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Strategic Source Evaluation: Addressing the Container Conundrum

Alyssa Russo, Amy Jankowski, Stephanie Beene, Lori Townsend

Structured Abstract**Purpose:**

This paper argues that information containers provide valuable context clues that can help students make choices about how to engage with information content. The authors present a strategic approach to source evaluation rooted in format and authority threshold concepts.

Design:

The authors developed a source evaluation strategy with the objective of deciding whether or not to trust an information source. This strategy involves a set of cues to help readers mindfully engage with both the container and content of a given source.

Findings:

When conducting research, non-expert readers are asked to evaluate content in the absence of relevant subject expertise. The cues presented in this paper offer practical tactics informed by the concepts of authority (to help make an accessible judgment of intellectual trust) and format (to help make more informed decisions about the content they find in a browser).

Originality/Value:

While librarians have produced many evaluative models and checklists to help students evaluate information, this paper contributes a unique strategic approach grounded in two information

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2
3 literacy threshold concepts—format and authority—and enacted through a series of actions
4
5 drawn from website evaluation models, fact-checking, and metacognitive exercises.
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10 **Keywords:**

11 Academic libraries, Information literacy, source evaluation, threshold concepts, cognitive
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13 authority, information formats, genre theory, affect, fact-checking, Library Instruction West
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19 **Introduction**

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23 The task of source evaluation is complicated by the way readers discover and experience digital
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25 information. The authors, referred to as the Container Conundrum Group (CC Group), started thinking of
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27 information sources according to a conceptualization of “container or content,” where information is
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29 both what it intends to communicate (content), as well as the way in which it is packaged (containers)
30
31 and distributed through systems. The categories of container and content overlap, but it can be useful
32
33 to think of these categories separately because digital information disrupts the traditional form
34
35 information sources take, altering their containers substantially. For example, a physical book's
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37 container is its physical and intellectual structure, its binding, covers, paper, font, table of contents,
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39 index, chapters, and so on. The content of the book is the ideas being communicated and the intention
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41 or purpose behind its creation. That same book in digital form is harder to recognize.
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48 In “Talking About Information Literacy: The Mediating Role of Discourse in a College Writing Classroom,”
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50 Holliday and Rogers (2013) observed classroom instruction in a college writing course and found that:
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3 the words used in classroom discourse tended to emphasize sources as containers, rather than
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5 the information itself. The term 'information,' rather than sources, was rarely used in classroom
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7 discussion or assignment descriptions. (Holliday and Rogers, 2013, p. 261)
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11
12 Holliday and Rogers conclude that thinking and speaking about information sources as containers or
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14 objects can serve as a barrier to learning from those sources. Similarly, Margolin and Hayden developed
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16 their Research Toolkit to highlight the importance of reading and using sources, even if "the object is to
17
18 skim rather than to fully read" (2015, p. 608). Yes, librarians want students to engage with the
19
20 information found in sources. However, the easy online availability of all types of information has
21
22 caused librarians and other educators to shift the discourse to source evaluation. In the relatively recent
23
24 past, students would find most information in the controlled environment of the library, with traditional
25
26 print publication processes and library selection acting as quality filters. The convenience of free-range
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28 information accessed through a web browser increased a potentially difficult step for readers—that of
29
30 judging whether or not a source is good enough to learn from.
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37 As a result, librarians and other instructors have produced a bewildering variety of evaluative models
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39 and checklists intended to help students tasked with evaluating the accuracy and credibility of
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41 information in the absence of personal expertise about its content. The CC Group argues that librarian
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43 efforts are best focused on the context surrounding the information, which includes the information
44
45 need, the organizing system that delivers the information, and the container. The container
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47 communicates valuable information and can assist students with source evaluation. The Container
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50 Conundrum is this juxtaposition between librarians' intention for students to engage with the content of
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52 information sources and the reality that attention to the container and wider context is necessary when
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54 judging whether a source is trustworthy.
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5 The CC Group proposes to address the Container Conundrum with a source evaluation strategy built on
6
7 a two pronged approach: a theoretical foundation composed of two information literacy threshold
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9 concepts—format and authority—enacted through a series of evaluative tactics taken from traditional
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11 fact-checking and website evaluation models. This approach attempts to provide readers concrete,
12
13 actionable guidance when deciding whether or not to trust a source enough to engage with the content.
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18 19 **Foundations**

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23 The CC Group explored three core foundations in the development of a source evaluation strategy. First,
24
25 an environmental scan of previously developed source evaluation models provided a better
26
27 understanding of how these models fall short. In the process, many specific components or evaluative
28
29 tactics in existing models were found to be valuable; but for the most part, the components were not
30
31 well explained or situated within a clear overarching strategy. Second, two theoretical concepts—
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33 authority (rooted in cognitive authority) and format (drawn from genre theory)—provided the
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35 grounding to develop a context-informed source evaluation strategy that engages with both the content
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37 and container of a source.
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43 *Existing Evaluative Models and Checklists*

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48 Information evaluation checklists and tools like the CRAAP test (Meriam Library, 2010) attempt to assist
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50 students with the hard work of assessing whether or not to use a piece of information. Even so:
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3 As students go down the list, they put their source into one of two boxes... While that kind of
4
5 simplification might help [in] a one-shot [instruction session], it's not going to apply in an
6
7 authentic information seeking situation.... Instead of this approach, we need to wade into the
8
9 messiness. (Seeber, 2017, paragraph 7)
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14 Many of these models have both yes or no checkboxes as well as lengthy lists of open-ended questions,
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16 which can sometimes feel impossible to answer, even for subject experts. Checklists may unintentionally
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18 compound feelings of confusion or frustration associated with research by asking questions that seem
19
20 unanswerable without subject expertise.
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25 An environmental scan of around 25 evaluative models, frameworks, and checklists (see Appendix)
26
27 revealed valuable tips and techniques but their deployment is problematic. Checklists are often
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29 structured into mnemonic acronyms that are easily memorized (e.g., CRAAP, CARBS, CARDIO, RADAR,
30
31 RADCAB, etc.), but an unfortunate consequence is that students are left without a sense of what is
32
33 hardest, easiest, or most important to evaluate. Students move down the checklists and may expect to
34
35 apply the same cognitive effort to each evaluative task, though some questions are more quickly
36
37 answered than others. For example, currency is easy to answer but accuracy is very difficult. Some of
38
39 the most common questions also arguably mislead students to reject sources outright. Currency can
40
41 lead students to make poor judgments about an information source because whether or not a source
42
43 has been published within the last ten years might not be the best determining factor for trusting it. If a
44
45 student is conducting research on the use of the term "hysteria" within the field of psychology, a source
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47 from 1895 will be essential reading because that is when the term found currency within literature and
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49 practice as will a source from the 1980s when the term was intentionally discarded in favor of
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51 something else. One notable exception is the RADAR framework (Mandalios, 2013), which directs
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3 students to concrete tools as well as conceptual framings, short questions, and explanations.
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8 Checklists can feel good upon completion; there's a sense of accomplishment. Nonetheless, the
9
10 structure of most source evaluation checklists relies on prior knowledge that readers may not possess.
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12 Checklists also tend to treat information sources as worlds unto themselves, rather than recognizable
13
14 formats with regular patterns connected to recurring situations that can be considered before
15
16 interacting with the content of a source. Finally, it is difficult to discern how the use of such checklists
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18 develops the skills and transferable knowledge necessary for more advanced evaluative tasks.
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23 *Authority and Cognitive Authority* 24 25 26 27

