely heavily on the training they receive during their postgraduate education. However, the content of the courses provided in master's programs is mostly shaped around research methods, techniques and theoretical facades of research. As a skill that is usually taken for granted and yet, not necessarily focused on as an ability that requires training or guidance, development of IL mostly remains overlooked. This oversight sets a serious challenge for novice researchers, frequently resulting in feelings of incompetence, frustration and demotivation among researchers that are at the early stages of their academic journey and hindering their progress and engagement in scholarly work.

Within this scope, this study aims to examine the difficulties that master's students encounter in locating and evaluating information, which is considered a major component of research literacy. Specifically, the study investigates their competency in assessing the credibility and value of information sources, recognizing information literacy as an essential subset of broader research literacy skills. Additionally, the study explores the strategies students develop to navigate these challenges, shedding light on the ways in which they adapt to the demands of academic research.

Research questions

(1) What challenges do graduate students face in accessing and evaluating academic sources?

(2) To what extent does structured guidance play a role in increasing information literacy among graduate students?

(3) What strategies do graduate students adopt to overcome the challenges in accessing and utilizing information?

Theoretical framework

Human information behavior

Information behavior represents the totality of activities that people engage in seeking, evaluating, and using information; it demonstrates their cognitive, social, and contextual interaction with systems and resources (Wilson, 1999). Wilson's (1999) framework on Human Information Behavior (HIB) provides a vigorous theoretical foundation for analyzing how individuals interact with information across various contexts, including information seeking, searching, and use. This framework is particularly relevant to the present study, which investigates graduate students' information literacy levels and the challenges they face.

Wilson's model conceptualizes information seeking behavior as a purposive activity driven by a need to fulfill specific goals, which aligns with the study's focus on the challenges students encounter while navigating academic resources such as databases and journals. Additionally, Wilson identifies barriers to information access—psychological, environmental, and systemic obstacles—that impede effective information retrieval. These barriers resonate with the findings of this study, which highlight students' self-perceived deficiencies in information literacy, often resulting from insufficient training or unfamiliarity with credible sources. Furthermore, Wilson's model of information use behavior, which involves integrating newly acquired information into an individual's knowledge base, parallels the study's exploration of how students evaluate and utilize the credibility and reliability of information. By situating these challenges within the broader framework of HIB, the study not only emphasizes the multidimensional nature of information literacy but also identifies critical areas for intervention, such as enhanced training programs and systemic support to bridge the identified gaps.

Conceptual framework

Research literacy

Beyond the mere ability of reading and writing, literacy is defined as the concept that deals with defining, researching and questioning problems that support people to organize their lives and solving problems. According to UNESCO's Literacy Assessment and Monitoring Programme (LAMP), literacy "involves a continuum of learning enabling an individual to achieve his or her goals, develop his or her knowledge or potentials, and to participate fully in the community and wider society" (2005). To provide a comprehensive and satisfactory definition, it is crucial to understand the multifaceted nature of research literacy. It is, in fact, a combination of various literacies such as information/technology literacy (the ability to find, access and use resources) verbal literacy (the ability to comprehend, discuss and critique written and oral body of work), visual literacy (the ability to read, construct and use non-verbal representations such as tables, charts, etc.) and numeracy (the ability to comprehend and practice statistical reasoning and mathematical calculations) (Beaudry & Miller, 2016), blended into one pivotal competency that in some way, each researcher may find themselves in need of. Beaudry and Miller (2016) provided the definition of research literacy as "the ability to locate, understand, discuss, and evaluate different types of research; to communicate accurately about them; and to use findings for academic and professional purposes". Similarly, Solomon, Wilson, and Taylor (2012) explain that these competencies are organized around central stages such as recognizing the need for information, using appropriate techniques to locate information, critically comparing and evaluating information, and linking with other or prior knowledge. In this respect, research literacy is not only important for those teachers who plan to continue their career in academia but also for those who intend to enhance their professional skills (Eriksen & Brevik, 2023). It helps them be aware of the latest developments within their field and to use this knowledge in practice with success.

As research literacy comprises a diverse set of competencies essential for engaging with academic and professional knowledge, information literacy emerges as one of its most fundamental

components. The ability to systematically locate, critically evaluate, and effectively apply information is integral to conducting rigorous research and making well-informed decisions (Shenton, 2009). Consequently, a comprehensive exploration of information literacy is crucial for understanding how researchers navigate the increasingly complex and dynamic information landscape of the digital age.

Information literacy

Building on the foundational concept of research literacy, it is crucial to examine information literacy as a core competency that researchers must cultivate. As an essential 21st-century skill, information literacy extends beyond the mere ability to locate information; it encompasses a complex interplay of knowledge, analytical skills, and technological fluency that allows individuals to navigate an increasingly information-saturated world (Trilling & Fadel, 2009). In an era characterized by rapid advancements in digital technologies and the exponential growth of information, the ability to critically engage with diverse sources is indispensable for researchers striving to contribute meaningfully to their fields. These competencies are particularly essential for managing the evolving demands of society, academic institutions, and professional environments, where the ability to synthesize, assess, and apply information effectively is key to informed decision-making and innovation (Scott, 2015).

