Kogut, A., Matthews, S., & Rios, A. (2026). Preservice teachers' choice of online popular sources to inform evidence-based practice: An application of the WHY Method to education source evaluation. *Contemporary Issues in Technology and Teacher Education, 26*(2), 253-281.

Preservice Teachers' Choice of Online Popular Sources to Inform Evidence-Based Practice: An Application of the WHY Method to Education Source Evaluation

Ashlynn Kogut and Sharon Matthews
Texas A&M University

Ambyr Rios
Kansas State University

The education environment increasingly emphasizes the need for teachers to ground their practice in the evidence base, which requires the ability to locate and critically evaluate online information. Within the context of a preservice teacher education literacy course, this study examined the online popular sources students chose to cite in an assignment after completing a lesson focused on finding information through both library resources and general online searches. The WHY Method, a framework for characterizing source authority, along with literacy educator classifications of reputation and alignment with the evidence base, were used to analyze students' online popular source selections. Some preservice teachers had challenges discerning whether the source was scholarly or popular based on how the online content was presented. Preservice teachers primarily cited static webpages and often failed to fully integrate ideas from the online popular sources into their papers. The WHY Method provided a practical way to characterize source authority and reputation, but the literacy educator classifications were necessary to evaluate the source's alignment with the evidence base. The analysis of these online popular sources indicates that preservice teachers must be explicitly taught how to evaluate and use sources of information they find online.

The current education environment emphasizes the importance of grounding practice in the evidence base, which requires teachers to find and evaluate online information (Davies, 1999; Thomm, Seifried et al., 2021). Future teachers should be taught how to evaluate online information in their preservice teacher education to develop this skill to use in their future professional roles (see also Chen et al., 2019; Shapiro et al., 2019). While emphasis has been placed in undergraduate education on finding scholarly, peer-reviewed sources (e.g., Burchard & Myers, 2019), this study focused on preservice teachers' choice of online popular sources to find authoritative information.

In this study, we operationally defined online popular sources as any information available in a digital medium that has not been published in an academic journal, as required by the course assignment. Online popular sources include webpages, blogs, reports, and videos created by researchers, practitioners, government agencies, and think tanks. Our definition of online popular sources also encompasses publications that may have undergone some form of review, such as dissertations and conference proceedings. This study addressed the gap in research on preservice teachers' information-seeking practices identified in prior reviews (Dahlqvist, 2021).

Within the context of a preservice teacher education literacy course, this study examined the online popular sources students chose to cite in an assignment after completing a lesson focused on finding information both via library resources and general online searches. The focus was on online popular sources for two reasons: (a) preliminary analysis of the sources indicated that students did not have issues identifying scholarly sources, and (b) in their professional roles, teachers prefer clear and jargon free information (van Schaik et al., 2018) and primarily use general web searches to locate information rather than digital libraries or online databases (Diekema & Olsen, 2014; Ntuli & Kyei-Blankson, 2016; Perrault, 2007).

We framed our examination using the WHY Method to characterize source authority. The WHY Method characterizes sources based on the author's identity, editorial process, and publication purpose to provide a contextual framework for assessing a source's authority (Rosenzweig et al., 2019). The WHY Method has been applied to English composition papers (see also Lambert et al., 2021; Rosenzweig et al., 2021), but we are unaware of studies evaluating its direct applicability to education resources.

Evidence-Based Practice in Education

Evidence-based practice (EBP) in education spans multiple facets: teachers in the classroom, policy development, and overall views of education (Davies, 1999). Beginning in the late 1990s and early 2000s, federal funding for education in the United States was linked to the use of effective practices, and the *No Child Left Behind Act* emphasized the use of scientific evidence (Slavin, 2002). The What Works Clearinghouse was founded in 2002 to review literature on educational programs, policies, and methods to determine their effectiveness and to guide the implementation of EBP.

Even with policies and online repositories, for teachers to apply EBP in their local educational settings, a base of high-quality research evidence must exist, and teachers must be able to locate, analyze, and apply the evidence to their work (Davies, 1999; van Schaik, 2018). The skills of finding, evaluating, and using information are not unique to EBP. The conceptions of information literacy (Association of College and Research Libraries [ACRL], 2016), digital literacy (UNESCO Institute for Statistics, 2018), and critical media literacy (McNeill, 2024) all include the ability to evaluate and apply information within a given context. The emphasis for using and grounding one's work in the evidence base highlights the role of educator preparation programs (EPPs) in teaching future teachers the skills to locate and utilize information grounded in the evidence base (British Educational Research Association, 2014; Darling-Hammond, 2006; Diery et al., 2021).

EBP within the literacy field has become synonymous with the "Science of Reading." The focus on the Science of Reading, also known as the Science of Teaching Reading (STR), has shaped the political and curricular landscape to ensure that evidence-based practices comprise reading instruction. EPPs are held accountable for preparing teachers who are knowledgeable in foundational literacy skills (Schwartz, 2025). This includes state-based STR assessments that evaluate preservice teachers' preparedness to enact evidence-based practices in early childhood, elementary, and middle-grade settings. Given the emphasis on research-informed reading instruction, it is imperative to understand which online resources preservice teachers use in their coursework, so that instruction can be shaped to further develop their critical evaluation skills and their ability to use evidence-based online sources to inform their teaching practices.

Searching and Evaluation Skills of Preservice Teachers

To use evidence to inform instruction, teachers must be able to search for and select that information effectively. However, preservice teachers' skills in finding information online are often ineffective (Burron & Pegg, 2021; Godbey, 2018). Preservice teachers frequently use online search engines to find information (Ntuli & Kyei-Blankson, 2016; Trixa & Kaspar, 2024), meaning they search for resources beyond those directly provided by instructors (Beach, 2020) or available through academic databases. The types of online resources chosen by preservice teachers include "research-based professional resources, popular search engines, and content-sharing networks" (p. 422). When searching for educational information online, preservice teachers primarily use Google-owned resources and choose sources that are not scholarly, such as online news, blogs, or videos (Zimmermann et al., 2022).

Once information is located, preservice teachers must evaluate the information in terms of relevance to the information need and information accuracy. In studies examining whether and how preservice teachers evaluate information quality (Beach, 2020; Trixa & Kaspar, 2024; Zimmermann et al., 2022), few participants performed any quality checks, let alone reflective ones, on the information they found. Beach identified five themes describing why preservice teachers selected resources: accessibility and convenience, content variety, visual aesthetics, literacy

content, and source credibility. The portion of students who used source credibility was small, but Beach noted its importance. In another study, only about a quarter of the participants performed any quality check on the chosen material (Zimmermann et al., 2022).