28 Students are often tasked with identifying evidence of authority in information products. Through a
29
30 series of questions (e.g., who is the author? what are their credentials? is the publication reputable?),
31
32 students evaluate markers of authority without having context for why they are asking the questions
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34 and what the answers really mean. Students often struggle to find answers, and even when they do,
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36 those answers don't lead to an understanding of the larger processes and communities that support the
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38 creation and use of information products. The threshold concept for authority can be defined as:
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43 a form of intellectual trust granted by an individual or community to an information source. It is
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45 both constructed, built through expertise and persistent reliability, and contextual, limited to
46
47 certain knowledge domains or situations and shaped by community norms. (Hofer et al., 2019,
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49 p. 58)
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3 This approach is grounded in the related concept of cognitive authority, developed by Wilson (1983),
4 which shifts the focus from seeking out 'who is an authority' (suggesting there is always a right or wrong
5 answer) to asking 'who are my authorities' (emphasizing individual purpose and context).
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12 Cognitive authority recognizes that people construct knowledge in two ways: 1) based on direct first-
13 hand experience and 2) based indirectly on information learned second-hand from other people or
14 information sources. People learn a limited amount from their own personal experience in the world,
15 but any time someone reads a book, listens to a podcast, or receives advice from a friend, the
16 knowledge internalized is second-hand. When readers don't possess the subject expertise to make good
17 judgments about a source based on the content alone, they can look to cognitive authorities. Cognitive
18 authority approaches the evaluation of sources from the perspective of intellectual trust, informed by
19 the competence and expertise of the creator and filtered through the context of the reader. Using this
20 approach enables librarians to reframe the way they talk about authority with students, transforming it
21 into a more reflective metacognitive process that centers the student and situates sources within their
22 broader disciplinary, professional, and personal information landscapes.
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39 In recent years, library and information science scholars have problematized the limitations of cognitive
40 authority, including that experts and novices approach cognitive authority evaluations differently
41 (Meszaros, 2010). The theory's success also relies on the reader's acknowledgement that some authors
42 or creators have more authority than others (Badke, 2015), and an assessment of cognitive authority
43 may be influenced by emotional reactions or a personal ideology that runs counter to that in academia
44 (Bluemle, 2018). These criticisms broadly reflect the inevitable subjective qualities of source evaluation.
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52 But the CC Group proposes that librarians can still use cognitive authority to help students make an
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3 accessible judgment of intellectual trust rooted in evidence of the author or creator's authority among
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5 their disciplinary peers.
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10 *Information Format*

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14 In approaching the Container Conundrum, the threshold concept of information formats is a helpful
15
16 organizing principle for evaluating sources. Formats are typified documents that librarians often
17
18 organize and make accessible. Genre theory, which originates in the field of rhetoric, can inform a digital
19
20 understanding of information formats. According to Miller's (1984) seminal article, genre can be said to
21
22 represent "typified rhetorical action" (p. 151). Later, Yates (1992) defines it thus:
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28 Genres (e.g., the memo, the proposal, and the meeting) are typified communicative actions
29
30 characterized by similar substance and form and taken in response to recurrent situations. (p.
31
32 299)
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37 These definitions recast formats in a way that includes not just a physical manifestation of information,
38
39 but also their purpose and content. They also confirm that digital information still has a shape (Dillon,
40
41 2008). Hofer, Lin Hanick, and Townsend (2019) offer a genre-informed definition of format:
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46 Each instance of a format shares a common intellectual and physical structure with others like it,
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48 and is intentionally produced to support or effect action. Intellectual structure refers to the
49
50 textual and visual content of a format. Physical structure refers to the organization, design, and
51
52 medium of a format. These categories are not strict and may overlap. (p. 82)
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3 Further, individual instances of a format can be analyzed and understood through the categories of
4 purpose, process, and product. Purpose describes why an instance of an information format exists and
5
6 who made it; process describes how it gets created and distributed into the world, including quality
7
8 control or review processes; and product describes the final form this information takes (Hofer et al.,
9
10 2019, p. 83). For example, a visit to a restaurant will involve interaction with two common formats: the
11
12 receipt and the menu. Both formats have a list of food or drink items and prices, but almost every
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14 reader can easily tell the difference between the two formats because the purpose of each format is
15
16 well-known. Readers can probably even describe how each of these physical items is likely to exist in the
17
18 world: how the receipt paper feels, what the machine that prints out the receipt looks like, how a large
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20 menu feels in their hands, and what it's likely to be made of. These formats are commonly found in both
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22 print and digital forms—which helps readers make sense of them across those two mediums.
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30 While there are technical differences between definitions of genre and format, the important
31
32 disciplinary distinction is one of perspective. Non-librarians are most interested in creating and using
33
34 disciplinary-specific and professional formats. Librarians, approaching from the discipline of information
35
36 science, organize and provide access to information that is often shaped into formats of various kinds.
37
38 Librarians typically encounter information formats once they are completed and therefore help students
39
40 make sense of the product when the purpose and process may be unclear (Hofer et al., 2019, p. 88).

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42 Thinking of information in terms of formats—with common patterns and structures that can be
43
44 recognized—can help students make more informed decisions about the content they find in a browser.
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50 In the context of container and content, the concept of format helps clarify the nature of digital
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52 information containers. Containers still exist in the digital realm, but the medium is often a website and
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54 the traditional indicators have morphed from title pages and table of contents to home pages and
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3 menus. The purposes and processes of creation are often more obscure with online information than
4
5 with traditionally produced formats. Additionally, because the web is a recent invention, new formats
6
7 have proliferated in recent years, though this process may stabilize as some new formats persist and
8
9 others fade (Dillon, 2008, p. 19). The web also allows wide distribution of content without the review
10
11 processes built into traditionally published information formats, whether peer-review or editorial. Thus,
12
13 it may seem that the container no longer exists or has collapsed (Connaway, 2018). Even so, the
14
15 container remains and is still useful in the context of information evaluation.
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21 **Practical Framework for the Source Evaluation Strategy**

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25 In addition to its theoretical foundations of authority and format, the CC Group looked to affective
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27 components of information evaluation and fact-checking tactics to help develop a source evaluation
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29 strategy. These elements provided a foundation for a range of evaluative behaviors based on a variety of
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31 conceptual prompts.
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36 *Affect, Mindfulness, and Metacognition*

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41 It is impossible to evaluate information in a perfectly neutral vacuum devoid of emotion. Sweet,
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43 Swanson, and Shermak (2019) explain that information is not neutral and that the human brain is not a
44
45 logic machine; rather, information is personal, it's emotionally charged, and the human brain relies on
46
47 heuristic short cuts over logic. Therefore, considering concepts bundled into metaliteracy (Jacobson and
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49 Mackey, 2017) can be helpful, specifically: affect, mindfulness, and metacognition.
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3 Affective learning is broadly concerned with feelings, emotions, and attitudes tied up in the learning
4 process. Prior knowledge, including personal values and beliefs, is closely tied to affective learning
5 because it impacts a reader's willingness to receive new ideas. New or conflicting ideas are a tough sell,
6 and librarians have long been grappling with this phenomenon as it relates to student research. In her
7 seminal work, Kuhlthau (1991) discusses personal construct theory, or the ways individuals process
8 information to construct meaning, explaining, "The disruption caused by the new ideas may become so
9 threatening that the new information is discarded and the construction abandoned" (p. 362).
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21 The CC Group also considered mindfulness, which Langer (2016) explains:

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25 the concept of mindfulness revolves around certain psychological states that are really different
26 versions of the same thing: (1) openness or novelty; (2) alertness to distinction; (3) sensitivity to
27 contexts; (4) implicit, if not explicit, awareness of multiple perspectives; and (5) orientation in
28 the present....[which] make us receptive to changes in an ongoing situation. (p. 22-23)
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37 As an example, traveling abroad and experiencing culture shock ushers in acute mindfulness. Suddenly,
38 ordering food, using public transportation, and engaging in social behavior in public, activities that a
39 traveler might mindlessly run through back home, give way to critical awareness. Langer (2016) explains,
40 "When we first learn a skill, we necessarily attend to each individual step. If we overlearn the drill, we
41 essentially lose sight of the individual components and we find it hard to make small adjustments" (p.
42 13). How might librarians cultivate mindfulness in source evaluation where students tend to make
43 judgments on autopilot, a behavior that staunches the benefits of uncertainty and curiosity?
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3 Finally, metacognition, commonly described as thinking about one's thinking, refers to the processes
4 used to plan, monitor, and assess one's own understanding and performance (Livingston, 2003).

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6
7 Metacognitive practices allow for mindfulness by helping students articulate working definitions and
8 allowing room for alternatives. Wilson (1983) explains, "We pick up cognitive authorities along the way
9 through life, not searching for them but accidentally happening on them" (p. 138). The construction of
10 cognitive authorities is a mostly invisible process; therefore, it is beneficial for students to reflect on who
11 their authorities are and to be able to justify how they arrived at those decisions. Because of these
12 beneficial mindsets, many of the tactics in the proposed source evaluation strategy encourage pausing
13 and performing a quick self-check.
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25 *Fact-Checking as an Evaluative Apparatus*

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30 The digital information environment has produced multiple and often competing perspectives of the
31 truth, challenging historical conceptions of objectivity (Nerone, 2011). As objectivity has become more
32 relative in contemporary life, fact-checking has emerged as a form of journalism that relies on:
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39 subtle judgments involved in finding reliable experts and data in assessing the intent or subtext
40 behind a piece of partisan rhetoric, and thus in weighing claims not only for technical accuracy
41 but also for their meaning in the context of a particular political debate. (Graves, 2016, p. 114)
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48 Fact-checkers are not subject experts. We suggest that they are professional skeptics. Many have
49 written about the nuanced art of verification (Borel, 2016; Buttry, 2014; Graves, 2016; Maras, 2013;
50 Navasky and Cornog, 2012). Fact-checkers are concerned with contextual corrections, communicating
51 degrees of accuracy, and finding multiple voices to triangulate the truth (Graves, 2017, p. 527). This type
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3 of work includes attention to factual omissions, exaggerations, cherry-picking, ignoring inconvenient
4 aspects of information, and misappropriating sources (Amazeen, 2015, p. 15).
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10 In the Container Conundrum, some fact-checking techniques focus on contextual clues that can help
11 students begin to engage with the information they are evaluating. Wineburg and McGrew (2017)
12 compared fact-checkers, historians, and college freshmen's evaluation of websites. Fact-checkers
13 employed a standout technique: taking bearings by reading laterally, which requires leaving the source
14 in order to verify and contextualize the information. This move allowed fact-checkers to quickly learn
15 about the organization's political leanings, funding, and reputation. Caulfield (2017) explains another
16 technique, "going upstream," which is used to get to the root of a claim. The idea is to work backwards
17 to the original source. If a claim is cited in a secondary source, this requires the checker to keep working
18 further upstream, tracing a claim back to its origins. Finally, Graves (2016, 2017) describes tracing false
19 claims, where checkers construct the source's trajectory and observe how it traveled across the internet
20 in order to contextualize and assess where a story has been as well as where it has not been.
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37 Fact-checking is a quality control mechanism with enticing techniques that librarians are keen to adopt
38 in the search for practical source evaluation guidelines. Yet fact-checking is not the ultimate solution for
39 *student* source evaluation. Professional fact-checkers delve deep into content, pull the story apart, and
40 put it back together, using tacit knowledge to execute moves which are not appropriate for student
41 researchers. Nevertheless, a few fact-checking moves demonstrate that, even without subject expertise,
42 contextual indicators can reveal a lot about content and credibility.
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52 **Cues as a Strategy for Contextual Source Evaluation**

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3 The following set of cues outlines a mindful strategy for source evaluation, considering the central
4 question, “How much trust do I grant this source?” As defined by *Merriam Webster* (2019), a cue is “a
5 signal... to begin a specific speech or action” and is used here to indicate a recommended evaluative
6 action. The strategy uses the threshold concepts of authority and format, as explained by the cues, to
7 engage with both the container and content of a given source. Each cue is accompanied by one or more
8 actionable tactics, informed by affective and metacognitive approaches and fact-checking practices,
9 which help execute the strategy in the moment as readers engage with the source. Successfully
10 evaluating sources in the internet era requires forethought, planning, and nimble thinking. Not all cues
11 will work with all sources, and sometimes one cue or tactic will not yield particularly helpful information,
12 requiring the reader to progress to another cue or tactic.
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27 Each cue is formatted as a question and structured with a brief introduction including the following
28 information:
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- 30 ○ Strength: strength of the approach
 - 31 ○ Effort: amount of effort it will take to investigate the cue
 - 32 ○ Explanation: why the approach works
 - 33 ○ Tactics: basic directions for how to investigate the cue
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43 **Cue:** *Why am I looking for information?*

