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Metaliteracy in the Developmental Classroom

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Abstract

This paper investigates the origins of metaliteracy with a focus on media bias, misinformation, and disinformation and their pedagogical implications for information literacy (IL) in the writing classroom. Grounding the conversation in cognitive dissonance theory and confirmation bias theory, the paper offers an overview of multiple web-based IL tools—including media bias charts and scales, fact-checking sites, and self-directed tools such as the CRAAP test and Jack Caulfield's SIFT method (aka The Four Moves)—and suggests pedagogical practices specifically for developmental writing classrooms. Concepts and practices that fall under the umbrella of metaliteracy including digital literacy, cyberliteracy, visual literacy, and transliteracy are discussed as skills that are increasingly important for college students as they interact with information dynamically in the landscape of today's complex digital age.

***Keywords*:** metaliteracy, information literacy (IL), media bias, misinformation, disinformation, developmental writing

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Introduction

Today's college students must wade through an unprecedented amount of information which they are expected to assess daily—some of which legitimately qualifies as "misinformation" and/or "disinformation." The techniques required to identify a source's credibility, veracity, and lack of bias have become increasingly complex. The need for such skills is further heightened for students who arrive at college underprepared and place into developmental reading and/or writing courses. Therefore, higher-education practitioners, particularly those who teach developmental courses, must be prepared to dedicate adequate time and resources to teach students effective and robust strategies to make evidence-based decisions about a source's relevance and usefulness to them as researchers as well as to thoughtfully produce their own content in online communities. Effective metaliteracy instruction requires practitioners to familiarize themselves with useful resources, recognize their own biases, and regularly update their approaches to respond to the dynamic nature of how we share, consume, and respond to information in today's complex world.

The purpose of this paper is to briefly discuss the histories, theories, and current resources associated with information literacy (IL) and metaliteracy along with implications for pedagogical practice in higher education, specifically in the developmental classroom. We will look at the background of IL, including the evolution of the term itself and two useful theories that undergird IL instruction, as well as the general educational shift to focus more on the practice of metaliteracy, which "is a unified construct that supports the acquisition, production, and sharing of knowledge in collaborative online communities" (Mackay & Jacobson, 2011, p. 62). We will also consider the current state of media bias, how the prevalence of "misinformation," and "disinformation" have impacted the metaliteracy practices, and common/best classroom practices for IL and metaliteracy instruction. Then we will consider the methodologies, benefits and drawbacks of various resources for classroom use including media bias charts, fact-checking tools, and self-directed evaluation tools. Finally, we will consider implications for the developmental classroom and draw some conclusions that can inform practitioners as we move forward in this rapidly changing field.

Background: History of Information Literacy and Metaliteracy

Originally coined in Australia in 1964, the term "information literacy" was first used in the United States in 1974 by Paul G. Zurkowski, the then-president of the Software and Information Industry Association. The term was adopted three years later by the American Librarian Association (ALA) as a key instructional component, and in 2009, President Obama established October as National Information Literacy Awareness month. Now half a decade old, the term has survived multiple iterations and definitions as the ways in which information is created, shared, and consumed have changed profoundly.

IL skills have long been a fundamental component of the higher education curriculum. Nearly 30 years ago, Shapiro and Hughes (1996) explained the importance of IL in the context of a liberal arts education:

> [I]nformation literacy should in fact be conceived more broadly as a new liberal art that extends from knowing how to use computers and access information to critical reflection on the nature of information itself, its technical infrastructure, and its social, cultural and

> even philosophical context and impact - as essential to the mental framework of the educated information-age citizen as the trivium of basic liberal arts (grammar, logic and rhetoric) was to the educated person in medieval society. (p. 2)

Over the years, as the search for information has shifted primarily from books and physical artifacts to electronic resources, the critical thinking practices required for information literacy have necessarily shifted as well.