The concept of information literacy has been explored across multiple disciplines, particularly in education, where it is recognized as a foundation for independent learning and scholarly inquiry. The American Library Association (2000) defines information literacy as the capacity to identify an information need and effectively locate, assess, and utilize relevant sources. Similarly, the Society of College, National, and University Libraries (1999) conceptualizes information literacy as an understanding of how information is created, structured, and disseminated within academic and professional contexts. Beyond these definitional frameworks, information literacy entails more than just information-handling skills; it involves cultivating critical thinking abilities, fostering a mindset of inquiry, and developing the capacity to engage in reflective learning. Within this perspective, learning is understood as an ongoing process of meaning-making, achieved through knowledge acquisition, analytical reflection, engagement with diverse perspectives, and practical application in real-world contexts (Keeling & Dungy, 2004).

In addition to its cognitive and analytical dimensions, information literacy also requires the ability to assess the credibility, relevance, and appropriateness of sources within specific academic or professional contexts (Berutu et al., 2019). As the digital landscape continues to expand, researchers must navigate an overwhelming volume of information, much of which varies in accuracy and scholarly rigor. The ability to critically evaluate sources is therefore integral to ensuring that research is grounded in reliable and high-quality evidence. Furthermore, information literacy is not a static skill but a dynamic and evolving competency that must be continually refined in response to emerging technological tools and shifting knowledge paradigms. By strengthening their information literacy skills, researchers not only enhance their academic and professional capabilities but also contribute to the broader dissemination of knowledge, fostering a culture of inquiry, intellectual rigor, and lifelong learning.

METHODOLOGY

Research design

With the aim of producing sound knowledge about human experience (Sandelowski, 2004), qualitative research enables researchers to provide a systematic, rigorous and detailed portrayal of a phenomenon. In this context, the study followed a basic qualitative design to gain insight into the participants' perspectives on their own information literacy skills and abilities. To explore the IL challenges faced by novice researchers, semi-structured interviews were chosen specifically for their effectiveness in capturing nuanced perspectives directly from participants, thereby facilitating the collection of detailed and meaningful data. The interviews were transcribed verbatim and

analyzed using the MAXQDA software for systematic scrutiny and identification of overarching themes. Given its widely acknowledgment as one of the most rigorous methods for systematizing the identification, analysis, and interpretation of patterns in qualitative data, inductive thematic analysis procedure was considered fitting for this study because of the potential for nuanced insights into a complex phenomenon (Boyatzis, 1998; Braun & Clarke, 2006). Such an integrated approach allowed the researchers to study the research issue comprehensively and, consequently, to explore the complexity and diversity of participants' experiences effectively.

Participants and Sampling

The selection criteria ensured that all participants had completed the same undergraduate program within the same academic period, despite graduating from different institutions—Middle East Technical University and Hacettepe University. Additionally, they were all enrolled in the Master's program in English Language Teaching (MA) at Gazi University. Beyond their academic commitments, all participants were actively employed as English instructors at both state and foundation universities in Türkiye. Their professional responsibilities extended beyond teaching, encompassing tasks such as preparing instructional materials, designing and grading assessments, and providing detailed feedback on student papers on a weekly basis. The demands of their dual roles as both educators and graduate students posed significant challenges, particularly in terms of time management and workload balance, further complicating their ability to engage fully in their research and academic development.

During the first two semesters of their master's program, the participants engaged in coursework that covered essential aspects of academic research and pedagogy. This included modules on research methods, research ethics, and academic writing, as well as specialized subjects related to English language teaching and learning. These courses aimed to equip them with the theoretical and methodological foundations necessary for conducting research in the field while simultaneously enhancing their instructional practices. However, despite this formal training, participants continued to face difficulties in integrating research into their professional and academic lives, highlighting the complexities of navigating concurrent roles as both educators and researchers.

Table 1. The participants' demographic information

Participant	Year of Graduation (BA)	Undergraduate Degree	Current Master's Program	Weekly Teaching Hours	Total Teaching Experience (Years)
Participant1	2017	Hacettepe	Gazi	20	4 years
Participant2	2016	METU	Gazi	28	5 years
Participant3	2016	METU	Gazi	20	5 years
Participant4	2017	METU	Gazi	24	5 years
Participant5	2016	Hacettepe	Gazi	21	5 years

There are several sampling methods, each corresponding to different objectives and cases. For this study, which aims to explore the experiences of master's level students in the initial stages of their academic undertaking, the purposive sampling method (Patton, 2002) was deemed appropriate. Enabling the researcher to limit the research work to only those individuals whose experiences are most in line with the purpose of the study, the participants are selected purposefully by the researchers to serve the aim of the research, even though the sample may not be statistically representative of the wider population. In this regard, typical case sampling, a form of purposive sampling, is particularly useful for identifying cases that exemplify the norm within a given context, often with input from key informants or statistical data to establish consensus on what constitutes a "typical" case (Suri, 2011). This approach allows researchers to select participants whose experiences and backgrounds align with common patterns observed in the field, ensuring that the findings offer insights into broader trends while maintaining relevance to the study's focus.

