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The Inclusion of Metacognition in Source Evaluation Instruction

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Abstract

Though the ACRL *Framework* holds metacognition as crucial to exercising information literacy, its emphasis was reduced from prominence in early drafts to a single mention in the final document. At the same time, few of the frequently-taught sets of source evaluation criteria include a step for self-awareness. This raises the question: do librarians explicitly teach metacognitive concepts when they teach source evaluation? Online library guides about source evaluation from various colleges and universities in Washington state were analyzed, and librarians who taught source evaluation were surveyed to determine whether and to what extent metacognitive concepts were included as part of the source evaluation process and how important librarians perceived metacognition to be relative to common source evaluation criteria. This research found that metacognition or self-reflection is not commonly considered or taught as an integral part of the source evaluation process.

Keywords: information literacy, metacognition, self-awareness, source-evaluation, biases, instruction, library guides

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The Inclusion of Metacognition in Source Evaluation Instruction

With more than two-thirds of the planet connected to the internet (International Telecommunication Union, 2023), most of humanity has access to more information, with less effort, than ever before in our collective history. However, increased access has not improved the ability to determine good information from bad. Responses to the COVID-19 pandemic and mitigation measures such as masks and vaccines provide a vivid example of the power of misinformation and the ease with which it spreads via the internet and social media (Caceres et al., 2022). In the online sea of information and misinformation, information literacy is, more than ever, a crucial skill set.

A significant challenge to information literacy is the variety of cognitive biases that affect the perception of information. For example, resistance to vaccination is often driven by tribalism or in-group bias based on existing political or cultural divisions (Goel, 2022b). Instead of evaluating each issue on its own merits and referring to experts whose expertise matches the topic, many look to what "their side" has to say—and there are opportunistic voices on every side seeking to draw lines of division. To combat in-group bias and other biases that interfere with information literacy, such as confirmation bias, cognitive dissonance, doubling down, and the Dunning-Kruger effect, *metacognition* is needed: the awareness of how one is thinking in real-time in order to dial back the natural human tendency towards bias. Such self-awareness or cognitive reflection imparts the ability to be active instead of reactive in evaluating information and has been shown to moderate the likelihood of accepting misinformation (Ali & Qazi, 2022; Stecula & Pickup, 2021).

The ACRL *Framework for Information Literacy Instruction in Higher Education* highlights the importance of metacognition, calling it "crucial to becoming more self-directed in [the] rapidly changing [information] ecosystem" (Association of College and Research Libraries [ACRL], 2015, p. 3). However, metacognition is a high-level and rather abstract concept. It could be argued that metacognition is implicit in the mastery of each frame of the *Framework*, but the word never reappears in the document after that single mention of its central importance. Given the prominence of the *Framework* in guiding library instruction, this prompts the question of whether librarians explicitly teach students to be metacognitive

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when they evaluate information or whether self-awareness is left implicit or left out entirely. This paper explores this topic through two research questions:

- RQ1: To what extent is self-reflection taught in library research guides on source evaluation?
- RQ2: To what extent do librarians self-report teaching self-reflection when they teach source evaluation?

Literature Review

The Challenge to Information Literacy Posed by Cognitive Biases

That cognitive biases have been active in influencing the social, political, and cultural landscape is uncontroversial. Psychologists Clark et al. (2019) wrote that selective pressure has caused humans to evolve strong group loyalty, which manifests in a variety of cognitive biases, most particularly tribalism or in-group bias. They argued that these biases are not limited to one political side; every in-group is prone to them. Cognitive neuroscientist Goel (2022a) argued that in-group bias is innate and biological and that although education can dampen its effects, it cannot be entirely eradicated. Goel identified several non-rational biological systems that interact with human reason and proposed a model of tethered rationality to understand human behavior, in which reason is not a separate process from the behavioral systems that evolved before it but is tied to them "with both bottom-up and top-down connections" (Goel, 2022a, p. 4), each influencing and being influenced by the others.

The influence of non-rational systems on human reason has held true for our ability to reason about the information we encounter. Social psychologists Forgas and Baumeister (2019) coined the term *metacognitive myopia* to refer to the "apparently universal human inability to correctly evaluate the source, reliability, and validity of information we receive from others" (p. 11) and argued that failure in the task of sifting incoming information is the origin of many cognitive biases and processing errors. Librarians have recognized metacognitive myopia as poor information literacy, a metacognitive failing.

Other authors have underlined the metacognitive nature of information literacy. McCoy (2022) wrote that the "metacognitive act" (p. 43) of considering and evaluating information should be included in information literacy instruction. Beene and Greer (2021) called for

including disciplines such as psychology in the study of information literacy to understand the role emotions play in conspiracy thinking. Similarly, Swanson (2022) drew on the disciplines of neuroscience and psychology to argue that our minds do not operate the way we often assume. We cannot access most of our brain activity; for example, science cannot directly examine how we file things into memory or make choices or preferences. Our hidden brain activity influences how we make decisions and what we choose to believe. Therefore, Swanson (2022) noted that self-interrogation is crucial to uncover the why behind belief: "Before we evaluate sources, we must evaluate ourselves" (32:30).