In response to this notable shift, Mackey and Jacobson (2011) suggested a revised term to reframe information literacy: metaliteracy. To distinguish between traditional IL and metaliteracy, they asserted, "While information literacy prepares individuals to access, evaluate, and analyze information, metaliteracy prepares individuals to actively produce and share content through social media and online communities" (Mackey & Jacobson, 2011, p. 76). This revised definition takes into account the dynamic nature of how information in the current age is actively and collaboratively produced and distributed. The term also refers to a learner's ability to regularly reflect on their own thinking processes and adapt to a host of new and emerging technologies such as social media platforms and other open spaces where information is shared and consumed (Jacobson & Mackey, 2013). Ultimately, then, metaliteracy is an expansion of information literacy that takes into account four domains of learning—cognitive, metacognitive, behavioral, and affective (Jacobson et al., 2021)—and considers new and emerging tools used to produce and share information in a shifting online environment. Metaliteracy is an umbrella term that encompasses concepts and practices such as digital literacy, cyberliteracy, visual literacy, and transliteracy—all skills that are increasingly important for college students as they interact with information in our current digital age.

IL and metaliteracy skills are complicated further by this current era in which the terms "disinformation" and "misinformation" are widely—and arguably rather liberally—used; as a result, today's college students must understand how to assess sources for reliability, credibility, and accuracy as they consume, create, and respond to the copious amount of information that is available to them daily. Indeed, as Pachtman (2012) argues, today's students need to "identify important questions, locate information, critically evaluate that information, and then communicate it to others" (p. 39). Compounding these existing challenges is the reality that students tend to believe they have more sophisticated IL strategies than objective assessments of their abilities show (Gross & Latham, 2012; Latham & Gross, 2013). Therefore, educators must prioritize the teaching of metaliteracy skills and be prepared to regularly update their pedagogical methods to respond to the ongoing and dynamic nature of information dissemination and consumption.

Metaliteracy skills are particularly important for students who arrive at college underprepared and place into developmental courses as first-year students. Cantrell et al. (2013) found in their study of 100 first-year college students attending a midsized regional public University in the southeastern United States that those who were placed into developmental reading courses possessed lower levels of reading self-efficacy compared to their mainstreamed peers. Since effective IL and metaliteracy skills hinge on a student's abilities to read, comprehend, and assess text in various formats, any deficiencies in this area can be profoundly detrimental. Indeed, the process of developing IL and metaliteracy skills is sophisticated and multifaceted. Diehm and Lupton (2014) describe a hierarchical process that begins with learning to access and process information; from there, the individual uses the information gathered to create a product. Final steps in the progression involve the use of new information to build a

personal knowledge base; to inform one's disciplinary knowledge; and to grow personally as well as to contribute to society. Diehm and Lupton (2014) use the term information literacy exclusively, but it is clear that the later stages of the process they describe require metaliteracy skills, as the individual moves from being a consumer of information to an active producer of content within collaborative communities. Such a process requires high-level cognitive skills that take time to develop, which is especially challenging for developmental students who are still honing their basic reading and writing skills as first-order tasks. Finally, the rapid pace of change in regards to metaliteracy also complicates the process for students who are already underprepared—in other words, already working to catch up with their mainstream peers' reading, writing, and/or math skills.

Clearly, today's developmental educators have an increasingly important responsibility to advance students' metaliteracy skills in a complex age of media bias, "misinformation," and "disinformation"; this requires knowledge of available tools—including their methodologies, benefits, and limitations—along with a willingness to commit adequate time and energy into recursive active learning practices and activities in the developmental classroom.

Theories that Inform Metaliteracy

Multiple theories can lay the groundwork for metaliteracy instruction in the classroom including cognitive dissonance theory and confirmation bias theory. Cognitive dissonance theory, developed in the 1950s by American psychologist Leon Festinger (1962), "centers around the idea that if a person knows various things that are not psychologically consistent with one another, he [or she/they] will, in a variety of ways, try to make them more consistent" (p. 93). To relieve the tension created by the dissonance, individuals may avoid or rebuff the conflicting information or even convince themselves somehow that there is no actual conflict (Duignan, 2022). Humans naturally seek stability, so they may even engage in such practices knowingly.