Data collection and analysis

This study employs a qualitative research approach, utilizing semi-structured interviews as the primary method of data collection. As described by Dörnyei (2007, p.136), a semi-structured interview represents a "compromise" between structured and open-ended interviews, integrating the strengths of both methods. According to Heigham and Croker (2009), this approach allows the interviewer to guide the conversation in predetermined directions to ensure key topics are addressed while maintaining flexibility for participants to steer the discussion toward new, potentially unexpected insights. Considering its ability to balance structured inquiry with exploratory depth, the semi-structured interview format was deemed the most suitable method for this study, allowing for a comprehensive exploration of participants' experiences and perspectives.

The authors designed the semi-structured interview to encompass ten key items, each carefully formulated to address potential challenges encountered by graduate students. The initial development of these categories was informed by the authors' observations and prior experiences with the issue, serving as a foundational framework before data collection commenced. As the study progressed, these categories underwent systematic refinement and validation, ensuring greater accuracy, relevance, and comprehensiveness in capturing the participants' experiences. The final set of interview questions covered the following key areas:

- Difficulties in accessing information (e.g., Struggles with using databases and search engines effectively)
- Financial issues (e.g., Inability to afford expensive books, articles, and other academic resources)
- Time management challenges (e.g., Difficulties in balancing academic workload with time constraints
- Language barriers (e.g., understanding technical terms, the demanding language of research articles, or specialized jargon)
- Perceived competence in information searching
- Challenges in identifying the correct terms or keywords for research
- Guidance received on information literacy skills
- Knowledge of evaluating the trustworthiness of sources
- Awareness of and strategies for avoiding "predatory journals"
- Understanding the credibility of academic journals

The interviews were conducted online due to the busy schedules of the participants and recorded in audio format, transcribed, and analyzed utilizing MAXQDA software. To explore the research questions, thematic analysis was carried out to uncover patterns and draw meaningful insights from the participants' stories and experiences. Participants willingly chose to take part in the study on a voluntary basis, ensuring that their involvement was based on informed consent and free from any external pressure or coercion. At the outset of the interviews, they were once again asked to provide verbal consent, reaffirming their voluntary participation in the study. This process ensured that they fully understood the purpose of the research and their right to withdraw at any stage without any consequences. On average, the duration of the interviews was 28 minutes. Once transcribed, each interview contained approximately 3,400 words. This word count reflects the depth and detail of the participants' responses, contributing to a comprehensive and rich dataset for analysis.

In qualitative research, the researcher serves as the primary instrument of analysis, making key decisions in coding and theme identification while ensuring credibility, trustworthiness, and validity through systematic documentation such as field notes, transcripts, and reflective journals (Starks & Trinidad, 2007; Nowell et al., 2017). To enhance the credibility and trustworthiness of the study, multiple strategies were employed, including peer debriefing, expert validation, and participant confirmation, in line with best practices in qualitative research (Creswell & Poth, 2018;

Lincoln & Guba, 1985). A field expert actively participated in the coding process by reviewing the initial codes and themes, contributing to their sorting, grouping, and naming. The final version of these codes was further examined by another field expert, ensuring a systematic and rigorous refinement process. Based on their evaluations, thematic groupings were finalized, and consensus was reached regarding the placement of certain codes within the most relevant thematic categories.

To minimize interpretative bias and enhance confirmability, the researchers also engaged in participant verification during the data collection process. Specifically, during and after the interviews, the researchers double-checked key statements with participants to ensure accuracy and to clarify any potential ambiguities. This process aligns with the principle of triangulation, which enhances validity by incorporating multiple perspectives in data analysis (Patton, 2002). This methodological framework was employed to uphold analytical rigor and enhance the trustworthiness of the findings.