Metacognition in Library Instruction

In 2011, Mackey and Jacobson argued that navigating the new social digital information landscape, in which individuals were not only consumers but creators and disseminators of information, required a broader conception of information literacy than had been defined to that point. In 2013, Jacobson and Mackey highlighted the importance of metacognition, noting the importance of reflecting on one's thinking processes to adjust to new technologies. Mackey and Jacobson's work on metaliteracy was influential in the formulation of the ACRL *Framework*. Fulkerson et al. (2017) described the four learning domains of metaliteracy: cognitive, or requisite knowledge; behavioral, or the ability to take effective action; affective, or the feelings and reactions of the learner; and metacognitive, or self-awareness of one's own thinking and learning. The authors claimed the first three have been well-represented in the library world, while metacognition has been less well-represented, though crucial in connecting the other three learning domains. Metacognition involves self-monitoring and self-regulation, making learners more adaptable and better at solving problems. Fulkerson et al. (2017) noted that although early drafts of the *Framework* "included explicit ways metacognition could be addressed pedagogically" (p. 26), the final version omitted all but a single affirmation of the importance of metacognition. The authors traced negative feedback against the idea of metaliteracy in the early drafts, which included criticism that the concept was vague or unnecessary. As a result, references to metaliteracy were almost removed from the final document, which resulted in the removal of most references to metacognition as well. The authors charged that this "diminished the document's usefulness as a teaching tool" (Fulkerson et al., 2017, p. 22).

Metacognition has been arguably implicit in many methods librarians use to teach source evaluation today but rarely explicit. Many librarians have used sets of source evaluation criteria packaged into an acronym or mnemonic for convenience in teaching and in student

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DOI: 10.15760/comminfolit.2024.18.2.2

recall. Few of these systems have included a criterion devoted to self-reflection. The popular CRAAP Test for evaluating sources (Blakeslee, 2004) has no criterion for metacognition in its acronym. Similarly, the RADAR criteria (Mandalios, 2013) are source-focused, with no criterion for examining oneself. In Caulfield's (2019) SIFT the first action, Stop, can include the metacognitive step of checking your emotions. Interestingly, in Caulfield's (2017) original system, Four Moves and a Habit, this step was the "habit," but when Caulfield repackaged the Four Moves into the acronym SIFT, the emotion checking step was not directly stated. However, many librarians have included this step under Stop when they present SIFT, for example, "Before you act on a strong emotional response to a headline, stop!" (Clark College Librarians, 2021). In CCOW (Tardiff, 2022), self-reflection is its own criterion: *Worldview*.

It has been similarly rare to find metacognition explicitly addressed in other library instruction systems or methods, even those urging paradigm shifts. Walton (2017) explored challenges to information literacy, such as pre-existing worldviews, confirmation bias, motivated reasoning, and epistemic beliefs, and claimed that existing information literacy instruction failed to address these problems. Walton urged the inclusion into information literacy instruction of a holistic theory called *information discernment*, which considers internal human behavior as an influence in evaluating information. However, while metacognition was mentioned, the instruction methods detailed by Walton were all outward-focused on the source being evaluated, with none focused inward on the evaluator.

Bull et al. (2021) recommended the adoption of what they term *proactive evaluation,* in contrast to older, reactive methods. Proactive evaluation teaches students to see information as having agency and being capable of acting upon and influencing the student. Much of the authors' focus was on the networked nature of online information and issues such as algorithmic personalization and tracking that determine how the information finds the user. Their approach invited the students to consider the relationship between the information and the user, a metacognitive activity. The authors urged open-ended dialogue to get these concepts across, but they did not have many concrete recommendations for how to accomplish it.

Indeed, the how of teaching metacognition has been relatively light in library literature, even when the need for it has been called out. Denke et al. (2020) implemented a scaffolded, constructivist reflection activity in a one-shot instruction session to help students articulate

their thinking as they interacted with an article. Mackey (2020) described a Massively Online Open Course, which helped students explore their preconceptions and how they influence their affective responses to information. Robertson et al. (2022) developed the Information Literacy Reflection Tool, a self-assessment instrument that prompted students to consider and rate their own information literacy across 57 questions. However, compared to other aspects of information literacy, such as the act of evaluating the source itself, there is surprisingly little literature on teaching practices that focus directly on imparting metacognitive skills. When the *Framework* was changed from draft to final state, metacognition was still seen as too broad or vague to receive much direct attention in the literature. As McCoy (2022) stated, "There is minimal research from either the library science or the cognitive science fields regarding the intersection between information literacy and metacognition" (p. 45). This study aims to discover whether this gap in the literature corresponds to a gap in librarian instructional practice.

Methods

This study examined librarian instructional practices through two lenses: a document analysis of library guides and a survey of librarians. Including a document analysis and a survey allowed the results from each to be compared to the other to build a more comprehensive picture of librarian instructional practices.