One of the dissonance-reducing behaviors people employ is confirmation bias, which is rooted in cognitive dissonance. As aforementioned, confirmation bias is the tendency to seek out and favor information that aligns with one's existing beliefs or worldview, especially when an issue is of primary importance and carries emotional relevance for an individual. Due to the sheer volume of information that is available to us today, we need an approach that allows us to process the information quickly, and interpreting information from our existing viewpoint helps us to do so in a way that is self-preserving (Casad, n.d.). The practice of confirmation bias can be detrimental, however, as it can cause individuals to ignore or discount potentially valuable information that could enhance their comprehensive understanding of an issue. Therefore, learning about cognitive dissonance and confirmation bias theories, as well as ways to combat the often-knee-jerk reactions to information that conflicts with people's own biases, can be an effective classroom approach to metaliteracy as students practice the process of reflecting on their own learning.

Media Bias, Misinformation, and Disinformation

Theories such as those discussed above help us to understand and grapple with media bias, which is a particularly stark reality in this age of increasing political polarization. Illustratively, citing mounting challenges presented by a proliferation of misinformation,

Dictionary.com announced in 2018 that it had chosen "misinformation" as the word of the year. The online dictionary defines the term as follows: "false information that is spread, regardless of whether there is intent to mislead" (Dictionary.com, 2023). On the other hand, Dictionary.com (2023) defines "disinformation" as "deliberately misleading or biased information; manipulated narrative or facts; propaganda." Intent, therefore, is the key difference between the two terms. Writing for UNESCO (United Nations Education Science and Culture Organization), Abuhmaid (2021) argues that it has become increasingly difficult to filter content with the amount of information we encounter and cites an infodemic with the rapid spread of inaccurate information, particularly on social media. Abuhmaid (2021) emphasizes the importance of schools teaching critical thinking skills to students through extensive media education so they can be empowered to distinguish between what is true and false, fact versus opinion.

Echo chambers and confirmation bias can plague even the most perceptive readers. Individuals do not consume information in a vacuum, and all readers possess a worldview that influences how they receive and analyze new information. Ling (2020) describes confirmation bias as a propensity to center our attention on information that reinforces our social or political perspectives. Ling (2020) also discusses how the disjointed, superficial browsing of news on our smartphones can exacerbate the problem. These practices can result in further polarization and hyper partisanship, which can erode our ability to engage thoughtfully and respectfully in the public square. Since young adults frequently access their news via online news sources (Antunovic et al., 2018), IL and metaliteracy skills are increasingly important for today's scholars.

Metaliteracy in the Classroom

Just as the definition of information literacy has changed with time, so have the practices for teaching and practicing IL and metaliteracy in the classroom. Kevin McGrew, Director of the Library at the College of Saint Scholastica in Duluth, Minnesota, has been working in the library science field for 35 years. McGrew recognizes a significant shift in how information is accessed and vetted. Early in McGrew's career, librarians would vet information and ensure that only high-quality, reputable materials that supported the institution's curriculum would be found in an academic library. Now, McGrew observes, the responsibility to find quality, authoritative sources has shifted to the shoulders of the end user (K. W. McGrew, personal communication, June 16, 2022). This process of accessing and analyzing sources for credibility, authority, and relevance is complex; therefore, instructors must be willing to commit adequate time and resources to the task.

One foundational tool that instructors can use is the *Framework for Information Literacy for Higher Education*, which was adopted by the Association of College and Research Libraries (ACRL) Board in January of 2016. The document puts forth six frames (including Research as Inquiry, Scholarship as Conversation, and Searching as Strategic Exploration); suggestions for faculty to implement the *Framework* and administrators to support it; background information on how the *Framework* was developed; and suggested sources for further reading. In addition, the document includes knowledge practices and dispositions that learners should possess as they are developing their IL skills. Emphasized in the appendix on faculty implementation of the *Framework* is the importance of integrating the IL program systemically throughout students' academic programs. The ACRL encourages faculty to provide contextualized, targeted IL sessions that meet students' particular needs for specific assignments or tasks related to their

coursework. McGrew agrees, citing the importance of meeting students in the moment and providing them with practices that can help them at their point of need (K. W. McGrew, personal communication, June 16, 2022).