FINDINGS

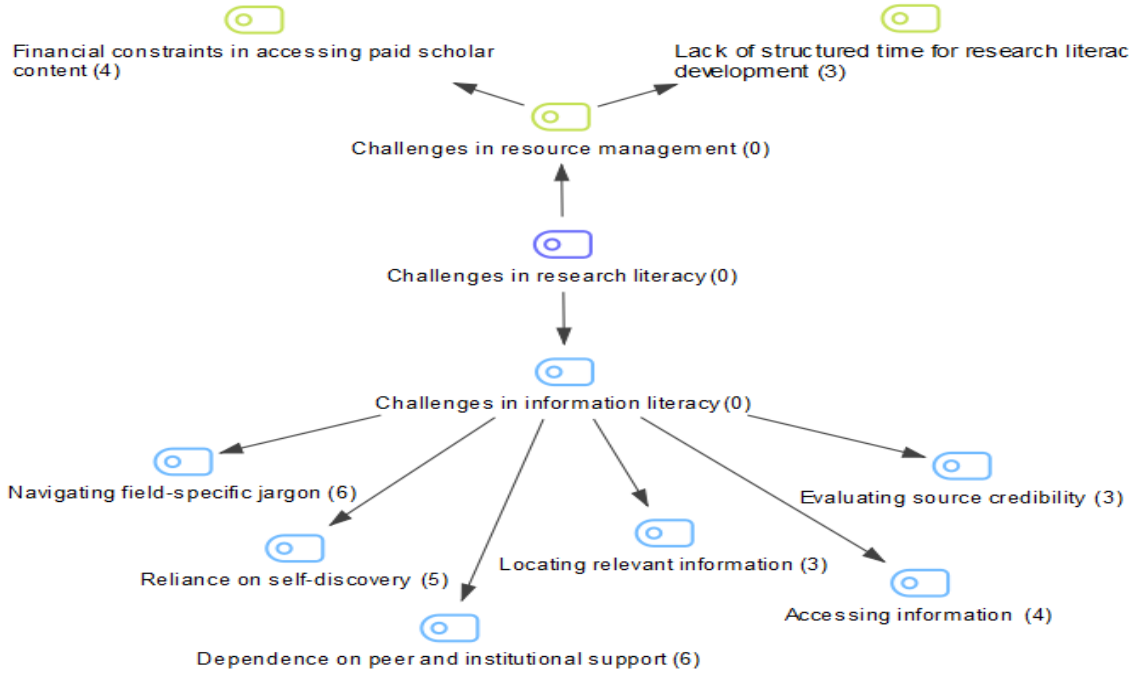
Analysis of the semi-structured interviews conducted with five participants identified three overarching themes, each corresponding to one of the research questions. The first two themes—challenges in information literacy and resource management—addressed the first and second research questions, respectively. The third research question, which explored the strategies employed by graduate students to navigate and overcome these challenges, also revealed distinct themes related to self-directed coping mechanisms. These themes emerged from a comprehensive analysis of participants' reported methods, which were identified both explicitly, through direct statements, and implicitly, through their descriptions of problem-solving approaches and adaptive behaviors. Figures 1 and 2 illustrate these findings, presenting a structured overview of the challenges in information literacy and resource management as subcomponents of research literacy, and key strategies adopted by participants in response to these challenges.

RQ1: What challenges do graduate students face in accessing and evaluating academic sources?

RQ2: To what extent does structured guidance play a role in increasing information literacy among graduate students?

The first research question explores the challenges that novice researchers face during the early stages of their academic and professional development. The second research question investigates the extent to which structural guidance influences participants' information literacy levels, shaping their ability to navigate and engage with scholarly resources effectively. In this context, structural guidance refers to the formal coursework that participants completed as part of their undergraduate (BA) and postgraduate (MA) studies. This includes structured academic instruction, curriculum design, and pedagogical frameworks that provided foundational knowledge and methodological training to support their research and learning processes. The themes identified in response to these research questions are presented in Figure 1 below, providing a structured overview of the key findings.

Figure 1. Core components and subdimensions of research literacy challenges



As illustrated in Figure 1, a comprehensive analysis of the interview data identified two predominant themes encapsulating the research literacy challenges faced by graduate students. The lower section of the figure highlights that a significant portion of these challenges is rooted in information literacy deficiencies, particularly in areas such as locating, evaluating, and effectively utilizing academic sources. This finding emphasizes the critical role of information literacy as a foundational component of research competency. Additionally, the analysis revealed that time and financial resource management constitutes another salient theme. The compounding pressures of balancing academic obligations with the professional demands of their dual roles as both teachers and researchers, combined with financial constraints that restrict access to essential research materials, create substantial challenges for graduate students in their research endeavors. The necessity to navigate these competing responsibilities while managing limited financial resources not only intensifies their workload but also impedes their ability to engage fully with scholarly research, ultimately affecting their academic progress and research productivity. These findings emphasize the interconnected nature of research literacy challenges, demonstrating that both cognitive (i.e., information literacy) and logistical (i.e., time and financial constraints) factors play a significant role in shaping graduate students' research experiences.

A closer examination of these challenges reveals that the lack of formal training in information literacy is a key factor contributing to students' struggles with academic research. Participants were asked whether they had taken a course related to information literacy skills during their BA or MA programs and, if so, whether they found the course content satisfactory. All participants reported insufficient instruction on locating academic sources and evaluating their credibility. While each had completed a research methods course during their MA studies, and some had encountered similar coursework at the undergraduate level, none of these courses provided explicit guidance on assessing the quality and reliability of academic information. Consequently, they had to develop these skills independently, often through trial and error, yet many still felt inadequately prepared in this area.