Library Guide Analysis

The study's first phase consisted of a quantitative document analysis of library research guides and tutorial pages about evaluating sources taken from college and university libraries in Washington state. Washington includes a mix of two-year, four-year, and graduate institutions, as well as public and private institutions, ensuring a wide representation of types of institutions within a manageable number of documents to analyze. Documents were identified by navigating each library's website and help pages and searching for library guides, tutorials, online library orientations, or LibAnswers content that mentioned "evaluating information," "evaluating websites," "evaluating sources, "bias," or "fake news."

Of the 73 two-year or higher degree-granting institutions in Washington state listed by the National Center for Education Statistics (2023), 49 institutions (37 public, 12 private; five two-year, 33 four-year, and 11 graduate) were found to have one or more library guides.

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The guide judged to be the most general and top-level guide on evaluating information at each library was chosen for analysis.

Each guide was assessed to identify whether it included instructional elements that explicitly prompted students to practice self-reflection as part of the source evaluation process. Language such as "check your emotions," "consider your worldview," or "consider your bias" was flagged. The researcher noted the level of self-reflection instruction (a passing mention of a few sentences, its own section, or an in-depth explanation) and if a common evaluation criteria system, such as the CRAAP Test or SIFT, was used.

Survey Design

The second phase of the project consisted of a survey of college or university librarians in Washington state who teach source evaluation. The survey instrument (see Appendix) was designed to collect information about whether and how much participants incorporated instruction on self-reflection into their source evaluation instruction. The relevant questions asked how often participants included a step on self-reflection when they taught source evaluation, how much time they devoted to this step relative to other criteria, and how important they judged it to be relative to other criteria. In order to usefully compare the inclusion of self-reflection to the inclusion of other common source evaluation criteria, identical questions were asked of six other criteria: currency, accuracy, purpose, relevance, authority, and lateral reading. These criteria were chosen because they, or their equivalents, appear in many popular source evaluation criteria sets and, therefore, are useful comparison points for common instructional practices.

Survey Population

The researcher identified 195 potential survey participants by searching the library websites used in the first phase of the study for First Year Engagement librarians and librarians who teach Research 101, English 101, and other research or composition classes judged likely to feature source evaluation instruction. After IRB approval, an email was sent to each person with an explanation and a link to the survey. The number of respondents was 63. Table 1 shows the representation of respondents by different types of institution, and Table 2 shows the instructional settings in which respondents teach source evaluation.

Table 1: Number of Survey Respondents by Institution Type

Institution Type	*n*	%
Vocational or technical college	0	0
2-year or community college	28	44
4-year public college	7	11
4-year private college	8	13
Public university	14	22
Private university	6	10

Note: *N* = 63.

Table 2: Instructional Settings for Source Evaluation Instruction

Instructional Setting	*n*	%
In-person reference interactions (students come to the reference desk)	53	84
Virtual reference interactions (chat reference, email, etc.)	56	89
Research consultations or one-on-one meetings with students, either virtual or in person	59	94
One-shot classroom instruction	59	94
In-depth classroom instruction (librarian-taught courses, embedded courses, etc.)	34	54
Other (please specify)	8	13

Note: *N* = 63; respondents checked all instructional settings. Others specified: video tutorials, LibGuides, webinars, workshops, social media, and asynchronous modules.

Of 62 librarians responding to a question about the use of source evaluation criteria, 74% (*n* = 46) indicated they used an existing system of criteria, such as the CRAAP Test, when teaching source evaluation.

Additionally, the majority of surveyed librarians felt they only *sometimes* or *never* had time to teach source evaluation sufficiently (see Figure 1).

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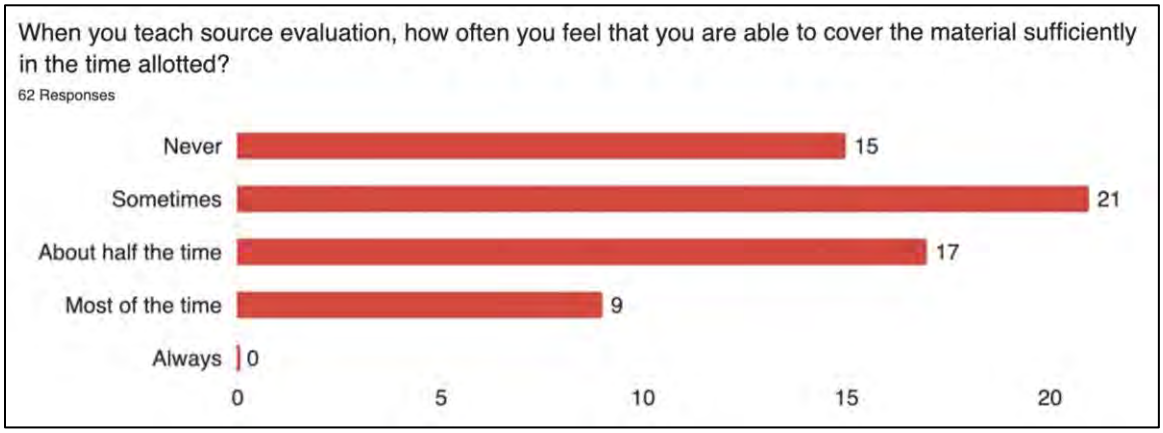
Figure 1: Librarian Feelings on the Sufficiency of Time Allotted to Teach Source Evaluation