One reason for the lack of structured information evaluation could be due to the goal of searching for preservice teachers, which is often to fulfill a course requirement (Chen et al., 2019). After finding and evaluating a source, the next step is to use the information. However, preservice teachers struggle to incorporate online information sources effectively into their writing assignments to support their arguments (Ntuli & Kyei-Blankson, 2016). This highlights the need for preservice teachers to practice using online information sources.

A disconnect also exists between the ways preservice teachers evaluate information for their coursework and what they think will be important in their future roles as teachers. Trixa and Kaspar (2024) examined the strategies preservice teachers use to evaluate information and found that "'general source verification,' encompassing reference checking, source quantity and type, and differentiation between primary and secondary sources" was the most common strategy (p. 14). Yet, when those preservice teachers were asked what they think is essential when teaching future students in the classroom, strategies of "separating facts from opinions" and "using public broadcasting sources" were ranked most important for planning future instruction. These evaluation strategies were rarely mentioned as strategies preservice teachers themselves employed (Trixa & Kaspar, 2024). Trixa and Kaspar concluded that the majority of preservice teachers preferred to use quick and surface-level evaluation strategies, like choosing known authoritative sources.

The strategies used by preservice teachers can also depend on where they are in their education progression. Preservice teachers, early in their studies, often use a procedural approach to information evaluation as they check sources (Leming & Johanson, 2023). However, later in their studies, some preservice teachers demonstrate "more reflexive critical thinking skills related to digital critical competence," which showcases a move toward critical reflection rather than reliance on a source evaluation checklist (p. 8).

Enhancing preservice teachers' abilities to find and evaluate information has been identified as a key component in preservice teacher education (Chen et al., 2019; Leming & Johanson, 2023; Zimmermann et al., 2022), and multiple approaches exist to incorporate these practices. Some instructors have had preservice teachers examine general online information source credibility (Ketzer-Nöltge & Markovic, 2022). Other instructors have integrated information literacy instruction into various content-area courses. For example, educators have integrated activities and assignments to develop students' skills in evaluating social studies resources (Gallagher, 2022) and science education resources (Burron & Pegg, 2021).

Another method of integrating information evaluation is to collaborate with academic librarians. Academic librarians bring a wealth of knowledge related to information literacy, grounded in the ACRL (2016) *Framework for Information Literacy for Higher Education*, a guiding document for

integrating the development of source evaluation skills in preservice teachers. For example, Burchard and Myers (2019) described a collaboration between a teacher education professor and a librarian through three workshops related to a unit on teaching information literacy for EBP. Analyses of the impact of these workshops showed that students had higher self-efficacy in searching for and evaluating sources on effective teaching practices.

When out in the field, the ability to access research findings outside of a university setting did not contribute as much to teachers' feelings of the usefulness of research findings as did their perceptions about personal ability and time to locate relevant research (Thomm, Salzer et al., 2021). This prior research highlights the need for preservice teachers to develop the skills and cognitive strategies to find, evaluate, and use online information resources relevant to their teaching practice.

Theoretical Framework and Research Questions

The principle of least effort (PLE) served as the theoretical framework guiding this study. George Zipf, a linguist, introduced PLE to explain human activity and the amount of effort people devote to any specific task (Case, 2005). Prior research on preservice teachers' processes for finding and evaluating web sources indicates that evaluating information requires considerable time (Leming & Johanson, 2023) and that preservice teachers often select items from the first four results of a web search (Zimmermann et al., 2022). To help understand preservice teachers' information-seeking behavior, we adopted PLE, also known as Zipf's law, as our guiding framework.

Within library and information science (LIS) research, PLE has been used to describe patterns of information behavior (Case, 2005; Chang, 2016). Drawing from the LIS field's information behavior perspective, we adopt the definition of PLE as the tendency for "information seekers [to] typically place a priority on reducing their information costs (with costs defined as expenditure of time and effort)" (Schwieder, 2016, p. 172). From this theoretical perspective, some students may be expected to spend the least possible amount of time searching for and evaluating sources before deciding which online materials to cite in their papers.

The research questions guiding this study were as follows:

1. Following a lesson on finding and evaluating online educational sources, what types of sources do students cite, and how do students incorporate those sources to support their arguments?

2. How applicable are the WHY Method and literacy educators' classifications in characterizing online popular sources related to literacy education?

    - How are the online popular sources cited by students characterized by the WHY Method of source evaluation?

- In what ways do literacy educators' classifications extend the characterization of online sources beyond what is captured by the WHY Method?

Methods

We used an action research framework to design and refine a curricular intervention focused on evaluating education-focused online popular sources. Action research begins with identifying a problem to improve within one's context, followed by collecting data, analyzing the evidence, implementing change, and evaluating outcomes (Bradbury, 2015). Action research is commonly used to study teaching and learning in higher education (Jensen & Dikilitas, 2023).

The problem we observed was that students did not fully evaluate the authority of the online popular sources they encountered and chose to use in their course assignments. To address this issue, we developed an online lesson that delivered instruction and an application assignment that required students to find, evaluate, and incorporate online popular sources into their work. After analyzing the results, we identified implications and future directions related to preservice teachers' evaluation of online resources connected to evidence-based practice.

Background

Our institution is a large research university in the southern United States. For several semesters prior to this project, we collaborated on teaching search strategies and information evaluation to students enrolled in READ 317, Reading and Writing Across the Middle Grades Curriculum, a writing-intensive course focused on integrating evidence-based disciplinary literacy strategies within content areas. Discussions at the end of each semester led us to conclude that the writing assignment requiring only peer-reviewed journal articles was not authentic to teachers' professional realities. In practice, teachers regularly draw on a wide range of online sources rather than relying solely on scholarly articles.

In spring 2020, the university library announced an information literacy development grant to facilitate faculty-librarian partnerships that embed information literacy within courses. The first two authors developed a grant project focused on source evaluation through the lens of the Authority Is Constructed and Contextual frame (ACRL, 2016). Preservice teachers use information for their coursework, but they also need to understand that various types of information can be valid when making instructional decisions. To do so effectively, they must learn to base their future teaching practices on evidence and to connect sources in ways that build coherent arguments while considering differing perspectives.