The *Framework* has garnered its share of criticism, including concerns about its use of jargon and, therefore, lack of accessibility to some audiences; its emphasis on theory, which makes it difficult to assess measurable outcomes; and a misalignment between the *Framework* and the tenets of critical information literacy, which seeks to challenge existing power structures (Beilin, 2015). Concerns have also been voiced over the phasing out of the ACRL Information Literacy Competency Standards for Higher Education, which were adopted in January of 2000. If practitioners share these concerns, they certainly can initiate discussions about these critiques should they want to include that as part of their metaliteracy curriculum, especially in higher-level classes where the metaliteracy curriculum has been scaffolded.

A related and ongoing conversation centers on whose job it is to teach IL and/or metaliteracy to students. Many models have been employed over the years with a combination of academic librarians and faculty members taking the lead. McGrew argues that academic librarians are the best trained and equipped to teach IL but acknowledges that most institutions do not have the staffing required to do this on the scale needed. McGrew et al. (2015) conducted a study to assess the "ability of classroom faculty to support and amplify the instruction given by library faculty." Results showed that both students and faculty predicted a higher level of confidence and skill in their ability to use the library for their research needs than their performance on the assessment demonstrated. Among the implications of their study was the suggestion that training sessions for faculty by library staff may be beneficial in enhancing classroom metaliteracy instruction.

Classroom Tools for Metaliteracy

Although training sessions such as those encouraged by McGrew are a key component of effective classroom metaliteracy instruction, it is also important for the practitioners to proactively analyze a variety of helpful tools that are readily available for classroom use. The Internet offers abundant resources for teaching IL and metaliteracy skills including many charts and scales that rate media bias using multiple techniques. The tools vary in methodology, rigor, and usefulness, so it is best practice for practitioners to familiarize themselves with as many as possible to determine which tools work best for which tasks. Although we cannot discuss every tool available here, we will investigate several of the most popular tools available for classroom use. Table 1 below offers a general overview of several of the most common tools, including their methodology/approach, pros/benefits, and cons/limitations. Following the table is a more thorough discussion of each of those individual tools.

Table 1
Comparison of IL Tools

Type of Source	Examples	Methodology/Approach	Pros	Cons/Limitations
Media bias charts and rating scales	Media Bias Fact Check (MBFC) Ad Fontes Media Chart Media Bias AllSides	Teams of researchers, writers, and/or contributors rate bias (primarily political) and/or reliability of sources Most include rating scales (e.g., 1-10) to represent levels of bias (e.g., least to most) Most ensure a variety of raters from across the political continuum (left leaning, moderate, and right leaning)	Creators of these tools employ methodologies that have progressed to further alleviate internal bias Charts and scales are visual and relatively easy to use and navigate They cover a wide variety of sources (e.g., the static Ad Fontes Media Chart includes ratings for over 150 sources, and the team has rated over 68,000 individual articles)	Methodologies are developed by the creators and generally not tested scientific approaches Some do not adequately allow for nuance/can be reductive They do not require critical thinking from the user
Fact-checking tools/sites	PolitiFact Snopes FactCheck.org	A panel of writers, researchers, and/or editors check the veracity of specific reports The team focuses on exposing questionable or deceptive claims Most of these sites reach out to original/primary sources to request evidence and/or back-up data to support claims(s) Many of these sites refer to experts and/or nonpartisan sources Some, but not all, use rating scales or systems	These are useful for checking particular claims for research purposes These tools often help to dispel legitimate disinformation They help to discourage individuals (especially politicians) from making false claims	These sites check only particular claims (very limited) They can be inherently biased

Note. Methodology practices as well as pros and cons may vary among the examples listed in the second column.