Limitations

The author acknowledges several limitations of this study for which reasons it should be viewed as exploratory. Due to the varying nature of library guides within and across institutions, the content of the online guide may or may not correspond to the teaching practices of the librarians delivering source evaluation instruction in the classroom. A single guide was chosen from each institution, and the author may have failed to locate the most used or most representative guide. Similarly, purposive sampling was used to solicit participants for the survey based on the author's best judgment about whether a librarian was likely to teach source evaluation, and this sample may not be representative of the teaching practices across the profession.

It is important to note that this study was conducted just before the surge in capabilities and availability of AI text and image generation systems such as ChatGPT. It is possible that the guides and practices studied here may have evolved in response to challenges posed by AI to information literacy, as, for example, lateral reading is important in evaluating AI output (Hutchison, 2024), and metacognition is crucial to working with AI (Mason et al., 2023).

Results

Metacognition in Library Guides

Out of 49 library guides, 71% (n = 35) featured one or more sets of common evaluation criteria. The level of "featuring" varied: it could be a graphic, a link to a handout, or an in-depth explanation. The CRAAP Test was the most used set of evaluation criteria, featured

in 43% (*n* = 21) of guides. The next most used was SIFT, at 20% (*n* = 10), while four percent (*n* = 2) used the pre-SIFT Four Moves and a Habit. Eight percent (*n* = 4) of guides used CCOW, and eight percent (*n* = 4) used SMART. AAOCC, ASAP, 5W, and WWW were each used by four percent (*n* = 2), and RAPT and TRAAP were each used in a single guide (2%). Of these criteria sets, only CCOW, Four Moves and a Habit, and (sometimes) SIFT include a step devoted explicitly to self-reflection.

Instruction on practicing self-reflection was included in 37% (*n* = 18) of the guides. In 19% (*n* = 11) of guides, this instruction consisted of one to three lines of text. For instance, the *How to Spot Fake News* infographic from the International Federation of Library Associations and Institutions appeared on four guides and included the line: "Check your biases: Consider if your own beliefs could affect your judgement." An infographic about the Four Moves and a Habit system included three sentences on checking emotions. An infographic about fake news from onthemedia.org included the line, "Gut check. If a story makes you angry, it's probably designed that way." Only 14% (*n* = 8) of guides went into detail about self-reflection. Half of these were in the context of the CCOW set of criteria, which includes an explicit criterion, Worldview, to prompt self-reflection. The other four guides detailed self-reflection apart from any system of evaluation criteria: one included a significant section on confirmation bias, one a video about "click restraint," one a section on "rethinking thinking" and implicit bias, and one a section on biases and a link to Project Implicit.

Librarian Survey Results

The survey instrument asked librarians about their teaching practices surrounding seven source evaluation criteria: currency, accuracy, purpose, relevance, authority, lateral reading, and self-reflection. For each criterion, librarians were asked how often a step on that criterion was included in their instruction, how much time and emphasis were devoted to it relative to other criteria, and the librarian's opinion of its importance. Though self-reflection is the pertinent criterion to this study, the survey presented all criteria equally to avoid leading respondents by highlighting self-reflection as the focus of interest.

In the survey results, self-reflection was included in source evaluation instruction the least often of any of the criteria studied, with 25 librarians including it *sometimes* or *never* and 19 including it *always* or *most of the time*, compared to 20 *sometimes* or *never* and 27 *always* or *most of the time* for lateral reading, the next least included criterion (see Figure 2).