Moreover, at the onset of their research journeys, participants were largely unaware of the full range of academic resources available for information retrieval, such as journal articles, books, and theses. While they were familiar with widely used platforms like YÖKTEZ and Google Scholar, they lacked awareness and proficiency in navigating other key academic databases,

including ProQuest and EBSCO, which offer access to a more extensive collection of scholarly literature. These experiences highlight a broader deficiency in formal training related to information literacy, leaving students to navigate the complexities of academic research with minimal institutional guidance. Their struggles were articulated as follows:

> At the beginning, I didn't know how to use YÖKTEZ and Google Scholar effectively, you know, searching with quotation marks and all. And even when I find an article or a book, they were usually not open-access and I didn't know what to do. I didn't know I had an institutional account and how to use Proxy settings to access those articles, so I would simply give up and look for other sources. (P1)

Similar to P1, P2 emphasized that, although they were aware of other databases, they lacked the knowledge to navigate the technical aspects effectively:

> At first, I only used Google Scholar, yeah, that was pretty much it. Then, in one of the courses, a professor showed us some other databases but not exactly how to use them. Somehow, I figured out how to use Proxy and institutional access but before I found out about those settings, I could not use ProQuest or EBSCO properly. (P2)

At the outset, the participants faced challenges in locating reliable online sources and often relied on assistance from peers to navigate these difficulties. As depicted in Figure 1, they reported that language posed significant challenges as they often felt uncertain about their mastery of the terms used or academic terminology. They noted that the variations in terminology across different subjects and authorial styles further complicated their comprehension and use of scholarly language.

> I think when you start MA, the professors just assume you know how to search for information. We had a course in BA about research but we briefly talked about research methods and picked a topic and just proceeded to write a proposal. So I didn't really know much about searching for information. (P2)

> I mean there are times that I use Google Translate to understand some sections, some wording, some phrases are difficult to grasp, there are some examples of sentences that are two paragraphs long. I cannot follow that information easily. Yeah, every day I learn new terminology. But I cannot say that I'm still 100% comfortable with academic discourse. It's like, another language. (P3)

In addition, the development of the skills related to assessing the validity of sources—identifying, for instance, predatory journals—is recognized as crucial yet admitted limited awareness about this subject. The participants were asked whether they possessed the skills to evaluate the trustworthiness of various sources, including journals, articles, and reviews. All participants indicated that they attempt to assess the trustworthiness of sources; however, none had a clear or systematic approach for ensuring reliability when they were unfamiliar with the author, journal, or publisher.

> I'm not really sure. Maybe if the language seems professional... or there are some famous publishers like Oxford, Cambridge, Pegem for Turkey, etc. If I'm familiar with the name of the publisher or the journal, I say it's fine. But that doesn't happen a lot, obviously. So no. I don't know how to make sure. (P1)

> I don't really have a system. Usually I check the references. I look for sources that seem legit, or, like, trustworthy. I mean, if I see names of well-known researchers, journals, publishers, it feels okay, I can trust this source. (P3)

> I check the number of citations, or where the journal comes from. There are some journals that you can 100% trust but that doesn't always work, of course. Then I check if the writer have any connection between other writers I know, I check for their other works. (P2)

> If the language and the layout seem a bit off, that's a red flag for me. But this is hardly a strategy, so no. I'm not sure how to check for trustworthiness. (P5)

Surprisingly, none of the participants were able to provide an adequate definition of what constitutes a predatory journal or how to independently assess a journal's credibility. While some recognized the term, they remained uncertain about its precise meaning and the specific characteristics that differentiate predatory journals from legitimate academic publications. This lack of clarity suggests a fundamental gap in their research literacy training, leaving them vulnerable to unreliable or deceptive sources. Following an explanation from the researcher, participants acknowledged their lack of a clear strategy for evaluating journal credibility. They expressed

uncertainty about key indicators of reputable academic publishing, such as journal volume, issue numbers, indexing status, and impact factors. Furthermore, they lacked awareness of common evaluation methods, including checking a journal's presence in recognized indexing databases or assessing the editorial board's credentials. Similarly, they were unfamiliar with how to systematically browse, compare, and verify academic journals, relying instead on informal or surface-level assessments. These findings underscore a critical deficiency in research training, emphasizing the need for explicit instruction on academic publishing standards, predatory journal identification, and source evaluation techniques.