Within the READ 317 course, we aimed to teach preservice teachers that not all legitimate sources must be peer reviewed or scholarly. However, even online popular sources are bounded in terms of being related to literacy and the requirement of being grounded in the evidence base. While we use the term online popular sources, all sources in practice were education-related. Our project was funded by the university library.

Evaluation Lesson

To begin the project, we created and integrated an online source evaluation lesson into READ 317. The lesson was designed using Articulate Rise 360 software, which was then embedded in the course learning management system. The lesson focused on (a) searching library databases, (b) distinguishing the differences between scholarly sources and online education sources, (c) locating online education sources, and (d) reflecting on questions to guide decisions about whether to use an online source. A core aspect of the lesson was modeling authentic evaluation practices, accomplished through multiple videos that demonstrated evaluating database search results and contrasting the evaluation of peer-reviewed articles with the evaluation of online popular sources.

Online Source Evaluation Guiding Questions

The application of finding and evaluating information as part of evidence-based education practice connects to the broader concepts of information literacy (ACRL, 2016), digital literacy (UNESCO, 2018), and critical media literacy (McNeill, 2024). Among the various frameworks for evaluating online information, the CRAAP Test (Blakeslee, 2004) is one of the most widely used. However, it has been critiqued for emphasizing website "surface features" and relying on a checklist approach (Breakstone et al., 2018). This has led to a new call for evaluation approaches that require students to consult other sources, mirroring professional fact-checking practices (Caulfield, 2019; Fielding, 2019).

Drawing from Breakstone et al. (2018) and Caulfield (2019), we developed a set of source evaluation questions that encouraged students to investigate the authority of online sources by seeking other sources, using lateral reading. These questions focused on what the popular source is, who created it, how the information is presented, and how the source contributed to the student's research topic. The full list of evaluation questions is provided in Appendix A.

Data Analysis

To assess the lesson's effectiveness, we analyzed citations from 26 de-identified student papers. The course's final assignment was a research paper that integrated literacy instructional strategy supports into the content. Students were required to use American Psychological Association (APA) citation style format for the paper. APA format requires that each work cited in the paper be included in the reference list and each reference in the reference list be cited in the paper. Assignment guidelines required four peer-reviewed scholarly articles, published no later than 2007, and two popular education sources that utilize practitioner and digital media as information platforms (e.g., podcasts, blogs, tweets, professional organization publications, and TedTalks). While not explicitly stated in the assignment, online resources were the most accessible to students because the course occurred during the COVID pandemic, and all popular education sources in the students' reference lists were available online. Prior to the paper submission, students

completed an article matrix template to extract key information and synthesize across selected sources.

This study received IRB approval for the use of de-identified data. No student grade or demographic information was included in the analysis. We extracted citations that did not represent scholarly sources from each paper's reference list to create our online popular source citation dataset.

The WHY Method of Source Evaluation

Analyzing the citations of student papers is a common method of information literacy assessment (Walsh, 2009). Leeder et al. (2012) developed a taxonomy to rate the sources cited by students to analyze the quality of student source selection. More recently Rosenzweig et al. (2019) built upon the Leeder et al. taxonomy to focus on the authority characteristics of the sources selected by students: author identity, editorial process, and publication purpose. The resulting WHY Method provides a framework for classifying each source by "Who wrote each source, How it was edited, and whY it was published" (Lambert et al., 2021, p. 642). There are predefined categories for each of the three classifications: author identity, editorial process, and publication purpose. Since the WHY framework has been piloted and used in multiple studies (see also Rosenzweig et al., 2019, 2021) to analyze source authority, we believed this framework would be appropriate for our analysis.

The WHY Method research taxonomy was shared by the creators with permission to adapt (Thill et al., 2020). Given our educational source focus, we modified the WHY Method definitions and examples to align with the types of resources we anticipated preservice teachers would use. For example, regarding who wrote the source, we specified textbook company employees as corporate authors, degreed or credentialed teachers as professionals, and graduate students as academics. For how the source was edited, we replaced vanity press with teacherpreneur marketplaces, online platforms like Teachers Pay Teachers, where current and former educators (referred to as teacherpreneurs) sell their teaching materials, including lesson plans, worksheets, and activities (Shelton & Archambault, 2018). We also redefined nonprofessionally reviewed to include social media and modified peer-reviewed to include the academic review processes common to graduate-level research. Appendix B provides our adapted taxonomy used to code the online popular sources.

To apply the WHY Method, the first two authors examined each student cited source in its original format. When links were inactive, we used the Internet Archive to retrieve the closest available webpage snapshot. Discrepancies in coding were resolved through discussion until consensus was reached.

Types of Sources

Because the assignment distinguished between peer-reviewed, scholarly articles and popular education sources, only the former were coded as scholarly references. All other sources, even those with some review process, were categorized as online popular sources. The assignment description encouraged students to use static formats (e.g., blogs and

professional organizational websites), as well as dynamic formats (e.g., podcasts, TedTalks, and other videos). We categorized the source type to determine whether students were using static online popular sources, such as webpages and blogs; dynamic sources, such as images and videos; or other types of online content we had not considered. We did not use a predetermined list of source types for this coding. The first two authors independently coded source types for each citation and refined categories through discussion to develop the final set presented in the results.

Citation Patterns

We also coded the total number of references, number of scholarly references, number of popular references, frequency of source citation, where in the paper the source was cited, the type of in-text citations, and synthesis of the source. Following Rosenzweig et al. (2021), we classified the types of in-text citations to explore if the in-text citations offered any information not provided by the WHY Method citation analysis, as well as to determine if the bibliographies aligned with the sources cited in the paper. A key difference between Rosenzweig et al.'s (2021) application and ours is that MLA format was used in Rosenzweig et al.'s data set, and our data set used APA style. However, as prior research has shown, preservice teachers struggle to integrate information sources into their papers (Ntuli & Kyei-Blankson, 2016). Therefore, we coded and counted the types of in-text citations to examine how students supported their arguments.