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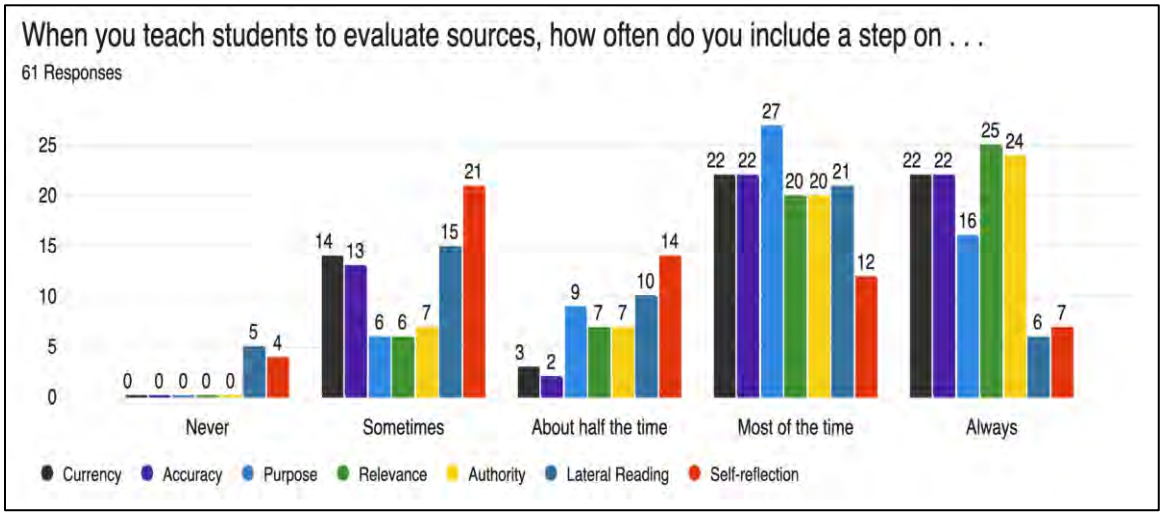
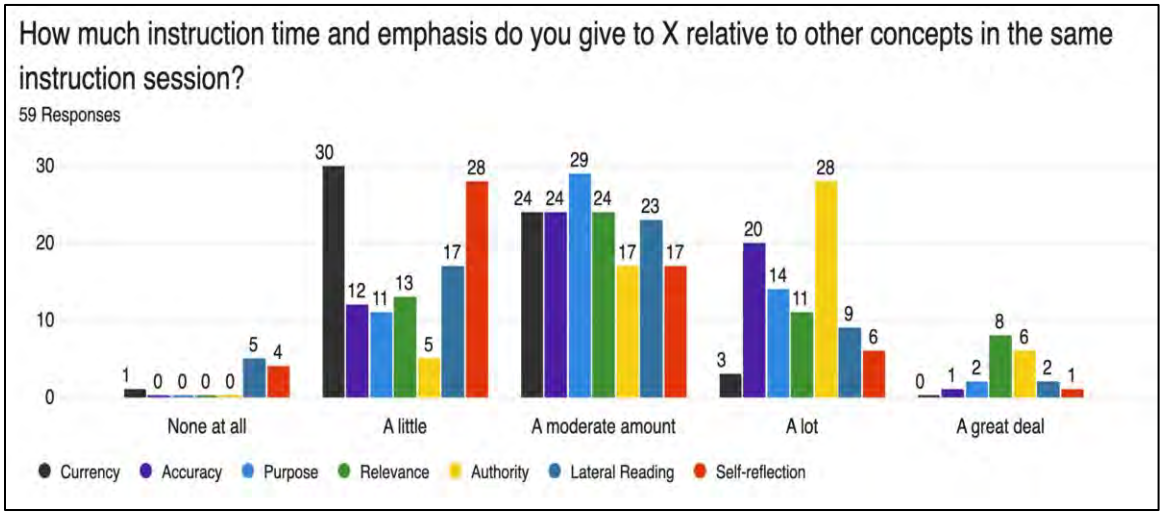
Figure 2: Frequency of the Inclusion of Seven Evaluative Criteria in Library Source Evaluation Instruction



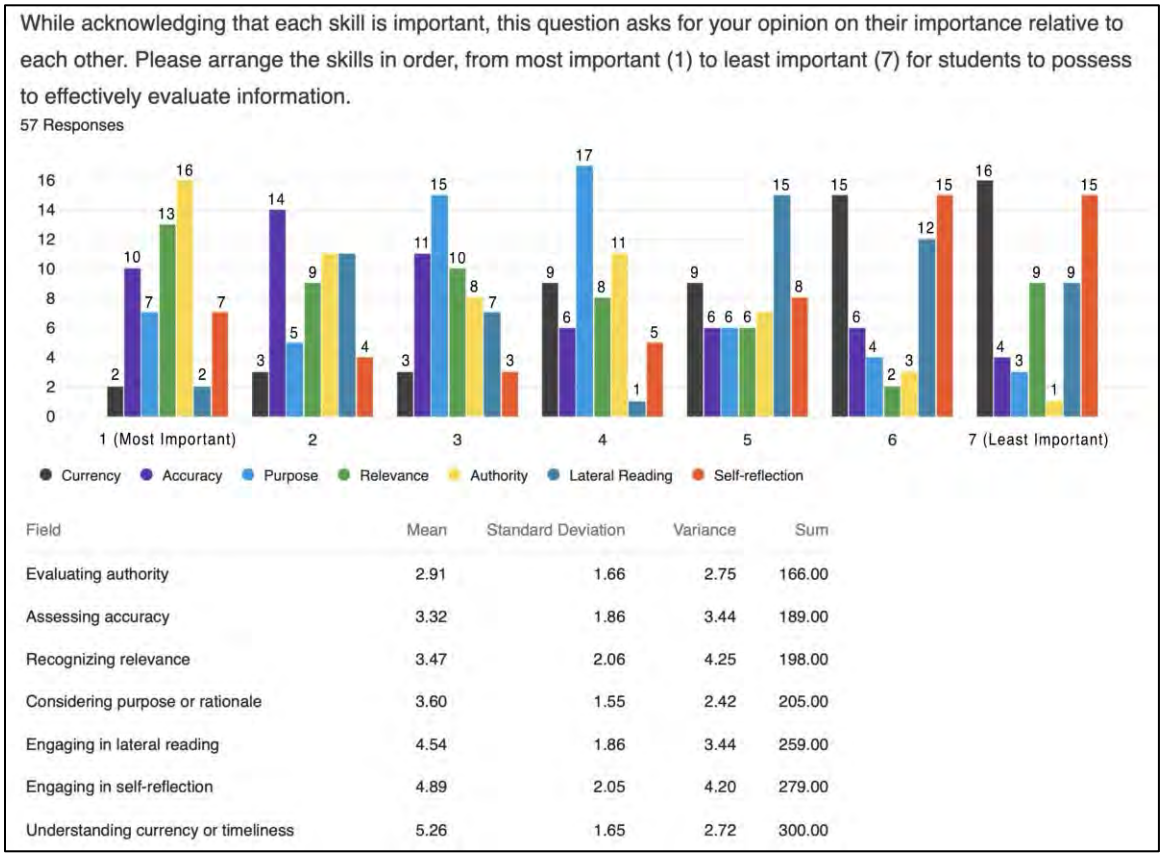
Similarly, self-reflection received the least time and emphasis relative to other criteria, with 32 librarians giving it *a little* or *none at all* and only seven giving it *a lot* or *a great deal* (see Figure 3).