Type of Source	Examples	Methodology/Approach	Pros	Cons/Limitations
Self-directed tools	CRAAP test Jack Caulfield's SIFT method (aka The Four Moves) Check, Please: Starter Course P.R.O.V.E.N.	These tools rely on a self-driven process that requires users to evaluate sources Most consider factors such as currency, accuracy, authority, and purpose	These tools do not do the work for the user They require critical thinking skills	These tools can be reductive for experienced users They can, on the other hand, be overly complex for inexperienced users (e.g., some users are not ready to recognize conflicts of interest, the complex characteristics that determine a source's authority, etc.)

Note. Methodology practices as well as pros and cons may vary among the examples listed in the second column.

It is worth noting here that although the tools listed above in Table 1 appear to aid students only with the development of more traditional IL skills, they form the foundation for metaliteracy, as they can and often do extend into the creation and production of original content in dynamic collaborative environments. Also, as McCoy (2022) asserts, there is a profound connection between IL and metaliteracy, as "[i]nformation literacy requires an understanding of how you are thinking about and evaluating the information that is being found and consumed; this is a metacognitive act that can be explicitly taught and practiced in the information literacy classroom" (p. 45). Indeed, instructors can extend classroom IL lessons into the metaliteracy domain by requiring metacognitive reflection (e.g., consider what kinds of resources they are preferring over others and why; what types of sources are finding the way to the top of their feeds and why; and what types of sources they are more likely to believe and share and why). Instructors may also require the production of original content within an online community in response to IL learning.

Media Bias Charts and Rating Scales

Media Bias Fact Check (MBFC). Arguably one of the most comprehensive tools available (the database includes over 7,400 politicians, journalists, and media sources), Media Bias Fact Check (MBFC) was created in 2015 by Dave Van Zandt, the source's primary editor. This tool offers a transparent and comprehensive description of its methodology and acknowledges that there is no possible way to ensure 100% objectivity. To calculate bias, the team of nine researchers, writers, and contributors assesses sources by considering political bias, use of factual information, and links to other credible sources. Using a 10-point scale, MBFC rates sources from least biased (0-2) to left/right center bias (2-5), left-right biased (5-8), and extremely biased (8-10). In its evaluations, the team contemplates, among other things, the source's use of loaded words; well-sourced evidence; and story selection (i.e., reporting news from both sides or only one) along with political affiliations, including any organizations or causes which the owners donate to or support. More specifically, the team considers many different types of bias (bias by omission, by labeling, by spin, by story or source selection) as

well as how many fact checks a source has failed. Other considerations include connotation and denotation as well as the use of what the site refers to as "purr words" ("words that are used to describe something that is favored or loved") and "snarl words" ("words used when describing something that a person is against or hates") (MBFC, 2023). Consideration of these kinds of elements generally expands the concept of news bias for most students.

MBFC also adheres to the International Fact-Checking Network Fact-checkers' Code of Principles, which were developed by the Poynter Institute to encourage excellence in the practice of fact-checking. In addition, MBFC commits to nonpartisanship; transparency of funding, organization, and methodology; and a regular practice of authentic and intentional corrections. Other benefits of this tool are that it includes definitions of important terminology (e.g., "pseudoscience," "satire," and "questionable sources"), a list of least-biased sources, a list of sources that have been re-evaluated/updated, and a detailed report for each source that includes its history and funding sources. Finally, MBFC received a perfect rating (100/100) in credibility from Newsguard, one of its competitors.

Although MBFC is relatively well respected, no tool alone is perfect. The site contains a disclaimer on its own limitations, including the fact that the MBFC team developed its own methodology that is not a tested scientific approach. Still, the team commits to correcting any factual errors it may make and working toward the goal of achieving a "least-biased" rating using the very criteria it established.