44 **Strength:** Strong

45 **Effort:** Easy to Moderate

46 **Explanation:** This is the first cue because it usually precedes the work of source evaluation. Readers are
47 looking for information for a variety of reasons and that context influences the kinds of information
48 sources that qualify as appropriate evidence. Evidence needed to make a decision about purchasing a
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3 car, for instance, is different than that required to make a scholarly argument. Reviewing the context of
4 the information need allows the reader to choose appropriate systems for discovering information and
5 to select the best cues for source evaluation once sources are located. Additionally, reflecting on the
6 information need allows readers to make judgments about relevance throughout the evaluative work
7 when reviewing sources, even before engaging with the content of the source meaningfully.
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14 **Tactics:** Pause and reflect; Review the requirements of the task at hand; Seek additional information
15 about the information task if the requirements are unclear
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21 This cue is preparation for source evaluation. It situates the work of source evaluation in the context of
22 the information need at hand, rather than an abstract search for “quality” sources. It acknowledges that
23 different information needs require different types of evidence and different levels of rigor. Although
24 the approach outlined in this paper centers the container and the question of trusting a source, the CC
25 Group acknowledges that questions of relevance and quality are heavily influenced by the wider context
26 of the information need.
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37 The tactics for this cue involve reflection about the information need. This reflection includes a check to
38 make sure that the requirements of the need are understood, especially if the need arises from
39 circumstances which are externally driven, such as an assignment for school or work, rather than
40 internally driven, such as curiosity. This moment may reveal a lack of clarity about the information need
41 which can be addressed before beginning the search for information and the accompanying source
42 evaluation.
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52 **Cue:** *How did this come into my life?*
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54 **Strength:** Medium to strong
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3 **Effort:** Easy to challenging
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5 **Explanation:** Building a habit of using this strategy is useful because information doesn't usually zip into
6 a reader's life by accident. Using this cue, readers reflect on the steps they took to access the
7 information and consider where a source is from as well as where it has been. Readers should note that
8 this cue will vary greatly depending on the context of each information need. For instance, it's easy to
9 accept a recommendation from a trusted expert, while it takes more effort to develop a new search
10 strategy or verification technique. Additionally, an understanding of how information flows through
11 organizing systems requires concerted effort but can lead to powerful evaluation skills.
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21 **Tactics:** Pause to acknowledge and check gut feelings about the initial appeal of a source; Develop or
22 reflect on a search strategy; Go upstream; Consider credible recommendations
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27 If the cue *How did this come into my life?* sounds like it's out of an advice column or a love song, it's
28 because the strategy involves reflection about notions of serendipity and intent during the information
29 seeking process. If a source looks hopeful at first glance, take a pause. This small tactic helps readers
30 acknowledge and check gut feelings about the appeal. Is it simply that it's the first result in a search and
31 seems relevant enough? Was it recommended by a trusted friend, family member, or professor?
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41 Recommendations are wonderful if they come from relevant cognitive authorities. Scholars regularly use
42 the citations from scholarly journal articles and books as recommendations. Even a sketchy-seeming
43 website recommended to a student by their professor is probably a good source—it may document
44 something illegal where information is hard to find. The key to using this tactic is ensuring that the
45 recommender is someone who can be trusted to give good information in the specific context of an
46 information need.
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3 Additionally, readers can benefit from being mindful of the actions they took to get to the information at
4
5 hand. There is overlap between this tactic and the ACRL Frame¹ “Searching as Strategic Exploration,”
6
7 which considers scope, identifies major players in a conversation, and matches information needs to
8
9 appropriate search tools, all while maintaining a flexible attitude during the search process (American
10
11 Library Association, 2015). These knowledge practices and dispositions may be considered as part of a
12
13 quick mental retracing of a search strategy. Readers might consider: Why is it different to search in an
14
15 academic library database compared to Google? What keywords were used to perform a search?
16
17 Reflecting on a search strategy may also reveal how organizing systems collect and distribute
18
19 information.
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26 Readers can also adopt tactics from fact-checking, such as tracing a source’s trajectory back to its origin
27
28 to make inferences about credibility. The spread of information is useful in contextualizing and assessing
29
30 the value of where it has been as well as noticing where it hasn’t been. In other words, has the
31
32 information passed through a cognitive authority whose expertise and persistent reliability have
33
34 previously established intellectual trust? For example, a story has circulated in partisan, personal blogs
35
36 but a mainstream news outlet like CNN hasn’t reported on it at all. However, fact-checking can be
37
38 difficult to do because there are many variables involved in each case. For example, an attribution that
39
40 isn’t hyperlinked can be verified with a normal web search while an orphan image will be better suited
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42 with a reverse image search. Additionally, it’s easy to unwittingly shift from fact-checking context to
43
44 fact-checking content claims, which falls outside the scope of this strategy. Professionals easily spend
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46 many hours and use a variety of tools, like Google translate or advanced search filtering tools, to retrace
47
48 the spread of information and find the original source of a claim (Graves 2017, p. 525). Therefore, in the
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54 ¹ The ACRL Board adopted the Framework for Information Literacy for Higher Education on January 11, 2016. The
55 Framework supports librarians in teaching information literacy concepts. It is comprised of six interrelated big
56 ideas in information literacy conceptualized as frames.
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3 short-term, readers might hone their awareness of primary versus secondary sources. Ultimately,
4
5 readers should be aware that nuanced fact-checking skills take time to develop, and in the absence of
6
7 those skills, readers should move on to another cue.
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12 **Cue:** *Is it easy to investigate?*
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14 **Strength:** Medium to strong
15

16 **Effort:** Easy to challenging
17

18 **Explanation:** Transparency is the quality of being clear and easily perceivable, and the *Is it easy to*
19 *investigate?* cue leverages that quality to establish trust between a reader and a source. When a source
20
21 is transparent, a reader can use the container (along with some specific content) to look into its purpose
22
23 and process without having been on the creation side of the information's production. Transparency
24
25 manifests in a variety of ways, including the organization and clear labeling expected from particular
26
27 formats. Additionally, enough details about sources referenced are clearly available, such as with a
28
29 bibliography or hyperlinks. A quick trip to the About page should clearly indicate intentions for putting
30
31 the information out into the world, perhaps explaining goals (e.g., through a mission statement or
32
33 personal narrative), datasets, funding, or a code of ethics (common in journalism). The more that other
34
35 sources corroborate purpose and process claims, the more readers will be able to trust the source.
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39 **Tactics:** Note whether it's easy to identify the format; Check the About page for purpose and process
40
41 information; Check a few referenced sources; Perform a few web searches to verify accuracy.
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47 Schnackenberg and Tomlinson (2016) define transparency as "the perceived quality of intentionally
48
49 shared information from a sender" (p. 1788). Applied to source evaluation, transparency depends on the
50
51 disclosure, clarity, and accuracy of a source's purpose and process via the product. Disclosure requires
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53 that purpose and process information are visible or accessible from within the product itself. Clarity
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3 requires that the disclosed information is coherent and may manifest as content (such as with language)
4 or through format (such as with labels and menus). Finally, accuracy requires verification of purpose and
5 process claims. Summing up the strength of transparency, a professional fact-checker noted, “when you
6 publish links to the original report, when someone else can follow your reporting and really take it apart,
7 it’s more scientific. It’s not perfectly scientific, but anyone can verify it” (Graves, 2016a, p. 125).
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16 Transparency is best achieved when information comes packaged in an established information format.
17 Patterns within the physical structure of a source visually cue a reader to recognize a format (see: *Do I*
18 *know what this is?*). If readers cannot recognize a stripped-down digital format, it is difficult to have
19 expectations about the content and purpose, and that raises skepticism and anxiety about the workload
20 or skills required to make a decision about trustworthiness. Therefore, a dump of intentionally shared
21 information with poor organization does not allow for transparency, whereas a source that follows
22 established format conventions enables the reader to easily locate purpose and process information and
23 verify claims.
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37 If an organization is not upfront about their purpose, or if they strongly emphasize neutrality on a topic,
38 readers should take notice and dig deeper with some lateral reading. In the case of the website for the
39 Center for Immigration (CIS), which claims to be a neutral nonprofit devoted to research, a Google
40 search quickly exposes the political leanings and agenda of the organization. Within the first few Google
41 results, the Southern Poverty Law Center and Politico weigh in with regards to classifying the CIS as a
42 hate group. The CIS made a claim about their neutrality, but further investigation reveals that claim to
43 be false. Using this cue, readers aren’t judging CIS content, but they are likely recalculating the level of
44 trust initially extended to the source due to the fact that the CIS hasn’t been transparent about their
45 bias.
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5 This cue's limitation is that it favors sources with widespread reputations and will overlook credible
6
7 sources if the creator has not amassed enough cognitive authority for a quick Google search to turn up
8
9 other sources connected to or discussing the merits of the source in question.
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14 **Cue:** *Do I know what this is?*
15