For the count of the type of in-text citations, we used the citation types and definitions (direct, parenthetical, and anaphoric) used by Rosenzweig et al. (2021). Direct citations were when "students reference a source from their bibliography by providing some piece of identifying information (such as the source's author, authoring organization, title, or publisher) within the text of a sentence" (p. 69). Direct citations are the equivalent to narrative citations in APA style. In APA narrative citations, the author is included in the sentence, with the year of publication typically in parentheses after the author (American Psychological Association, 2020). We assumed that students would use narrative citation to state or relay quotes from the online popular sources. This type of citation does not require much synthesis of the information.

For parenthetical citations, "students provide identifying information within parentheses at the end of a sentence" (Rosenzweig et al., 2021, p. 69). Rosenzweig's definition of parenthetical citations aligns with the definition of parenthetical citations in APA style. We anticipated that students using parenthetical citations would put more effort into paraphrasing the information and potentially even synthesizing it.

In anaphoric citations, "students use personal pronouns or noun phrases to refer to a source already cited (directly or parenthetically) in that paragraph" (Rosenzweig et al., 2021, p. 69). Anaphoric citations have no direct equivalent in APA style. As we coded the type of in-text citations, we analyzed the supporting text around each citation to determine whether it aligned with our view of how students would use direct (or narrative) and parenthetical citations.

As we coded, the authors added memos to the coding form to record observations about where students were finding online popular sources and how the citation types represented the synthesis of those sources in the paper. Two authors independently coded each of the 26 papers using a Google Form, and we discussed any disagreements until we reached a consensus.

Reputation and Evidence-Base Alignment Evaluation

To further characterize the online popular sources, two literacy faculty members independently evaluated each source for its reputation and alignment with the evidence base. While both students and instructors can use the WHY Method, only those versed in the literacy discipline can accurately evaluate the reputation and alignment with the evidence base of each online popular source. By applying a more subjective approach to evaluate online popular sources, we aimed to determine whether the WHY Method would be sufficient and, if not, what value the extra time spent evaluating the sources would add to their characterization. We modeled this evaluation of sources on Beach's (2020) evaluation method, where experienced researchers assessed the sources selected by students on a predefined set of criteria.

The second author, an experienced literacy faculty member, and the third author, an early career literacy faculty member, evaluated each of the online popular sources from a literacy educator perspective by rating both the reputation of the source and whether the information provided by the source was rooted in evidence. These ratings were on a 1-5 scale, with 1 being low and 5 being high. A rubric was developed with criteria for each rating. For reputation, "5" was a source widely cited/endorsed by literacy organizations, school districts, or scholars; "3" was a source that had a mixed reputation with practitioners and researchers; and "1" was not cited or widely criticized by literacy experts and associations. For alignment with evidence base, "5" was accurate alignment with science of reading and links to scientific research, "3" was contains some evidence of alignment but also contains practices not supported by research, and "1" promotes instructional practices that have been discredited.

The two literacy faculty members followed these steps to evaluate each source:

1. Examined the source in its original format. If the original link was inoperable, the Internet Archive was used to find a snapshot closest to the time the student would have viewed it.

2. Independently rated the source on its reputation within the literacy community.

3. Independently rated the source on its alignment with the literacy evidence base.

4. Discussed ratings to reach consensus.

Results

Across the 26 student papers, there were 181 total references: 120 scholarly, peer-reviewed articles and 61 online popular education sources. All papers met the criteria of citing four peer-reviewed, scholarly articles, and further analyses of the reference lists indicated students appropriately chose scholarly articles. However, two papers did not include the required two online popular sources. In one instance, the student appeared to misidentify the container of a source as the source itself, citing material from the National Council of Teachers of Mathematics peer-reviewed journal, *Mathematics Teaching in the Middle School,* as if it were a general website. Several students made similar errors, citing journal articles accessed through webpages as though they were online popular sources, suggesting confusion between academic journal content and general websites.

Types of Popular Education Sources

Students cited 10 online source types (see Table 1). The most common online source was a webpage (n = 37, 61%). We defined webpages as online pages of content that were not part of a structured publication. Webpages were a broad category to encompass information presented in a static online format. Magazine articles (n = 7, 11%) were the next most common. Magazine articles were sources that had print versions, like *The Atlantic* and *Scientific American,* or provided volume or issue information directly on the webpage or in the URL.

Table 1
Types and Frequency of Sources Cited by Students

Source Type	Frequency (%)
Webpage	37 (61%)
Magazine Article	7 (11%)
Graduate Student Research Paper	6 (10%)
Video	4 (7%)
Conference Paper	2 (3%)
Infographic	1 (2%)
Lesson Plan	1 (2%)
Picture book	1 (2%)
Podcast	1 (2%)
Research Report/White Paper	1 (2%)

Interestingly, graduate student research papers, which included dissertations and master's theses, were used as online popular sources six times. We considered these online popular sources rather than scholarly articles because they were not published in academic journals. Students also cited videos and podcasts five times. Overall, students' citations relied primarily on static web content rather than multimedia sources, indicating a preference for general webpages over dynamic media.

Types of Citations for Popular Education Sources

Submitted papers showed students cited online popular sources an average of two times after sources that were listed in the reference list but not cited in the paper were removed. Most of the online popular source citations (n = 38, 62%) were only cited in the body of the paper. The second most common occurrence was not citing the online popular source at all; 20% (n = 12) of the online popular sources were not cited anywhere in the paper. Students rarely cited an online popular source in the introduction, in the conclusion, or in multiple sections of the paper.

The online popular sources were cited as either a direct citation (47%), narrative in-text citation per APA, with direct identifying information within the sentence or a parenthetical citation (49%) with identifying information only at the end of the sentence. Based on our memos during the coding process, we found that when using both parenthetical citations and direct citations, students frequently quoted material from the online popular source with limited rhetorical work to integrate the idea fully into the narrative. This mostly included copying and pasting short quotations from the source for definitions or a list of evidence that aligned with their chosen instructional approach. Only 3% of the citations were anaphoric citations, which were categorized as using pronouns or noun phrases to refer to a source a student previously cited.

Characterizations of Online Popular Education Sources

The WHY Method analysis revealed that students most often drew on sources written by academic authors (n = 24, 39%) and, to a lesser extent, by professional authors (n = 15, 25%). Many of these sources were professionally edited (n = 39, 64%). The most frequent classifications for why a source was published were nonprofit (n = 27, 44%) and commercial (n = 22, 36%). Looking at the combination of categories, items written by an academic, professionally edited, and published for a nonprofit reason (WFHEYC, n = 8, 13%) as well as items written by an academic, peer-reviewed, and published for higher education (WFHFYF, n = 8, 13%) were the most chosen (see Tables 2-5). The WFHFYF category (academic, peer-reviewed, higher education) described the graduate student research papers and dissertations.