Ad Fontes Media Bias Chart. Another well-known online bias-checking tool is the Ad Fontes Media Bias Chart, which employs two axes: reliability and bias. Articles are individually reviewed and rated by at least three analysts (out of 60 total) with varying political leanings: one right leaning, one left leaning, and one centrist/moderate. Individuals assign a rating and then compare; if there is disagreement on a rating, scores may be fine-tuned after discussion. The final rating for the article represents an average of the three analysts' scores. If necessary, more than three analysts may be called upon to rate a specific article. The main tenets of the bias score are an article's level of political advocacy, both selection and omission of topics, and language use.

The methodology described above was created by Ad Fontes Media's founder, Vanessa Otero, who originally analyzed resources alone. Since the advent of the Media Bias Chart in 2016, Otero's methodology has progressed in response to suggestions from other experts. The revised methodology is an attempt to alleviate bias and commit to a more data-driven approach.

The Ad Fontes Media Bias Chart is wide ranging with the availability of two charts: one static and one interactive. The static chart includes ratings for over 150 news sources, while the interactive chart has the capacity to search from thousands of diverse sources (web, print, podcast, and TV). Finally, like the MBFC contributors, Otero acknowledges that complete objectivity is impossible to achieve but is transparent about the team's attempt to lessen bias.

Not surprisingly, the Ad Fontes Media Bias Chart has attracted a fair share of criticism. Writing for *ACRLog*, Benjes-Small and Elwood (2021), for instance, argued that the Chart elevates the political midpoint as if it were entirely unbiased, took issue with Otero's lack of information literacy training or expertise, questioned the actual value of a bipartisan analysis, challenged the Chart's framing of what constitutes "right-" vs. "left-" leaning, argued that the Chart does not allow for necessary nuance, and asserted the tool simply reinforces confirmation bias. Otero responded at length to the original post by Benjes-Small and Elwood (2021),

acknowledging that some nuance is sacrificed with the use of a graphic and discouraging users from relying too much on such charts. Still, Otero argues, it can be a useful tool, especially for those who may not have access to an academic library or a course in metaliteracy.

Media Bias AllSides. The Media Bias AllSides chart rates only political bias and assigns sources to one of five categories: "Left," "Lean Left," "Center," "Lean Right" and "Right." Media Bias AllSides considers various types of bias such as "slant, spin, sensationalism, and story choice." Unlike MBFC and the Ad Fontes Media Bias Chart, Media Bias AllSides recruits unpaid public readers to rate articles in the aforementioned categories. These readers (six to nine per review) self-report their own political leanings through a bias rating test and see only the text of the articles they are reviewing, not the outlets that published them. Like the methodology used for the Ad Fontes Media Bias Chart, AllSides employs staffers who identify as left leaning, right leaning, and center.

To offer an example of its rating system, Media Bias AllSides shared the results of its May 2022 blind bias survey. The team recruited over 1,300 individuals of various political leanings to blindly rate the bias of online content, which had been stripped of any identifying characteristics, derived from the following sources: The Daily Wire, The Epoch Times, Forbes, The Hill, and Politico. AllSides calculated the weighted average for each source and determined that The Daily Wire fell on the right, The Epoch Times leaned right, The Hill and Politico fell in the center, and Forbes leaned left.

Media Bias AllSides (2024) has a mission statement of sorts to "[f]ree people from filter bubbles [a term much like confirmation bias] so they can better understand the world—and each other." The site offers an editorial philosophy; biographies of its founders and team members; YouTube videos that explain the tool's methodology; a news link on its menu that includes content from the left, center, and right; and AllSides Talks, which bring together people from different sides of the political spectrum for respectful dialogue. Finally, Media Bias AllSides recognizes its limitations and acknowledges that no methodology is perfect; therefore, the team welcomes community feedback on agreement or disagreement with current ratings and public participation in blind bias surveys.

Fact-Checking Tools

Fact-checking sites and tools are also widely available online and can be used in conjunction with the rating charts and scales. Fact-checking sites are designed specifically to check the veracity of specific reports, so their use as a research tool is a bit more limited, but they can be particularly helpful for current topics and events. Common fact-checking sites include PolitiFact, which applies Truth-O-Meter ratings to determine a claim's accuracy; Snopes, which researches and reports on questionable claims; and FactCheck.org, which focuses specifically on exposing deceptive claims and information in the realm of U.S. politics.