16 **Strength:** Strong; Weak if asking "How does it look?" instead
17

18 **Effort:** Moderate
19

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21 **Explanation:** The crux of this cue is recognizing that a great deal of information is delivered as an
22
23 instance of a particular format. This recognition shifts the initial visual evaluation of a source from "How
24
25 does it look?" to "Do I know what this is?" If readers are already familiar with a given format, they will
26
27 quickly recognize a number of indicators that help them identify the format of an information source.
28
29 For example, a scientific research article in a scholarly journal usually has an Introduction, Methods,
30
31 Results, and Discussion section as well as other elements. When readers make a quick visual evaluation
32
33 and recognize an information format, they can judge the information the source is communicating more
34
35 effectively. For instance, readers may recognize a forum thread, like *Reddit*, or an advice column, like
36
37 *Ask-A-Manager*, and adjust their expectations accordingly. However, this quick visual evaluation can
38
39 mislead readers if they focus on subjective judgments of a source's appearance, as in "this website looks
40
41 professional," rather than concrete indicators of known formats.
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45 **Tactics:** Pause; Look for obvious labels to indicate format; Look for other indications of a known format;
46
47 Avoid judgments based on visual features that do not connect to format; If no format can be discerned,
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49 move on to another cue.
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3 Everyone uses a form of this strategy: a quick visual evaluation of surface indicators. It's often deployed
4 before conscious thought begins. When an information source provokes an immediate feeling or a snap
5 judgment, readers are often relying on the overall appearance of a source. This cue is the origin of
6 commonly heard reasoning about online information such as "it looks professional." In many cases, a
7 quick visual evaluation is all the reader requires before deciding to use the content. In the absence of
8 knowledge about formats, this can be a weak strategy resulting in poor outcomes. When deployed
9 properly, however, it can help situate the information found in a website by identifying the purpose and
10 process. For example, when confronted with a web page titled "The 35 Greatest Speeches in History,"
11 librarians take a quick glance around before engaging with content beyond the title. They notice what
12 kind of information format it is—a personal blog, a newspaper, an advocacy organization, or something
13 else. They also notice if the format is difficult to identify and become a bit suspicious. Suspicion then
14 provokes a closer examination. These visual indicators are powerful because readers often don't process
15 them consciously and may only become aware of doing so if something seems wrong.
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34 Given the relatively automatic nature of this cue, what matters is not developing the habit of using it,
35 but becoming aware of it, noticing when such automatic judgments are made, and developing
36 knowledge of formats to strengthen those judgments. Learning to pause and recognize when the
37 decision has already been made is the first tactic. Secondary tactics, after the initial pause, might start
38 with looking for obvious labels indicating format—such as "Research Article," "Review," "Opinion," or
39 "Commentary." Format indicators beyond obvious labels might also help the reader discern a purpose
40 for a given piece of information, through conducting what might be termed a brief format analysis.

41 These indicators could include dates, lists of references or sources cited, volume/number information,
42 About pages, layout, author credentials or affiliations—anything that lets the reader know how they
43 might categorize this source or that gives concrete information about the purpose and process of the
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3 source. Classifying a source as a known format is a more advanced tactic and becomes easier with
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5 practice and experience.
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10 The limitations of this cue include its weakness when deployed without an awareness of format and the
11 reality that some information found online doesn't conform to the standards of any one format. Though
12 recognizing that a piece of online information isn't a recognizable format is potentially a meaningful
13
14 clue.
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21 **Cue:** *Is this reviewed?*

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23 **Strength:** Medium to strong

24
25 **Effort:** Easy to challenging

26
27 **Explanation:** Review is a quality control process through which a creator's work is vetted by a group of
28 experts prior to dissemination. Some common examples include academic peer review (e.g., scholarly
29 journals) and editorial review (e.g., books, newspapers, magazines). With more information transitioning
30 online, determining whether a work has undergone review can be difficult. In these instances, evaluative
31 effort is shifted onto readers. Over time, readers will develop familiarity with certain formats and
32 publishers, recognizing when the content they encounter is the product of a probable review process
33 (e.g., an original research article).
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43 **Tactics:** Look for labels, such as "peer-reviewed"; Look up a source in a search engine, library catalog, or
44 in reference sources; Check for an About page.
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50 Traditionally, certain types of information sources were reviewed through publishing standards and
51 editorial processes prior to dissemination. One means to recognize authors as authorities in their fields
52 is through sustained, discursive practices in reviewed publications whereby a group of experts review
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3 their peers' work and acknowledge that they have disciplinary expertise, competence, and credibility.

4
5 Review processes are not foolproof methods for quality assurance, however, as they do not necessarily
6
7 resolve issues of bias, transparency, or representation within communities (Badke, 2015; Meola, 2004).
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12 Determining which information is reviewed has become more difficult with the online dissemination of
13
14 non-reviewed and reviewed content appearing alongside sources that are in some review stage or
15
16 process but not readily apparent. Some information sources unique to a digital format are typically non-
17
18 reviewed (e.g., personal web pages or blogs). Some online information falls in between reviewed/non-
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20 reviewed, such as government documents, grey literature, law reviews, or pre-published items in some
21
22 stage of the review process (Badke, 2015; Connaway, 2012; Harrington et al., 2019; Raven, 2012).
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26 Crowdsourced projects also confound this evaluative binary because they leverage the expertise of
27
28 many authors and editors, sparking arguments over quality control processes. *Wikipedia* is one such
29
30 project, which has aroused debate since its inception (Badke, 2015; Goldman, 2010; Kittur and Kraut,
31
32 2008; Niederer and Dijck, 2010; Schwartz, 2006; Stvilia et al., 2005). While it is commonly asserted that
33
34 *Wikipedia* cannot be trusted because it can change overnight due to its lack of quality control, in
35
36 actuality the oversight of software and editors (Niederer and Dijck, 2010), and a cadre of insiders
37
38 (Schwartz, 2006) keep it from "degenerating into chaos" (Badke, 2015, p. 195). This wisdom of the
39
40 crowd has been demonstrated as being comparable to the findings of a singular expert (Badke, 2015;
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42 Giles, 2005; Surowiecki, 2004). While crowdsourced information proliferates online, however,
43
44 traditionally produced expert information is still seen as more credible when compared to information
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46 produced collaboratively online (Badke, 2015; Goldman, 2010).
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53 Evaluating review processes becomes easier with time, practice, and exposure to multiple and varied
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55 formats. By becoming aware of where to look for publisher, author, and editorial information, readers
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3 develop familiarity with online formats, review processes, or contributor guidelines which may exist for
4 certain publishers. Readers might also search for clues or leave a source to find external information
5 about it in order to ascertain whether it has undergone review. For example, some websites will list a
6 contact author or moderator in their About page, which indicates some quality control process, but in
7 order to verify the extent of the review process, or the procedures behind the website's quality control,
8 a reader should contact the author/moderator of the website. Some online sources act as hosting
9 services instead, in which case there are probably no real review processes in place. Other websites may
10 have review processes, but they are not transparent to readers (e.g., websites like *Happify* or
11 *erowid.org*). In such cases, readers should seek a second opinion via a search engine query, reference
12 sources such as *Wikipedia*, or by asking a trusted expert.
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28 **Cue:** *Does the creator know what they're talking about?*
29