Figure 3: Instruction Time Given Seven Evaluative Criteria in Library Source Evaluation Instruction



When librarians were asked to rank each criterion in order of relative importance, self-reflection was ranked second to last, above only currency (see Figure 4).

Figure 4: Librarian Ranking of Source Evaluation Skills in Order of Relative Importance



Field	Mean	Standard Deviation	Variance	Sum
Evaluating authority	2.91	1.66	2.75	166.00
Assessing accuracy	3.32	1.86	3.44	189.00
Recognizing relevance	3.47	2.06	4.25	198.00
Considering purpose or rationale	3.60	1.55	2.42	205.00
Engaging in lateral reading	4.54	1.86	3.44	259.00
Engaging in self-reflection	4.89	2.05	4.20	279.00
Understanding currency or timeliness	5.26	1.65	2.72	300.00

Open-Ended Responses

The survey included the open-ended question, "Do you have any other thoughts or observations which you would like to share?" Several themes emerged from the answers. Time is a significant factor in source evaluation instruction, with several librarians expressing frustration with the common one-shot format, especially when professors also expect technical database instruction in the same session. The time problem is exacerbated when teaching "more advanced" skills like lateral reading and self-reflection, which call for layered and incremental learning that is challenging to deliver in a single class session. Context and discipline are considered when librarians choose which criteria to cover or emphasize, with one librarian noting that Nursing requires prioritizing the currency of the information and another writing, "[A]ny of my responses [to the survey] would change immediately with a change in context." Because evaluation criteria interrelate and their importance varies by context, two librarians expressed doubt about the value of the task of hierarchically ranking evaluation criteria on the survey. Two librarians stated that the

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survey reminded them of self-reflection and that they would try to integrate it into their instruction going forward. Another wrote that their work teaching research "through an anti-racism lens" qualifies as teaching self-reflection.

Discussion

Only 14% of library source evaluation guides provided detailed coverage of self-reflection, which suggests that it is not commonly viewed or taught as an integral part of the source evaluation process. This is borne out by the survey, which found that self-reflection was one of only two criteria (with lateral reading) never taught by some librarians (Figure 2) and was the criterion taught the least out of all criteria studied when considering either how often a criterion was included or the amount of time and emphasis it received relative to other criteria when it is included (see Figures 2 and 3). When librarians were asked to rank each criterion in order of relative importance, more than half of the librarians surveyed ranked self-reflection as either the least or the second-least important skill for evaluating information out of the seven skills studied (see Figure 4).

The open-ended answers suggest reasons for this deficit. Some librarians were simply unaware of self-awareness as a potential source evaluation criterion. Although the survey was designed to avoid singling out self-reflection relative to other criteria, its inclusion among the other criteria prompted two librarians to consider it more directly: "I'm actually rethinking how little I've emphasized self-reflection and lateral reading, I might try to do that more!" and, "Until you posed the question about self-reflection, I had not given it much thought. … I now realize that this concept should be addressed in a much more intentional and substantial manner." This finding suggests that a partial explanation for the relative lack of attention paid to self-reflection may be a lack of exposure to the idea among librarians—unsurprising given its lack of prominence in the ACRL *Framework*. Self-reflection had the second largest standard deviation when ranked relative to other criteria: of 57 librarians responding to the ranking question, 26% ($n = 15$) each rated it as least important or second-least important, while 12% ($n = 7$) rated it as the most important criterion and 7% ($n = 4$) as second-most important, a large split relative to most other criteria (see Figure 4). This result suggests that librarians who are aware of or have directly considered self-reflection are more likely to think it is an important part of the source evaluation skillset.