Table 2
Who Wrote the Source Categories

Category W: Who wrote it?	Frequency (%)
WF: Academic	24 (39%)
WE: Professional	15 (25%)
WZ: Cannot be determined	10 (16%)
WC: Corporate Author	7 (11%)
WD: Academic-amateur	3 (5%)
WB: Nonprofessional	2 (3%)

Table 3
How Was the Source Edited Categories

Category H: How was it edited?	Frequency (%)
HE: Professionally Edited	39 (64%)
HF: Peer-reviewed	9 (15%)
HA: Self published	6 (10%)
HB: Teacherprenuer Marketplaces	6 (10%)
HD: Social Media	1 (2%)

Table 4
Why Was the Source Published Categories

Category Y: whY was it published?	Frequency (%)
YC: Non-profit	27 (44%)
YB: Commercial	22 (36%)
YF: Higher Education	10 (16%)
YA: Personal	2 (3%)

Table 5
Most Frequently Occurring WHY Category Combinations

Attribute Combination	Expanded Source Type	Frequency (%)
WFHEYC	Academic, Professionally Edited, Non-profit	8 (13%)
WFHFYF	Academic, Peer-reviewed, Higher Education	8 (13%)
WEHEYC	Professional, Professionally Edited, Nonprofit	6 (10%)
WZHEYC	Cannot be determined, Professionally Edited, Non-profit	5 (8%)
WCHEYB	Corporate author, Professionally Edited, Commercial	4 (7%)
WFHEYB	Academic, Professionally Edited, Commercial	4 (7%)
WEHBYB	Professional, Teacherpreneur Marketplaces, Commercial	4 (7%)
WEHEYB	Professional, Professionally Edited, Commercial	3 (5%)
WCHEYC	Corporate author, Professionally Edited, Non-profit	3 (5%)

After removing one duplicate source (Brann & Zorfass, 2014) cited by two students, 60 unique citations were analyzed by literacy instructors for both reputation and connection to the evidence base. Approximately 40% of the sources were categorized as medium (3) in terms of reputation and grounding in the evidence base (Table 6). This rating reflected a mixed or unproven reputation in professional literacy circles, as characterized by the use of some evidence-based practices alongside practices unsupported by evidence. About 35% of sources received high ratings (4 or 5) for both reputation and grounding in the evidence base. This corresponded to a positive endorsement by literacy organizations and professionals, as well as alignment with core components of evidence-based literacy instruction.

Table 6
Count of Reputation and Evidence Ratings

Rating	Reputation	Reputation Rating Rubric Criteria	Evidence Base Alignment	Evidence Base Alignment Rubric Criteria
High - 5	5 (8%)	Highly respected by literacy community	2 (3%)	Explicit and accurate alignment
4	17 (28%)	Mostly positive reviews by literacy community	19 (32%)	Aligns with evidence base but lacks explicit connection
Medium - 3	26 (43%)	Mixed reputation in literacy community	26 (43%)	Some evidence aligned practices with some unsupported practices
2	12 (20%)	Limited positive reviews by literacy community	13 (22%)	Practices not directly connected to evidence base
Low - 1	0	Widely criticized by literacy community	0	Use of practices discredited by research

None of the 60 sources was rated low in either category, which corresponded with the absence of sources criticized by the literacy community for promoting discredited practices. Ten sources did not receive the same rating in both categories: three received a higher rating in connection to the evidence base than in reputation, and seven received a higher rating in reputation than in connection to the evidence base.

Comparison of WHY Method to Literacy Educator Classifications

We mapped the most frequently occurring WHY Method categorizations to the literacy educator classifications to explore how the latter might enhance interpretation of the WHY Method. The WFHEYC category (academic, professionally edited, and nonprofit), one of the most frequent, contained the widest range of instructor source ratings, from 5 ratings in reputation and EBP to 2 ratings in reputation and EBP. For these online popular sources, the instructor classifications helped tease out distinctions

among sources, demonstrating that not all items within a single WHY category share equivalent reputation and evidence-based grounding.

When academic authors (WF) were excluded, the professionally edited (HE) and nonprofit (YC) online popular sources tended to receive consistently high ratings for reputation and alignment with the evidence base across all author categories (e.g., professional, cannot be determined, corporate).

The WFHFYF category, the other most frequently occurring classification, contained popular sources primarily rated medium (3) in terms of reputation and evidence. These sources only included graduate theses, dissertations, and conference proceedings. On the basis of the WHY categorization (WFHFYF) alone, one might assume that this source would be of solid authority; however, the instructor ratings revealed that these sources are midlevel in reputation and evidentiary grounding.

Finally, for some WHY categorizations, we found that the instructor ratings did not add to the understanding of the source authority. WCHEYB (corporate, professionally edited, commercial), WFHEYB (academic, professionally edited, commercial), WEHBYB (professional, teacherpreneur, commercial), and WEHEYB (professional, professionally edited, commercial) were generally rated by instructors as 2 or 3 in both reputation and evidence-based alignment. These categorizations shared the commercial aspect of publication. Because of the why it was published aspect, we found the instructor categorizations did not add nuance to the WHY categorizations.

Discussion

Types of Sources Cited

Students primarily cited static webpages as their online popular sources. While this finding is expected given the nature of online searching, what we found when identifying the online popular sources to include in our dataset was that several students had challenges discerning if the source was a peer-reviewed article or a popular source based on the online content presentation. In particular, a few students cited peer-reviewed journal articles using the APA citation style for webpages. LIS literature has portrayed this challenge as the phenomenon of "container collapse" to describe the lack of distinction between a journal article, blog, magazine, website, etc., on the internet (Connaway, 2018). Recognizing the genre and the source of an online resource can support identification of containers but requires "deep engagement" with the resource (Cyr et al., 2021).

Interestingly, six of the 61 online popular source citations were graduate student research papers, including dissertations. Although professors/ teacher educators would not consider graduate work a popular source, students are often also told that dissertations are not a scholarly, peer-reviewed source either. The limiting binary of scholarly, peer-reviewed versus popular sources may cause relevant, credible materials to fall through the cracks. Additionally, such limiting discourse may hinder students' understanding of the varied and diverse ways evidence-based information can be published.