30 **Strength:** Medium to strong
31

32 **Effort:** Easy to moderate
33

34 **Explanation:** As an alternative to directly evaluating a source, a reader may shift their focus to the
35 author or creator. If evidence suggests that they know what they're talking about, the source is more
36 likely to be a good one. A reader may consider if the author has some credential, affiliation, or evidence
37 of a reputation that suggests they are an expert: has a PhD, is a medical doctor, is affiliated with a well-
38 known organization or institution, has won a prestigious award, etc. This type of judgment is limited by
39 domain—don't ask a chef for political advice or an astronomer about crime. Sometimes credentials can
40 hide incompetence or bias, but they are a starting place. Additionally, a reader can look for information
41 about the creator outside of the source itself and evaluate any information found to determine if the
42 author is a cognitive authority; that is, whether they are accepted as a trustworthy expert by their
43 disciplinary community.
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3 **Tactics:** Look for information about the creator via the source itself; Look for information about the
4 creator using an outside reference source or search engine (lateral reading).
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10 If readers can assess the expertise of a creator—including authors, organizations, and publishers that
11 make information available—and build trust in their knowledge, they can often extend that trust to a
12 source itself. Without being a subject expert, readers cannot easily evaluate the truthfulness or integrity
13 of source content, but they can pursue a strategic evaluation to see if they trust the creator, based on
14 the creator's position as a trusted expert in a discipline or peer community.
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23 A source may include some information about a creator that lends evidence of expertise (e.g.,
24 credentials, professional affiliation, brief biography, About page, links to other articles). Sometimes,
25 trusting this information is enough—a reader may decide to trust an investigative news article when the
26 author is identified as a Pulitzer Prize winner. But looking to the information provided about an author
27 or creator via a source itself may be limiting in its perspective.
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37 The practice of looking to outside sources to investigate a creator's credentials, additional work, and
38 external evidence of professional reputation is a form of parallel reading, common to the work of fact-
39 checkers (Wineburg and McGrew, 2017). In its most convenient form, parallel reading is facilitated
40 through a web search. For example, consider the author of an article about climate change on the
41 Heartland Institute website. The author's biography on the Heartland Institute's website describes the
42 individual as an accomplished PhD scientist and prolific published writer. However, looking *outside* this
43 website via a quick Google search identifies a number of other established sources describing the author
44 as a notorious climate change skeptic who no longer engages in the mainstream scientific community—
45 in other words, not a cognitive authority among a majority of disciplinary peers. A Google search of the
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3 “Heartland Institute” brings up other sources identifying it as a highly partisan think tank. Parallel
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5 reading can also take the form of consulting traditional reference sources (e.g., *Who’s Who*,
6
7 *Contemporary Authors Online*, *GuideStar*). Ideally, if using unfamiliar sources, this exercise also
8
9 incorporates cross-checking to best gauge the consensus of popular opinion across multiple outside
10
11 sources.
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16 Seeking information about a creator outside of a source itself isn’t without its shortcomings, one of
17
18 which may be the difficulty in deciding which outside sources to trust. Available information will vary
19
20 depending on the situation and field, but readers may be advised to consider specific types of sources,
21
22 such as news media, academic or professional websites with biographical information, Google Scholar
23
24 author profiles, social media pages, *Wikipedia* pages, or traditional library reference resources. Using
25
26 multiple sources, a reader can investigate the general consensus on the creator’s position as a cognitive
27
28 authority. Another potential shortfall is in the context of an affective or emotional reaction, whereby a
29
30 reader’s assessment of cognitive authority is informed by their own perspective and ideology.
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37 **Cue:** *Does the information make sense?*
38

39 **Strength:** Weak, except for subject experts
40

41 **Effort:** Often automatic; when mindfully considering, easy to challenging depending on the level of
42
43 subject expertise
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46 **Explanation:** When something “makes sense,” a judgment is based on the content—usually after a brief
47
48 skim or read of a short snippet. This judgment is often something readers don’t even think about; it
49
50 happens naturally, instinctively. But humans aren’t all that good at making this kind of assessment in the
51
52 absence of some serious expertise in the matter at hand, and readers need to be particularly careful
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54 with inflammatory or emotional content. Over time, readers can build expertise in specific areas and
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3 critical thinking skills through the study of logic and reasoning, math and statistics, language and
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5 rhetoric, and information studies, but the *Does the information make sense?* cue is not particularly
6
7 effective for student readers.
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10 **Tactics:** Pause and consider instinctive judgments; If an expert, evaluate content; If a non-expert, discard
11
12 source if of obvious poor quality or try another cue if not sure.
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16 When initially approaching an information source, readers are often prone to focus on the content to
17
18 determine credibility and relevance. This evaluation may simply be based on an initial read of a handful
19
20 of sentences—a tactic readers often use instinctively. However, this sort of instinctive judgment of the
21
22 quality and trustworthiness of content is not strategic and is often ineffective. It is important for readers
23
24 to develop a habit of self-reflection, to pause and recognize when they make instinctive judgments
25
26 about source content, and proactively take steps to consider more critical evaluative practices or cues.
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31 Seeking to answer the cue *Does the information make sense?* is a process by which readers determine a
32
33 baseline level of the content's "intrinsic plausibility," a means of conferring cognitive authority to a
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35 source on the basis that it generally sounds truthful and is therefore worthy of trust (Wilson, 1983, p.
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37 24-25). Even with a closer read, however, most readers don't have the ability to judge if the content
38
39 actually *is* truthful. Rather, the content-immersed evaluation is based on the hedging of a non-expert
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41 reader. For example, a librarian may read a magazine article on human genome editing that seems
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43 detailed, well-written, and objective. Her impression after reading may be that the article makes sense,
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45 but she probably doesn't possess the scientific subject expertise to know that it is accurate or thorough.
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48 She relies on other means to determine whether the article is worthwhile.
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3 This cue can be effective when readers build expertise in specific subject areas or knowledge domains to
4 an extent that makes critical reading a feasible tactic. Building critical thinking, logic, reasoning, and fact-
5 checking skills is another way to give readers a leg up on analyzing the plausibility of information
6 content, arguments, and evidence, but without subject expertise, these processes also remain difficult.
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14 Further complicating content-based evaluations, a decision about whether or not information makes
15 sense is often based on an affective response triggered by the reader's perspective, assumptions, and
16 emotions (Bluemle, 2018; Cooke, 2018; Sullivan, 2018). In this context, a reader's ability to evaluate an
17 argument or claim is particularly problematic because a decision may be based more on motivated
18 reasoning or confirmation bias than on logical considerations of the reliability and accuracy of the
19 information itself.
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30 Readers will benefit from developing a metacognitive awareness for when they base their judgments on
31 an instinctive assessment of information—which is one way to mindfully consider the role that emotions
32 and perspectives play in source evaluation. Assessing whether or not information makes sense is often
33 most effective in the context of weeding out overtly poor sources—it can be much easier to identify
34 what *doesn't* make sense or is illogical, even without subject expertise (e.g., clearly false statements,
35 poor grammar, etc.). All this is not to say that reading sources isn't important. Rather, while reading is
36 critical to the research and learning process, reading sources as a primary step in evaluating their own
37 validity is limiting in its effectiveness.
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51 **Conclusion**