The participants highlighted the need for explicit training and support, emphasizing the importance of structured courses or direct guidance from professors to help students develop essential research skills. They noted that these skills were often inconsistently developed before graduate school, making the transition to advanced academic research particularly challenging. This highlights the necessity of equipping students with both the knowledge and practical tools required to navigate the research landscape effectively and engage in complex academic work. The lack of adequate preparation not only creates feelings of uncertainty but also demands significant time and effort, especially for students from diverse educational backgrounds who may not have had prior exposure to systematic research training. These challenges are particularly evident in students' difficulties in assessing the credibility and quality of academic journals, especially when encountering unfamiliar or potentially predatory publications. In the absence of formal instruction on information literacy, participants relied heavily on peer support, supplemented by limited guidance from professors and self-directed learning through online resources. However, this informal approach often proved insufficient, leading to ongoing struggles in efficiently accessing and evaluating academic information. The heavy dependence on informal learning mechanisms highlights the pressing need for structured, accessible training programs to bridge these gaps in information literacy and research competencies. Strengthening institutional support in these areas would not only improve students' ability to navigate academic databases effectively but also enhance their overall confidence and proficiency in conducting rigorous scholarly research.

As reflected in Figure 1, the participants outlined the challenges they faced in managing their time to balance the demands of a master's degree against full-time employment. Having to teach 20 to 30 hours a week, coupled with the demanding nature of MA studies that included multiple courses, made it very difficult to maintain a balance and discharge their responsibilities effectively. For participants working as part-time teachers, the challenge was even greater, as they were required to teach additional hours to earn a sufficient income, further limiting their availability for academic pursuits. All participants emphasized the struggle of finding enough time for research, often feeling overwhelmed by the need to juggle teaching, coursework, and professional obligations. As a result, they were unable to dedicate sufficient time to developing their information literacy skills, which required consistent practice and engagement with academic databases, source evaluation techniques, and research tools. The lack of structured time for focused learning in this area contributed to their reliance on trial-and-error methods and informal support networks, ultimately slowing their progress in mastering essential research competencies:

> In prep school it is not unusual to have a really busy program. We have to prepare extracurricular activities for students. We have quizzes and portfolio tasks, which means we have to assess, like, let's say 100 papers in two weeks. And I have 28 hours of teaching. It feels like playing Second Life. (P2)

> [working and studying at the same time] is hard because I have to commit to my job and also I have assignments to complete, papers to write all the time. Although I managed later, I changed my job frequently but had at least 20 hours a week. And in one term I had to take four courses and it was the most challenging time for me. I felt like I was torn between two full-time jobs and always failing one of them. (P4)

> It was so exhausting in the beginning, but in time, I kind of found a balance. I started studying for my MA studies routinely in the same part of the week. Like sundays. And I tried to never change it. Still, it is so difficult to stick to my plans and keep everything in order. (P5)

The high cost of academic resources—such as books and journal articles—was a major barrier, at times leading individuals to resort to unethical or unauthorized means to acquire the materials they needed. All participants stated that if they could not access a book or an article as they were not open access, they would go for alternative options such as pirating sites or groups in social media that people share scholarly documents. If none of these options work out, they would give up and look for alternatives to those articles or books:

> If I can't find an article or a book anywhere, in groups or through illegal ways, you know, I look for a substitute. I can't afford those prices. Maybe if they were in Turkish liras, I would buy some of them from time to time. Because it is both time and energy consuming. You search for something, you find it, then there's a paywall and it's so expensive. I don't have that kind of money. (P1)

> There are times when I needed an article or a book, but I just couldn't afford it. I try to check if my university has access or look for a free version online. Sometimes, I find discussions in forums where people share resources, and that helps. But honestly, if I can't find it after searching, I just give up and look for a different source. (P3)

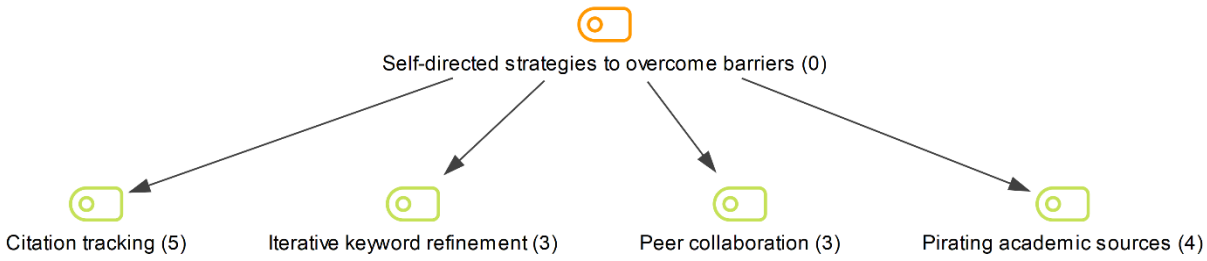
> I didn't even try to buy any books or articles because I knew I couldn't afford them. I know it's not the right thing to do but I had to look for online options. (P4)

In brief, the participants identified resource management and information literacy as the areas in which they perceived deficiencies in their competencies, encountered difficulties, and sought solutions. Building on these insights, the third research question investigated the strategies developed by the participants in dealing with the aforementioned problems, with a view to sharing the solutions they had expressed in this regard.

RQ3: What strategies do novice researchers adopt to overcome the challenges in accessing and utilizing information?