Some librarians indicated in the open-ended questions that they were aware of self-reflection but found it challenging to include in the time allotted in a typical one-shot library instruction session. One-shot sessions were taught by 94% (n = 59) of respondents, while in-depth classroom instruction was taught by only 54% (n = 34) (see Table 2). Very nearly a quarter of librarians (24%, n = 15) indicated that they never feel they are able to cover the source evaluation material sufficiently in the time allotted. In comparison, 34% (n = 21) sometimes do, 27% (n = 17) do about half the time, and only 14% (n = 9) do most of the time. No librarians indicated that they always have enough time (see Figure 1).

This time challenge likely contributes to the use by many librarians of pre-existing sets of source evaluation criteria packaged in an acronym or mnemonic. When asked if they used such a set of source evaluation criteria, 74% (n = 46) of librarians indicated the affirmative. Such systems provide a useful organizing framework for teaching the complex topic of source evaluation in a compressed timeframe. However, of a total of seventeen sets of source evaluation criteria mentioned by respondents or featured in library guides, only CCOW, Four Moves and a Habit, and (sometimes) SIFT include a step for self-reflection. If time pressure causes librarians to rely on pre-existing sets of source evaluation criteria, self-reflection is unlikely to be included in their instruction.

Conclusion

If human behavior is a "blended response involving both instincts and reason" (Goel 2022a, p. 24), it follows that the metacognitive act of self-reflection is necessary for reason to be separated from and applied to one's instincts and the cognitive biases that arise from them and that this would hold true when attempting to reason about information, i.e., practice information literacy. Though the *Framework* briefly highlights the importance of metacognition and self-reflection, this research study provides evidence that librarians rarely teach self-reflection explicitly when teaching students to evaluate information. Possible reasons for this omission include a lack of awareness of the importance of self-reflection, the perception of metacognition as a vague or indefinite concept, the lack of a self-reflection step in common source evaluation criteria, and the lack of time in a typical library instruction session. Hopefully, this paper will raise awareness of this crucial piece of the information literacy puzzle and spark further research and discussion around finding actionable methods of teaching students to be self-aware as they evaluate information.

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Appendix: Survey Instrument

Source Evaluation Instructional Practices Among Librarians

You are being asked to voluntarily participate in a research study. The purpose of this study is to identify librarian teaching practices in source evaluation instruction.

The importance of information literacy in this Information Age cannot be overstated. We have access to more information, with less effort, than ever before in human history, but we are collectively no better than we have ever been at telling good information from bad, as the extreme division, conspiracy theorizing, and hatred proliferating online demonstrate. Librarians are at the front lines of the battle against misinformation, especially in teaching students how to evaluate sources of information. This survey seeks to understand how librarians engage in this crucial work.

You will not directly benefit from being in this research study.

Procedures

If you agree to participate, you will be asked to fill out a brief survey. It should take about 5-10 minutes.

Discomfort and Risks

There are no known risks for participating in this research.

Other Information

Your participation in this study is completely voluntary. If you choose to withdraw from participation, you may do so at any time. You may choose to withdraw the permission for the use of your information at a later date.

You will not be compensated for participating in this study.

Your information will be kept confidential. No identifying information will be collected unless you choose to provide it. Survey data will be stored securely in a password protected computer and online in a password-protected Qualtrics account.

Continuation of this survey signifies your informed consent to this research study.

https://pdxscholar.library.pdx.edu/comminfolit/vol18/iss2/2
DOI: 10.15760/comminfolit.2024.18.2.2

1. At what type of institution do you teach?
    - Vocational or technical college
    - 2-year or community college
    - 4-year public college
    - 4-year private college
    - Public university
    - Private university
2. In what setting(s) do you teach students to evaluate sources? (Check all that apply)
    - In-person reference interactions (students come to the reference desk)
    - Virtual reference interactions (chat reference, email, etc.)
    - Research consultations or one-on-one meetings with students, either virtual or in person
    - One-shot classroom instruction
      In-depth classroom instruction (librarian-taught courses, embedded courses, etc.)
    - Other (please specify)
3. When you teach students to evaluate sources, do you use an existing system of criteria, such as the CRAAP Test, SIFT, RADAR, 5W, or others?
    - Yes (please specify)
    - No
4. When you teach source evaluation, how often you feel that you are able to cover the material sufficiently in the time allotted?
    - Never
    - Sometimes
    - About half the time
    - Most of the time
    - Always
5. When you teach students to evaluate sources, how often do you include a step on evaluating the **currency or timeliness** of the information? Examples include but are not limited to: studying the information timeline, finding the date of publication, considering whether the topic is one in which information changes rapidly, etc.

- Never
- Sometimes
- About half the time
- Most of the time
- Always

6. How much instruction time and emphasis do you give to the **currency or timeliness** of information relative to other concepts in the same instruction session?

- None at all
- A little
- A moderate amount
- A lot
- A great deal

7. In your opinion, how important is it for students to be able to evaluate the **currency or timeliness** of information?