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54 Evaluating information sources is a common activity that encompasses a range of everyday behaviors.
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56 People encounter sources of information all the time—increasingly in a digital form—and must decide
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3 which sources to trust. Without expertise in the topic at hand or critical evaluative experience, the
4
5 source evaluation process remains difficult, and no single existing strategy or checklist is a magic bullet
6
7 to getting source evaluation right.
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10 One limiting factor of this evaluative strategy is that it only guides readers so far in deciding whether or
11
12 not to use a source. The set of cues is intended to answer a single overarching question: “How much
13
14 trust do I grant this source?”—a first step in choosing sources to meet an information need. This
15
16 question centers the credibility, quality, and authority of information rather than the context in which
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18 students may use a source—their scope and purpose. A source may be deemed trustworthy, but at the
19
20 same time irrelevant in a given context. The question of relevance may be considered briefly when
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22 reflecting on the information need and deciding whether to review a source. But the issue of relevance
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24 is more thoroughly addressed as a second step in the evaluative process when direct, in-depth
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26 engagement with the content or information in a source is critical to deciding whether or not to actually
27
28 use it. This evaluative strategy was developed through the study of theoretical and practical concepts as
29
30 well as anecdotal experience; it has not yet been studied in an applied research context.
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36 The proposed evaluative strategy draws from existing models and concepts common to information
37
38 literacy and remixes many of these ideas. It provides substantive context for what each evaluative cue
39
40 means in the larger information landscape, which differentiates it from other models intended for quick
41
42 consumption. The CC Group aims to provide an accessible contextual framework for source evaluation,
43
44 taking into account the container as well as the content. It is rooted in theoretical strategies and carried
45
46 out through a series of practical tactics informed by concrete fact-checking moves and metacognitive
47
48 awareness. Because of the significant contextual discussion, this strategy is not brief; it intentionally
49
50 does not take the form of a checklist. For this reason, it may best be used as a conceptual tool for
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52 librarians as they work with students rather than as a tool meant for direct student use. In the future,
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3 the CC Group plans to study student decision-making practices in the context of online source
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5 evaluations as mapped to the new strategy.
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| Acronyms/Checklists | Read More | Criteria | | | | | | |
|-----------------------|---|---|-------------------------|--|-----------------|--|--------------------------|---------------------|
| CRAAP | https://tinyurl.com/y6ztmdj6 | Currency | Relevancy | Accuracy | Authority | Purpose | | |
| RADCAB | https://www.radcab.com/ | Relevancy | Appropriateness | Detail | Currency | Authority | Bias | |
| CARS | https://tinyurl.com/y9kls18w | Credibility | Accuracy | Reasonableness | Support | Also: design/style | Also: electronic sources | |
| CARRDSS | https://tinyurl.com/z54vkql | Credibility | Accuracy | Reliability | Relevance | Date | Sources | Scope |
| CARDIO | https://tinyurl.com/y26vy97p | Currency | Authority | Relevance | Documentation | Information Type | Objectivity | |
| CRITIC | https://tinyurl.com/y564j9br | Claim | Role of claimant | Information backing the claim | Testing | Independent verification | Conclusion | |
| 5 Ws | https://tinyurl.com/ahzbjos | Who | What | Where | When | Why | | |
| RADAR | https://tinyurl.com/ycfrdoeq | Rationale | Authority | Date | Accuracy | Relevance | | |
| BEAM | https://tinyurl.com/y2obfw4p | Background | Exhibit | Argument | Method | | | |
| IFIAPPLY-CRAAP | https://tinyurl.com/yybv7zfu | Identify emotions | Find unbiased sources | Intellectual courage to seek other sources that challenge my views | Authority | Purpose | Publisher | Year of publication |
| #VALUE! | https://tinyurl.com/y5x4mrrs | Presentation (is the information clear) | Relevance | Objective | Method | Provenance (who authored this information, where did it come from) | Timeliness | |
| AAOCC | https://tinyurl.com/y9x5bbo7 | Authority | Accuracy | Objectivity | Currency | Coverage | | |
| IMVAIN | https://tinyurl.com/imvain | Independent | Multiple sources quoted | Verified with evidence | Authoritative | Informed | Named sources | |
| CARBS | https://tinyurl.com/yxg4vah3 | Currency | Authority | Relevancy | Bias or factual | Scholarly or Popular | | |
| DUPED | https://tinyurl.com/yxg4vah3 | Date | Unambiguous | Purpose | Expertise | Determine (Source) | | |
| PROVEN | https://tinyurl.com/y65pbr9u | Purpose | Relevance | Objectivity | Verifiability | Expertise | Newness | |
| SCAAN | https://tinyurl.com/yxg4vah3 | Source type | Currency | Accuracy | Authority | Neutrality | | |

| Acronyms/Checklists | Read More | Criteria | | | | | | |
|-----------------------|---|---|-------------------------|--|-----------------|--|--------------------------|---------------------|
| CRAAP | https://tinyurl.com/y6ztmdj6 | Currency | Relevancy | Accuracy | Authority | Purpose | | |
| RADCAB | https://www.radcab.com/ | Relevancy | Appropriateness | Detail | Currency | Authority | Bias | |
| CARS | https://tinyurl.com/y9kls18w | Credibility | Accuracy | Reasonableness | Support | Also: design/style | Also: electronic sources | |
| CARRDSS | https://tinyurl.com/z54vkql | Credibility | Accuracy | Reliability | Relevance | Date | Sources | Scope |
| CARDIO | https://tinyurl.com/y26vy97p | Currency | Authority | Relevance | Documentation | Information Type | Objectivity | |
| CRITIC | https://tinyurl.com/y564j9br | Claim | Role of claimant | Information backing the claim | Testing | Independent verification | Conclusion | |
| 5 Ws | https://tinyurl.com/ahzbjos | Who | What | Where | When | Why | | |
| RADAR | https://tinyurl.com/y CFRdoeq | Rationale | Authority | Date | Accuracy | Relevance | | |
| BEAM | https://tinyurl.com/y2obfw4p | Background | Exhibit | Argument | Method | | | |
| IFIAPPLY-CRAAP | https://tinyurl.com/yybv7zfu | Identify emotions | Find unbiased sources | Intellectual courage to seek other sources that challenge my views | Authority | Purpose | Publisher | Year of publication |
| PROMPT | https://tinyurl.com/y5x4mrrs | Presentation (is the information clear) | Relevance | Objective | Method | Provenance (who authored this information, where did it come from) | Timeliness | |
| AAOCC | https://tinyurl.com/y9x5bbo7 | Authority | Accuracy | Objectivity | Currency | Coverage | | |
| IMVAIN | https://tinyurl.com/imvain | Independent | Multiple sources quoted | Verified with evidence | Authoritative | Informed | Named sources | |
| CARBS | https://tinyurl.com/yxg4vah3 | Currency | Authority | Relevancy | Bias or factual | Scholarly or Popular | | |
| DUPED | https://tinyurl.com/yxg4vah3 | Date | Unambiguous | Purpose | Expertise | Determine (Source) | | |
| PROVEN | https://tinyurl.com/y65pbr9u | Purpose | Relevance | Objectivity | Verifiability | Expertise | Newness | |
| SCAAN | https://tinyurl.com/yxg4vah3 | Source type | Currency | Accuracy | Authority | Neutrality | | |