Fact-checking sites may also be susceptible to bias, of course, so extra steps may be taken by the user to determine a fact-checking site's partiality. For instance, MBFC rates PolitiFact and Snopes.com as having a left-center bias and FactCheck.org as being "least biased" with a very high level of factual reporting. Cross-checking sources in this fashion can help to ensure rigorous IL strategies that add a layer of accountability for the researcher.

Self-Directed Evaluation Tools

Although media bias charts and fact-checking sites are clearly helpful to students who are learning IL and metaliteracy skills, these tools do the work for the researcher by assigning ratings to sources primarily through the use of an editorial team that uses a specific methodology. It is important that students move beyond that, however, to also utilize resources that actively engage them in the process of analyzing such important elements as a source's credibility and veracity. These strategies also cross over from basic IL skills (accessing and evaluating information) to the metacognitive practices that undergird metaliteracy.

CRAAP Test. A common tool used to this end in many composition classrooms is the CRAAP test (CRAAP test administrators, 2023). CRAAP is an acronym that stands for currency, relevance, authority, accuracy, and purpose. Many iterations of the CRAAP test are available online, some of which pose questions for the researcher under each category (for instance, how relevant is this source to your topic or claim?) and rating scales that help students determine if the source is acceptable or appropriate for their classroom research.

The CRAAP test has received a fair amount of criticism for being reductive. Some argue that students oversimplify the tool, as there is simply too much nuance for them to understand under each category including potential conflicts of interest, sources of funding, and levels/types of authority. Still, many instructors find it a useful tool, especially for 100- and 200-level undergraduate courses.

SIFT. Mike Caulfield, a research scientist for the UW Research Center for an Informed Public, has been an outspoken critic of the CRAAP test and developed the SIFT (aka The Four Moves) model as an alternative (Caulfield, 2019). SIFT is an acronym for Stop, Investigate, Find better coverage, and Trace the original content. Caulfield also offers a three-hour minicourse called Check, Please: Starter Course (n.d.). The material is free and editable, and Caulfield's goal is to create a curricular community around metaliteracy practices.

P.R.O.V.E.N. Caulfield's "Four Moves," in conjunction with the ACRL *Framework*, has also been used as the foundation for a source evaluation tool titled P.R.O.V.E.N. (purpose, relevance, objectivity, verifiability, expertise, and newness), available at an Open Educational Resource titled CORA, an acronym for Community of Online Research Assignments (Carey, 2017). The process is designed to get students to consider carefully how sources might meet their unique needs. Embedded in the P.R.O.V.E.N. model is consideration of whether or not the source has been fact checked by sites such as PolitiFact or Snopes. In addition, the model asks researchers to check their own emotions and biases, recognizing how these may influence their analyses of sources.

Applications for the Developmental Classroom

As already mentioned, students who place into developmental classes often face more barriers to academic success than their college-ready peers. It follows, then, that helping this population develop critical thinking and metaliteracy skills is especially important. A study done by Zimmerer et al. (2018) analyzed two groups of students—those who were working through an innovative, contextualized reading curriculum and those who were learning from a traditional reading curriculum with the default course textbook—for reading and information literacy skills, persistence, course completion, and subsequent registration in the gateway course. Students who

learned via the contextualized reading curriculum (described as an approach that connected reading skills with disciplinary content, required students to develop their reading strategies by accessing various types of resources, and gave students task-specific, project-based opportunities) performed better than those who learned via the traditional curriculum on information literacy skills, while students in both groups saw gains in their reading strategies. Additionally, course completion, persistence, and successive course registration were similar for the population that used the contextualized curriculum, which consisted of students who scored one or more levels below college ready, and those who used the traditional curriculum, which consisted of only students who had scored a single level below college ready. Zimmerer et al. (2018) concluded that the use of intentional and recursive information literacy practices in a developmental reading course can help our most at-risk students to achieve academic success.