Through our theoretical framework of the PLE (Schwieder, 2016), these instances suggest that students often privilege efficiency over careful evaluation of information. In some cases, students appeared to expend effort to create a citation formatted as a popular source rather than critically analyzing the source itself. This highlights our concern that preservice teachers tend to prioritize expediency over critical reflection as they discern which sources to incorporate to guide their planning and instruction. With the emergence of curriculum-sharing sites, such as Pinterest and Teachers Pay Teachers, other researchers have advocated for the need for preservice teachers (Schroeder & Curcio, 2022) and even practicing teachers (Gallagher et al., 2019) to be critical of the curriculum-supplementation resources they find online.

Writing Process Concerns

This assignment required students to cite sources in APA format, which presented challenges on several levels. The most apparent issues were stylistic, including a lack of attention to the distinction between parenthetical and direct/narrative citations, and incorrect formatting. While such mechanical errors were somewhat expected, more concerning was the tendency to copy and paste without critically synthesizing or integrating the source to scaffold or strengthen an argument, despite an article matrix being embedded as a research task to support synthesis across selected articles. The lens of PLE suggests that preservice teachers were more likely to simply include the source to satisfy the required paper components. In their professional roles, these preservice teachers will not write in formal ways that require appropriate citations; however, being able to select sources that support evidence-based instructional practices is still critical.

Authority Characterizations of Online Popular Sources

The online popular sources were written primarily by academics and professionals. For our analysis, academics were defined as individuals with master's or doctoral degrees as well as graduate students, while professionals referred to degreed or credentialed teachers. Both academic and professionally authored pieces, which were professionally edited and published for nonprofit purposes, appear to have authority within the EBP literacy instruction landscape. While this assumption held in most cases, the literacy educator ratings revealed notable variation in both reputation and alignment to the evidence base among sources in the WFHEYC (academic, professionally edited, and nonprofit) category.

When examined through the lens of PLE, students may tend to choose a source based on the apparent authority of the author, which our analysis suggests is insufficient for evaluation. On the other hand, most sources published for commercial reasons included some information aligned with unsupported practices or practices not connected to the evidence base. Prior research has found that preservice teachers tend to choose known authoritative sources (Trixa & Kaspar, 2024). Thus, when preservice teachers use PLE to avoid selecting commercially published materials, they may inadvertently reduce their likelihood of selecting subpar evidence-based resources as well.

WHY Method Usefulness for Education Sources

Adapting the WHY Method to the education context enhanced the framework's suitability for analyzing online popular sources focused on teaching and learning. We modified the existing categories to better align with the nuances of education-related popular sources, while retaining the academic categories to preserve the WHY Framework's broader application to both scholarly and popular sources.

Our modified definitions in two categories required further clarification among the research team. Disentangling the teacherpreneur marketplace and social media sources proved challenging, as teacherpreneurs and commercial entities often utilize multiple social and online platforms to promote their businesses. Ultimately, we decided to categorize any source promoting the possibility of teacher-created materials as belonging to the teacherpreneur marketplace category. For the Who dimension, the professional and academic author positioning often overlapped; however, in education, there is a distinction between classroom teaching experience and the theoretical perspectives in higher education. When an author had both classroom teaching experience and an advanced degree in education, we classified them as an academic author.

One aspect of authority not included in the WHY Method was the age of the source. Although the assignment requirements specified that sources should be published no later than 2007, a few of the online popular sources cited were conference papers published in the early 1990s. While those papers were considered authoritative when originally published, the complexity of source evaluation within the literacy discipline negates the authority of this source. Publication date and its influence on authority is contextual. Consideration of the publication date is also not aligned with the scope of the WHY Method; however, discussion about when a source was published and how that can impact the source's authority is something to address with students in the classroom.

Our evaluation extended beyond the WHY Method by including assessments of source reputation and alignment with the evidence base. From a pedagogically driven student choice analysis perspective, we found the additional time and effort required to apply the literacy educator classifications to be valuable only for analyzing alignment with the evidence base. While only a small number of sources received a different rating in both categories, this divergence highlights that reputation and alignment with the evidence base are not equivalent evaluation criteria. In other words, it could be possible for a source with a high reputation to publish materials that are not highly aligned with the evidence base or, conversely, for a source with a lower reputation to publish materials aligned with the evidence base. By rating the alignment with the evidence base in tandem with the WHY Method, we found the WHY Method appropriate for characterizing the reputation of an online popular source.

The creators of the WHY Method used this framework to evaluate the authority of sources selected by students for English composition papers in multiple studies (Lambert et al., 2021; Rosenzweig et al., 2021). Their findings and recommendations guided the way we designed our own analysis. We identified two aspects of the way these prior studies relate to

our findings that warrant further consideration. First, Rosenzweig et al. found that analysis of only an MLA reference list or bibliography to analyze source citations would be appropriate; that there would be no need to look at whether students are citing the sources. In the context of our literacy course, we found that examining the ways students cited actual sources was necessary to serve as a proxy for how students use the sources. A second issue for consideration from prior WHY Method studies is that Lambert et al. stated, the "most important finding of this new study: the profound effect of institution on student source selection" (p. 658). Our data were collected from one class at a single institution. Given the influence of institutional context, the selection habits of preservice teachers at other institutions might be different. Additional research considering the potential influence of the institution on preservice teachers is essential for examining the various aspects that affect student source selection. Overall, we found the WHY Method helpful for classifying the source authority of online popular education sources, but analysis beyond the WHY Method is needed to analyze the online popular sources for alignment with the evidence base.

Literacy Educators' Classifications of Education Sources

While the educator classifications proved necessary for evaluating the alignment with the evidence base, their application presented challenges in terms of feasibility and consistency. Even with a rubric to guide ratings of reputation and evidence-based alignment, the instructors' background knowledge, professional experiences, and evidence-based alignment preferences influenced their ratings for these criteria. Whereas the WHY Method of source evaluation employs concrete categories that can be verified and discussed in the event of disagreements, the more subjective literacy instructor ratings necessitated more discussion and compromise to reach a consensus.

The discussions between the literacy educator's classifications to reach consensus illuminated different perspectives on how one can identify EBP in online popular sources. One perspective held that alignment with the evidence base required that an online popular source must use citations. The other perspective emphasized a more inferential approach that alignment could be determined by reading the content and assessing whether it reflected knowledge of the literacy evidence base, even in the absence of direct citations.