| Models/Frameworks | Read More | Criteria | | | | | | | | | | |
|--|---|--|---|--------------------------------|-----------------------------------|--|--|--|--|---|--------------------|------|
| RUSA evaluating primary sources | https://tinyurl.com/y5cvm9nb | Author | Biases/ Influences | Intended audience | Origin | Significance when it was created | Edited/ Translated | Time period it was created | Limitations of source | How does your interpretation fit with others? | | |
| 6 Cs of primary source analysis | https://tinyurl.com/yy56l9qd | Content | Context | Citation | Connections | Communications | Conclusions | | | | | |
| Purdue OWL Evaluating Sources | https://tinyurl.com/y7egea5p | Authorship/ Affiliations | Sources/ Quotations | Bias/Special interests | Author qualifications | Publication information | Also: evaluating while reading | | | | | |
| USC Social Sciences: Evaluating Sources | https://tinyurl.com/y9nhtzx3 | Author | Date | Edition/ Revision | Publisher | Title of source | Intended audience | Objectivity | Coverage | Writing style | Evaluative reviews | |
| Berkeley Guide on Evaluating Sources | https://tinyurl.com/m/z9qq2z4 | Authority | Purpose | Publication and format | Relevance | Date | Documentation | | | | | |
| Georgetown Tutorial on Evaluating Internet Sources | https://tinyurl.com/y7qqzk95 | Authority | Purpose | Objectivity | Accuracy | Reliability/ Credibility | Currency | | | | | |
| Big 6 | https://thebig6.org/ | Task definition | Information seeking strategies | Location and access of sources | Use of information | Synthesis | Evaluation | | | | | |
| Kuhlthau Guided Inquiry Design | https://tinyurl.com/m/hkxnaix | Open | Immerse | Explore | Identify | Gather | Create and share | Evaluate | | | | |
| Posttruth, Truthiness, and Alternative Facts: Information Behavior and Critical Information Consumption for a New Age (Nicole Cooke) | https://tinyurl.com/m/y2xdu6s2 | Recency/Date (Currency) | Examine the URL | Language | Plausibility/ Credibility | Reputation/ Bias | Reported elsewhere? Triangulation of sources | Evaluate | Sort | Effectively use | Seek | Find |
| 4 Types of Credibility, Web Credibility Models (B.J. Fogg) | https://tinyurl.com/m/y452v12g | Presumed | Reputed | Surface | Earned | | | | | | | |
| Meltzoff & Cooper; Teaching trustworthiness of online information to students | https://tinyurl.com/m/y5m9uh19 | Habit/tenacity | Authority | Democratic judgment | Reasoning | Sensory information | Empirical/ Experimental methods | | | | | |
| ACRL Framework | https://tinyurl.com/m/oohrwzw | Authority is constructed and contextual | Information creation as a process | Information has value | Research as inquiry | Scholarship as conversation | Searching as strategic exploration | | | | | |
| New Yorker article on data literacy | https://tinyurl.com/m/y39xkajk | Who is telling me this? How does he or she know it? What is he or she trying to sell me? | Conclusions that dramatically confirm your personal opinions or experiences should be especially suspect. | Language | Evidence | Guesstimation techniques to check the plausibility of data-based claims. | Watch out for unfair comparisons | Remember that correlation doesn't imply causation. | Machines are as fallible as the people who program them—and they can't be shamed into better behavior. | Like all data-based claims, if an algorithm's abilities sound too good to be true, they probably are. | | |
| Research Toolkit (Margolin and Hayden) | https://tinyurl.com/m/yxrojgwr | What is my research question? | How do I find sources? | How do I read this stuff? | How do I use sources in my paper? | Faculty guide | | | | | | |
| Four Moves and a Habit (Mike Caulfield) | https://tinyurl.com/m/mjt82qv | Check for previous work | Go upstream to the source | Read laterally | Circle back | Check your emotions | | | | | | |

| Models/Frameworks | Read More | Criteria | | | | | | | | | | |
|--|---|--|---|--------------------------------|-----------------------------------|--|--|--|--|---|--------------------|------|
| RUSA evaluating primary sources | https://tinyurl.com/y5cvm9nb | Author | Biases/ Influences | Intended audience | Origin | Significance when it was created | Edited/ Translated | Time period it was created | Limitations of source | How does your interpretation fit with others'? | | |
| 6 Cs of primary source analysis | https://tinyurl.com/yv56l9qd | Content | Context | Citation | Connections | Communications | Conclusions | | | | | |
| Purdue OWL Evaluating Sources | https://tinyurl.com/y7egea5p | Authorship/ Affiliations | Sources/ Quotations | Bias/Special interests | Author qualifications | Publication information | Also: evaluating while reading | | | | | |
| USC Social Sciences: Evaluating Sources | https://tinyurl.com/y9nhtzx3 | Author | Date | Edition/ Revision | Publisher | Title of source | Intended audience | Objectivity | Coverage | Writing style | Evaluative reviews | |
| Berkeley Guide on Evaluating Sources | https://tinyurl.com/z9qqz2z4 | Authority | Purpose | Publication and format | Relevance | Date | Documentation | | | | | |
| Georgetown Tutorial on Evaluating Internet Sources | https://tinyurl.com/y7qqzk95 | Authority | Purpose | Objectivity | Accuracy | Reliability/ Credibility | Currency | | | | | |
| Big 6 | https://thebig6.org/ | Task definition | Information seeking strategies | Location and access of sources | Use of information | Synthesis | Evaluation | | | | | |
| Kuhlthau Guided Inquiry Design | https://tinyurl.com/hkxnalx | Open | Immerse | Explore | Identify | Gather | Create and share | Evaluate | | | | |
| Posttruth, Truthiness, and Alternative Facts: Information Behavior and Critical Information Consumption for a New Age (Nicole Cooke) | https://tinyurl.com/y2xd6s2 | Recency/Date (Currency) | Examine the URL | Language | Plausibility/ Credibility | Reputation/ Bias | Reported elsewhere? Triangulation of sources | Evaluate | Sort | Effectively use | Seek | Find |
| 4 Types of Credibility, Web Credibility Models (B.J. Fogg) | https://tinyurl.com/y452vl2g | Presumed | Reputed | Surface | Earned | | | | | | | |
| Meltzoff & Cooper; Teaching trustworthiness of online information to students | https://tinyurl.com/y5m9uhl9 | Habit/tenacity | Authority | Democratic judgment | Reasoning | Sensory information | Empirical/ Experimental methods | | | | | |
| ACRL Framework | https://tinyurl.com/oohrvzw | Authority is constructed and contextual | Information creation as a process | Information has value | Research as inquiry | Scholarship as conversation | Searching as strategic exploration | | | | | |
| New Yorker article on data literacy | https://tinyurl.com/y39xkajk | Who is telling me this? How does he or she know it? What is he or she trying to sell me? | Conclusions that dramatically confirm your personal opinions or experiences should be especially suspect. | Language | Evidence | Guesstimation techniques to check the plausibility of data-based claims. | Watch out for unfair comparisons | Remember that correlation doesn't imply causation. | Machines are as fallible as the people who program them—and they can't be shamed into better behavior. | Like all data-based claims, if an algorithm's abilities sound too good to be true, they probably are. | | |
| Research Toolkit (Margolin and Hayden) | https://tinyurl.com/yxrojgwr | What is my research question? | How do I find sources? | How do I read this stuff? | How do I use sources in my paper? | Faculty guide | | | | | | |
| Four Moves and a Habit (Mike Caulfield) | https://tinyurl.com/mit82gy | Check for previous work | Go upstream to the source | Read laterally | Circle back | Check your emotions | | | | | | |