The participants were asked to provide insights into the coping strategies they employed as novice researchers who simultaneously managed full-time teaching responsibilities while addressing both the technical and methodological challenges of conducting research. The findings revealed that as they navigated the demands of these dual roles, they gradually developed various adaptive mechanisms to overcome the difficulties they encountered. These strategies evolved over time, shaped by both individual efforts and the availability - or lack of, institutional support. Figure 2 presents an overview of these self-directed coping strategies, highlighting both the explicit methods participants reported and the implicit approaches they adopted in response to their research challenges.

Figure 2. Coping strategies for challenges of research and information literacy



In the initial stages of their research journeys, most participants relied heavily on Google Scholar as their primary source of information, viewing it as both easily accessible and a convenient starting point for academic inquiries. However, they soon recognized that not all sources retrieved through this platform met the necessary standards of scientific rigor or relevance. This realization highlighted the need for greater guidance in critically assessing the credibility and applicability of retrieved materials. Without formal instruction on evaluating academic sources, participants often found themselves uncertain about distinguishing high-quality research from less reliable publications, highlighting a crucial gap in their information literacy skills. To bridge this gap, participants frequently turned to peer support and instruction from master's-level research courses

to enhance their research competencies, as presented in Figure 2. While these courses provided a solid foundation in research methodologies, they were perceived as insufficient in addressing the practical aspects of information literacy. Specifically, participants noted a lack of structured training on how to effectively locate, assess, and utilize institutional resources for academic research. Many expressed frustration at the absence of clear strategies for identifying high-quality, relevant information, which often left them feeling ill-equipped to navigate the vast array of available academic literature. In response to these challenges, novice researchers devised their own strategies for evaluating and refining their research processes. Figure 2 presents that some participants relied on the number of citations as an indicator of an article's credibility, assuming that highly cited works carried greater academic authority. Others adopted a more systematic approach by identifying key studies within their field and analyzing the keywords used in those publications. This method allowed them to refine their search terms and align their inquiries with established research, thereby improving the precision and relevance of their literature searches. Despite these self-developed strategies, participants continued to face persistent barriers, particularly financial constraints in accessing scholarly resources. Many acknowledged resorting to unauthorized methods to obtain academic materials, citing the prohibitive costs associated with subscription-based journals and paywalled research. Their experiences highlight the broader issue of accessibility in academic research, where financial limitations can significantly hinder knowledge acquisition and scholarly advancement.

Overall, these findings emphasize the critical need for more comprehensive training in information literacy, particularly in evaluating academic sources and effectively utilizing institutional resources. Additionally, they point to the necessity of greater institutional support in providing access to high-quality research materials and fostering an environment where novice researchers are equipped with the skills and tools necessary to navigate the complexities of academic inquiry. Addressing these challenges through targeted training programs and improved resource accessibility would not only enhance research competency but also empower early-career researchers to engage more confidently in scholarly work.

DISCUSSION

The findings reveal substantial gaps in novice researchers' information literacy, a fundamental skill set for academic success (Chen et al., 2022; Selvi & Ganesan, 2022). Despite completing research methods courses, participants reported a lack of explicit instruction on evaluating source credibility and effectively navigating academic databases. This aligns with Beaudry and Miller's (2016) argument that research literacy should include structured training in source assessment; however, these competencies are often underdeveloped in formal education settings. Wilson's (1999) Human Information Behavior (HIB) framework provides a useful lens for understanding these challenges. His model identifies various barriers to information access, including psychological obstacles (e.g., self-doubt in assessing source credibility), environmental factors (e.g., insufficient institutional support), and systemic constraints (e.g., paywalls and restricted database access). These barriers were evident in participants' experiences, reinforcing the need for institutional interventions to address these gaps and provide targeted support for developing research literacy. Another particularly noteworthy finding was participants' reliance on trial-and-error strategies and peer support to navigate their research challenges. While collaborative learning has been shown to enhance research literacy (Shenton, 2009), the absence of structured guidance left many struggling unnecessarily, often leading to frustration and self-doubt—an issue similarly observed in prior studies (Eriksen & Brevik, 2023). This emphasizes the importance of integrating explicit instruction in academic research skills within postgraduate curricula. Without systematic training, students risk developing inefficient research habits, potentially undermining both their confidence and their ability to carry out rigorous academic work.

The study also highlights the crucial role of structured coursework in shaping information literacy development. However, participants reported that their formal education lacked a

systematic focus on practical research skills, particularly in assessing journal credibility and managing restricted-access content. This finding is consistent with Adendorff and Parkinson's (2001) conceptualization of research literacy, which emphasizes the necessity of explicit instruction in locating, evaluating, and incorporating scholarly sources. Further, research by the American Library Association (ALA, 2000) suggests that students who receive structured training in information literacy demonstrate greater academic confidence and efficiency in navigating research databases. The fact that participants struggled with basic search techniques, such as Boolean operators and institutional access mechanisms, points to a significant oversight in academic training programs. Their limited familiarity with databases beyond Google Scholar suggests a disconnect between theoretical research instruction and practical skill application, reinforcing the need for curriculum revisions that incorporate digital research training.