- Not at all important
- Slightly important
- Moderately important
- Very important
- Extremely important

8. When you teach students to evaluate sources, how often do you include a step on evaluating the **accuracy** of information? Examples include but are not limited to: triangulating the information with other sources, checking citations, etc.

- Never
- Sometimes
- About half the time
- Most of the time
- Always

9. How much instruction time and emphasis do you give to the **accuracy** of information relative to other concepts in the same instruction session?

https://pdxscholar.library.pdx.edu/comminfolit/vol18/iss2/2
DOI: 10.15760/comminfolit.2024.18.2.2

- None at all
- A little
- A moderate amount
- A lot
- A great deal

10. In your opinion, how important is it for students to be able to evaluate the **accuracy** of information?

- Not at all important
- Slightly important
- Moderately important
- Very important
- Extremely important

11. When you teach students to evaluate sources, how often do you include a step on evaluating the **purpose or rationale** behind the information? Examples include but are not limited to: asking why the information was created, identifying the author's bias, asking if a product or idea is being sold, etc.

- Never
- Sometimes
- About half the time
- Most of the time
- Always

12. How much instruction time and emphasis do you give to the **purpose or rationale** behind information relative to other concepts in the same instruction session?

- None at all
- A little
- A moderate amount
- A lot
- A great deal

13. In your opinion, how important is it for students to be able to evaluate the **purpose or rationale** behind information?

- Not at all important
- Slightly important
- Moderately important
- Very important
- Extremely important

14. When you teach students to evaluate sources, how often do you include a step on evaluating the **relevance to their research** of the information to their research topic or assignment? Examples include but are not limited to: asking if the information topic addresses the research question, questioning if its scope is too broad or too narrow, asking who the intended audience is, etc.

    - Never
    - Sometimes
    - About half the time
    - Most of the time
    - Always

15. How much instruction time and emphasis do you give to the **relevance to student research** of information relative to other concepts in the same instruction session?

    - None at all
    - A little
    - A moderate amount
    - A lot
    - A great deal

16. In your opinion, how important is it for students to be able to evaluate the **relevance to their research** of information?

    - Not at all important
    - Slightly important
    - Moderately important
    - Very important
    - Extremely important

https://pdxscholar.library.pdx.edu/comminfolit/vol18/iss2/2
DOI: 10.15760/comminfolit.2024.18.2.2

17. When you teach students to evaluate sources, how often do you include a step on evaluating the **authority** of information? Examples include but are not limited to: determining if the author is qualified to write on the topic and why, examining the author's credentials, looking at organizational affiliations, investigating the publisher, etc.
    - Never
    - Sometimes
    - About half the time
    - Most of the time
    - Always
18. How much instruction time and emphasis do you give to the **authority** of information relative to other concepts in the same instruction session?
    - None at all
    - A little
    - A moderate amount
    - A lot
    - A great deal
19. In your opinion, how important is it for students to be able to evaluate the **authority** of information?
    - Not at all important
    - Slightly important
    - Moderately important
    - Very important
    - Extremely important
20. When you teach students to evaluate sources, how often do you include a step on **self-reflection**? Examples include, "Check your bias," "Check your emotions," "Consider your worldview," "Be aware of your own thinking," or other methods of prompting students to look inward and reflect on how they interact with the source under evaluation. In other words, this step asks students to evaluate themselves, rather than the source.

- Never
- Sometimes
- About half the time
- Most of the time
- Always

21. How much instruction time and emphasis do you give to **self-reflection** relative to other concepts in the same instruction session?

- None at all
- A little
- A moderate amount
- A lot
- A great deal

22. In your opinion, how important is it for students to be able to **self-reflect** when they evaluate information??

- Not at all important
- Slightly important
- Moderately important
- Very important
- Extremely important

23. When you teach students to evaluate sources, how often do you include a step on **lateral reading**, that is, leaving the source under evaluation in order to investigate it more thoroughly via other web sites or sources? Examples include but are not limited to: triangulating by bringing other sources into the conversation, Googling the author to find their affiliations, seeing what other web sites have to say about the topic or author, etc.

- Never
- Sometimes
- About half the time
- Most of the time
- Always

https://pdxscholar.library.pdx.edu/comminfolit/vol18/iss2/2
DOI: 10.15760/comminfolit.2024.18.2.2

24. How much instruction time and emphasis do you give to **lateral reading** relative to other concepts in the same instruction session?
    - None at all
    - A little
    - A moderate amount
    - A lot
    - A great deal
25. In your opinion, how important is it for students to **lateral reading** as part of the process of evaluation?
    - Not at all important
    - Slightly important
    - Moderately important
    - Very important
    - Extremely important
26. While acknowledging that each skill is important, this question asks for your opinion on their importance relative to each other. Please arrange the skills in order, from **most important (1)** to **least important (7)** for students to possess to effectively evaluate information.
    - Engaging in self-reflection
    - Engaging in lateral reading
    - Evaluating authority
    - Considering purpose or rationale
    - Recognizing relevance
    - Assessing accuracy
    - Understanding currency or timeliness
27. Do you have any other thoughts or observations which you would like to share?