Studies such as Zimmerer et al.'s (2018) can help practitioners implement successful metaliteracy lessons and activities to allow students in developmental courses to catch up to their peers with the use of effective research practices. Designing in-class lectures and activities around specific assignments or tasks, using a variety of resources for different tasks, and allowing students plenty of time for practice and discussion during class time can help this population develop confidence in this area.

Suggested Classroom Lessons

A typical metaliteracy unit that uses the resources shared herein may begin with students choosing topics for a research paper. The instructor can start with a basic introduction to Boolean logic and offer in-class opportunities for students to experiment with various search terms/strings to identify potential sources using Google, Google Scholar, and library databases. Embedded in this step should be explicit instruction and practice activities to help students understand the characteristics of scholarly vs. popular sources. Next, the instructor can introduce various graphs and charts (e.g., MBFC, the Ad Fontes Media Bias Chart, and/or Media Bias AllSides) so students can check their non-scholarly sources for bias. At this point, students should consider the potential effectiveness of the sources they have accessed with their audience in mind, asking themselves, will my audience consider this a reputable, credible source based on what I have learned so far?

Next, with a basic understanding of some biases that may exist in some of the sources they have accessed and the criteria most often used to determine a source's reliability, students can move on to the self-directed tools, such as the CRAAP test or Caulfield's SIFT model. At this point, students should be well poised to determine which sources they should incorporate in their papers and which they should reject based on the processes described above. They also should possess some fundamental skills for subsequent IL tasks as they continue to seek out, assess, and use sources throughout their academic careers.

For instructors who are willing and able to move further into metaliteracy (rather than strictly IL) practices, many options exist beyond the basic strategies listed above. One of the most natural and obvious approaches that arises organically from any of the IL practices listed above is asking students to reflect on their news-gathering practices and consider how their personal biases may influence how they access, consume, and share information. Indeed, Stanton et al. (2021) describe metacognition as awareness of and control over one's thinking and learning processes, so an intentional consideration of one's owns preferences and prejudices can help

raise students' self-awareness around their information gathering and sharing practices. Stanton et al. (2021) also encourage the practice of social metacognition, wherein students share ideas with classmates and both give and receive feedback on these ideas. Starting with individual reflection and then moving into small group discussions and finally asking groups to share some thoughts with the entire class could help to reinforce that everyone has mindsets, worldviews, and preconceptions that shape how they consume and produce information.

Finally, if an instructor wishes to move students beyond metacognition into information production—the part of metaliteracy that involves the sharing of information in collaborative online communities—there are many resources available to guide them into preparing meaningful experiences in their classrooms. For instance, assignments, articles, prompts, and other materials are available at Metaliteracy.org (n.d.), a blog dedicated to providing open metaliteracy-based resources intended for educators who are dedicated to metaliteracy practices in their classrooms. The team at Metaliteracy.org includes Thomas P. Mackey and Trudi Jacobsen who, as mentioned earlier, coined the term and have collaboratively written four books and many articles on the topic of metaliteracy. Other valuable metaliteracy resources can be found online at various library and education sites as well as in scholarly articles available on Google Scholar and through library databases.

Conclusion

Metaliteracy skills are foundational to a modern liberal arts education. Since these skills are interwoven throughout the curriculum and used in most—if not all—disciplines, practitioners must be ready to provide targeted and task-based instruction to help students effectively search for, access, and evaluate a variety of types of sources for credibility, relevance, and usefulness to their research processes; reflect on their learning processes and their own biases; and practice sharing information responsibly across a wide spectrum of available online platforms. As argued here, students who place into developmental courses are especially at risk and need dedicated metaliteracy instruction so they do not fall behind their college-ready peers. Finally, the need for robust metaliteracy instruction is likely to intensify as we find innovative ways to create, share, respond to, and use information as a society; therefore, institutions would benefit from serious conversations about how, when, and where such instruction will show up in the curriculum.

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