A particularly striking issue identified in the findings was participants' difficulty in distinguishing reputable academic sources from predatory journals. Their lack of awareness regarding journal indexing, impact factors, and other credibility indicators suggests that novice researchers may unknowingly rely on low-quality or deceptive sources (Beall, 2016). Addressing this gap through structured training on research ethics and publication standards would significantly enhance graduate students' ability to critically evaluate scholarly sources. Without formal instruction in these areas, students remain vulnerable to misinformation and may unintentionally compromise the integrity of their research.

Despite these challenges, participants demonstrated resilience by developing their own coping strategies. Citation tracking, keyword refinement, and peer collaboration emerged as key mechanisms for overcoming research obstacles, aligning with previous findings on adaptive research behaviors (Scott, 2015). However, the fact that these strategies were largely self-taught indicates a reactive rather than proactive approach to research literacy acquisition. One of the most concerning findings was participants' reliance on unauthorized methods, such as pirating academic resources, due to financial constraints. This issue reflects broader systemic challenges in knowledge accessibility, where economic barriers limit equitable engagement in academic research. The findings emphasize the need for universities to expand access to digital repositories and promote open-access publishing initiatives (Piwowar et al., 2018). Wilson's (1999) model of information use behavior is particularly relevant here, as it highlights how individuals adapt to constraints within their research environments. While participants exhibited resourcefulness in overcoming barriers, their struggle to assess journal credibility and access scholarly materials suggests that self-directed strategies alone are insufficient. Instead of relying on informal learning mechanisms, universities should institutionalize comprehensive information literacy education within postgraduate programs. Equipping students with essential research competencies early in their academic careers would not only enhance their ability to conduct rigorous research but also reduce their reliance on inefficient and, in some cases, ethically questionable coping strategies. Addressing these gaps through formalized training and improved institutional support is crucial for fostering a research culture that prioritizes both accessibility and academic integrity.

CONCLUSION

With the advancement of technology, the sources of information and the means of accessing them have changed drastically. While search for information used to have only one dimension, such as physical libraries and documents that are in reach, the practice of "searching" bears various meanings now, including "googling" keywords, using proxy and online databases, finding books to borrow online, and even pirating options that allows illegal gateways to information. As much as this change eased the process of information seeking, it brought its limitations as well. Having the information right there in front of the screen does not necessarily mean it is easy to access. This study's findings, interpreted through Wilson's (1999) Human Information Behavior (HIB) framework, reveal significant gaps in graduate students' information literacy (IL) skills. Despite being digital natives (Prensky, 2001), participants showed limited ability to perform scholarly

information-seeking tasks, particularly at the beginning of their master's programs. While they felt confident operating everyday digital tools, they struggled with academic resources, underscoring a disconnect between general technological know-how and the specialized skills required for academic IL.

Wilson's framework offers a useful perspective on these issues, presenting information-seeking as a goal-oriented process often obstructed by psychological barriers (such as self-doubt), environmental challenges (like insufficient training), and systemic obstacles (including inadequate institutional support). These challenges were evident in the participants' experiences, with many feeling unprepared to critically assess the credibility and reliability of academic sources or effectively navigate institutional databases. This gap between perceived readiness and actual competence highlights the urgency of addressing the barriers outlined by Wilson and stresses the need for systemic interventions. Additionally, Wilson's emphasis on integrating new information into existing knowledge frameworks resonates with this study's findings on how students process and apply scholarly information. While participants frequently devised their own strategies to overcome obstacles, they expressed doubts about their effectiveness, reflecting the fragmented and improvised nature of their information behavior.

To address the previously identified shortcomings, this study underscores the necessity of structured and targeted training programs implemented early in master's education. These programs should focus on cultivating essential academic information literacy skills, including the proficient navigation of institutional databases, the critical evaluation of sources, and reliable methods for assessing the credibility of articles and journals. By integrating such training into graduate curricula, institutions can mitigate unnecessary obstacles for novice researchers, providing them with the necessary tools to engage in academic work with greater confidence and competence.

Grounded in the Human Information Behavior (HIB) framework, this study highlights the multidimensional and contextual nature of both information literacy and research literacy, emphasizing the practical steps institutions can take to enhance students' overall research capabilities. A well-structured approach to information literacy training would not only improve students' ability to locate and assess academic resources effectively but also strengthen their broader research literacy skills, such as formulating research questions, synthesizing existing literature, and applying appropriate methodologies. Additionally, reducing the time and cognitive burden associated with independent trial-and-error learning can lead to more efficient and productive research engagement. By introducing tailored interventions at the outset of graduate programs, institutions can significantly alleviate the challenges of navigating unfamiliar academic landscapes, fostering a more inclusive and empowering research environment that equips graduate students with the skills necessary for scholarly success.

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