Implications

These findings underscore important implications for teacher education, particularly regarding ways we prepare preservice teachers to critically and consistently evaluate online instructional materials. The variation in our two literacy instructors' interpretations of evidence alignment suggests that preservice teachers may encounter similar challenges when determining which sources meaningfully reflect evidence-based practices. As such, preservice teacher education should provide explicit, guided, and sustained opportunities to apply frameworks like the WHY Method, accompanied by educator-modeled discussions that unpack what constitutes evidence alignment in literacy instruction. Simply introducing these frameworks in teacher education courses is not sufficient. While

integrating such approaches can deepen preservice teachers' analytical engagement with questions of source authority, doing so requires intentional scaffolding, instructional time, and careful balance between fostering criticality and maintaining feasibility.

In addition to structured and intentional instructional support, reconsidering the design of course assignments is essential, as a single lesson is unlikely to provide sufficient opportunity for students to develop the critical awareness needed to select and strategically use online popular sources. Despite the inclusion of scholarly and online popular sources for the assignment, the resulting research paper represented an inauthentic artifact that did not accurately reflect the practical work that teachers routinely perform in professional contexts. To better analyze the sources that students select when making curricular decisions, an assignment that simulates authentic instructional decision-making, such as selecting, adapting, or justifying curriculum materials, could yield clearer insights into how preservice teachers engage with evidence-based information sourcing and integration. While course assignments will always include some degree of inauthenticity, designing tasks that reflect the real instructional work of teachers can more effectively equip preservice teachers to make thoughtful, evidence-based choices in their future classrooms.

A primary goal of this research was to investigate the idea of cueing preservice teachers to make online information evaluation part of their practice, particularly as they segue to work with instructional teams that are likely composed of alternatively certified peers who are not as well-versed in identifying best practice. After analyzing online popular sources using the WHY Method, we believe that direct instruction to preservice teachers on using the WHY Method for evaluating the contextual authority of online sources is warranted. The more concrete categories of the WHY Method provide tangible indicators for assessing the authority and reputation of online popular sources.

Additionally, instructors should have ongoing discussions with preservice teachers about how online popular sources demonstrate alignment with EBP. Our own authors disagreed on how to identify EBP in online popular sources; thus, preservice teachers must first learn the foundational knowledge of evidence-aligned literacy practices so that they can both use contextual clues like the presence of references and more deeply evaluate the content to determine the alignment to the evidence base.

The lesson described in this paper was created at a time when Teachers Pay Teachers and Pinterest were popular places for students to find curricular ideas. Despite the issue of container collapse, the information provided on static webpages still allowed students to identify who wrote the source, how it was published, and why it was published. Now that generative AI has entered the landscape, the concern of teaching preservice teachers how to evaluate the contextual authority and evidence-based foundations of online information remains.

The ability to critically evaluate any information one encounters, regardless of the format, is only becoming more important as the nature of information seeking shifts from the use of search engines providing webpage links to generative AI chatbot syntheses of information (Caswell,

2025; Gartner, 2024). Traditional web browser searches now yield AI summaries of information related to queries, which are typically placed strategically to draw attention to the AI-generated content (Withorn, 2025). Regardless of the resource focus, the central underlying concern of evaluating source authority remains unchanged; evaluating all information encountered online remains an essential skill for preservice teachers.

Conclusion

The question of whether preservice teachers can adequately assess the contextual authority and evidence-based foundations of a source remains a key consideration for teacher educators. This study is limited in its analysis of online popular sources cited in course artifacts from one class. However, the in-depth analysis led us to recognize the value of a concrete evaluation tool as well as more subjective evaluations of EBP alignment. Teacher educators must be cognizant of guiding preservice teachers to evaluate the information they select and the sources they seek to integrate. Future research could further investigate how preservice teachers apply the WHY Method and evaluate AI generated information for alignment with the evidence base. Ultimately, preservice teachers will be charged with guiding their own students' evaluation skills in this more complex digital environment.

Financial Disclosure

This work was supported by a University Libraries Information Literacy Development Grant sponsored by the Texas A&M University Libraries.

References

American Psychological Association. (2020). *Publication manual of the American Psychological Association* (7th ed.). https://doi.org/10.1037/0000165-000

Association of College and Research Libraries. (2016). *Framework for information literacy for higher education*. https://www.ala.org/acrl/standards/ilframework

Beach, P. (2020). Planning for literacy instruction: An evaluation of online resources used by preservice teachers. *Contemporary Issues in Technology and Teacher Education*, *20*(3), 396-434. https://citejournal.org/volume-20/issue-3-20/english-language-arts/planning-for-literacy-instruction-an-evaluation-of-online-resources-used-by-preservice-teachers

Blakeslee, S. (2004). The CRAAP test. *LOEX Quarterly*, *31*(3), Article 4. https://commons.emich.edu/loexquarterly/vol31/iss3/4

Bradbury, H. (2015). *The SAGE handbook of action research*. SAGE Publications Ltd, https://doi.org/10.4135/9781473921290

Brann, A., & Zorfass, J. (2014, May 13). *Supporting reading in social studies*. Reading Rockets. https://www.readingrockets.org/article/supporting-reading-social-studies

Breakstone, J., McGrew, S., Smith, M., Ortega, T., & Wineburg, S. (2018). Why we need a new approach to teaching digital literacy. *Phi Delta Kappan*, *99*(6), 27-32. https://doi.org/10.1177/0031721718762419

British Educational Research Association. (2014). *Research and the teaching profession: Building the capacity for a self-improving education system*. https://www.bera.ac.uk/wp-content/uploads/2013/12/BERA-RSA-Research-Teaching-Profession-FULL-REPORT-for-web.pdf

Burchard, M. S., & Myers, S. K. (2019). Early information literacy experience matters to self-efficacy and performance outcomes in teacher education. *Journal of College Reading and Learning*, *49*(2), 115-128. https://doi.org/10.1080/10790195.2019.1582372

Burron, G., & Pegg, J. (2021). Elementary pre-service teachers' search, evaluation, and selection of online science education resources. *Journal of Science Education and Technology*, *30*(4), 471-483.

Case, D. O. (2005). Principle of least effort. In K. E. Fisher, S. Erdelez, & L. E. F. McKechnie (Eds.), *Theories of information behavior* (pp. 289–292). Information Today.

Caswell, A. (2025, February 21). New study reveals people are ditching Google for AI tools like ChatGPT search - here's why. *Tom's Guide*. https://tech.yahoo.com/ai/articles/study-reveals-people-ditching-google-090100369.html

Caulfield, M. (2019). SIFT (The Four Moves). https://hapgood.us/2019/06/19/sift-the-four-moves/

Chang, Y. W. (2016). Influence of human behavior and the principle of least effort on library and information science research. *Information Processing & Management*, *52*(4), 658-669. https://doi.org/10.1016/j.ipm.2015.12.011

Chen, Y.-J., Chien, H.-M., & Kao, C.-P. (2019). Online searching behaviours of preschool teachers: A comparison of pre-service and in-service teachers' evaluation standards and searching strategies. *Asia-Pacific Journal of Teacher Education*, *47*(1), 66-80. https://doi.org/10.1080/1359866X.2018.1442556

Connaway, L. S. (2018, June 20). What is 'container collapse' and why should librarians and teachers care? *OCLC Next*. http://www.oclc.org/blog/main/what-is-container-collapse-and-why-should-librarians-and-teachers-care/

Cyr, C., Cataldo, T., Brannon, B., Buhler, A., Faniel, I., Connaway, L., Valenza, J., Elrod, R., & Putnam, S. (2021). Backgrounds and behaviors: Which students successfully identify online resources in the face of

container collapse. *First Monday*, 26. https://doi.org/10.5210/FM.V26I3.10871

Dahlqvist, C. (2021). Information-seeking behaviours of teacher students: A systematic review of qualitative methods literature. *Education for Information*, *37*(3), 287-313.

Darling-Hammond, L. (2006). Constructing 21st-century teacher education. *Journal of Teacher Education*, *57*(3), 300-314. https://doi.org/10.1177/0022487105285962

Davies, P. (1999). What is evidence-based education? *British Journal of Educational Studies*, *47*(2), 108e121. https://doi.org/10.1111/1467-8527.00106

Diekema, A. R., & Olsen, M. W. (2014). Teacher personal information management (PIM) practices: Finding, keeping, and re-finding information. *Journal of the Association for Information Science and Technology*, *65*(11), 2261–2277.

Diery, A., Knogler, M., & Seidel, T. (2021). Supporting evidence-based practice through teacher education: A profile analysis of teacher educators' perceived challenges and possible solutions. *International Journal of Educational Research Open*, *2*, 100056. https://doi.org/10.1016/j.ijedro.2021.100056

Fielding, J. A. (2019). Rethinking CRAAP: Getting students thinking like fact-checkers in evaluating web sources. *College & Research Libraries News*, *80*(11), 620-622. https://doi.org/10.5860/crln.80.11.620

Gallagher, J. (2022). An emerging critical lens: Elementary teacher candidates' developing evaluation of social studies resources on online sites of curriculum sharing. *Journal of International Social Studies*, *12*(1), 2–21.

Gallagher, J. L., Swalwell, K. M., & Bellows, M. E. (2019). "Pinning" with pause: Supporting teachers' critical consumption on sites of curriculum sharing. *Social Education*, *83*(4), 217-224.

Gartner. (2024, February 19). Gartner predicts search engine volume will drop 25% by 2026, due to AI chatbots and other virtual agents [Press release]. https://www.gartner.com/en/newsroom/press-releases/2024-02-19-gartner-predicts-search-engine-volume-will-drop-25-percent-by-2026-due-to-ai-chatbots-and-other-virtual-agents

Godbey, S. (2018). Testing future teachers: A quantitative exploration of factors impacting the information literacy of teacher education students. *College & Research Libraries*, *79*(5), 611-623. https://doi.org/10.5860/crl.79.5.611

Jensen, I. B., & Dikilitas, K. (2023). A scoping review of action research in higher education: Implications for research-based teaching. *Teaching in Higher Education*, *30*(1), 84–101. https://doi.org/10.1080/13562517.2023.2222066

Ketzer-Nöltge, A., & Markovic, M. (2022). Fostering pre-service teachers' information and critical digital literacy skills through a COIL Project. *International Journal of TESOL Studies*, *4*(3), 125-142. https://doi.org/10.46451/ijts.2022.03.10

Lambert, F., Thill, M., & Rosenzweig, J. W. (2021). Making sense of student source selection: Using the WHY Method to analyze authority in student research bibliographies. *College & Research Libraries, 82*(5), 642-661. https://doi.org/10.5860/crl.82.5.642

Leeder, C., Markey, K., & Yakel, E. (2012). A faceted taxonomy for rating student bibliographies in an online information literacy game. *College & Research Libraries*, *73*(2), 115-133. https://doi.org/10.5860/crl-223

Leming, T., & Johanson, L. B. (2023). "And then I check to see if it looks legit" – digital critical competence in teacher education. *Frontiers in Education*, *8*. https://doi.org/10.3389/feduc.2023.1137563

McNeill, E. (2024). *U.S. Media literacy policy report 2023: A state-by-state status of media literacy education laws for K-12 schools*. Media Literacy Now. https://medialiteracynow.org/wp-content/uploads/2024/02/MediaLiteracyNowPolicyReport2023_publishedFeb2024b.pdf

Ntuli, E., & Kyei-Blankson, L. (2016). Improving K-12 online learning: Information literacy skills for teacher candidates. *International Journal of Information and Communication Technology Education*, *12*(3), 38–50. https://doi.org/10.4018/IJICTE.2016070104

Perrault, A. M. (2007). An exploratory study of biology teachers' online information seeking practices. *School Library Media Research*, 10. https://www.ala.org/sites/default/files/aasl/content/aaslpubsandjournals/slr/vol10/SLMR_ExploratoryStudy_V10.pdf

Rosenzweig, J. W., Lambert, F., & Thill, M. C. (2021). It's what's on the inside that counts: Analyzing student use of sources in composition research papers. *Evidence Based Library and Information Practice*, *16*(4), 63-83.

Rosenzweig, J. W., Thill, M., & Lambert, F. (2019). Student constructions of authority in the Framework era: A bibliometric pilot study using a faceted taxonomy. *College & Research Libraries, 80*(3), 401-420. https://doi.org/10.5860/crl.80.3.401

Schroeder, S., & Curcio, R. (2022). Critiquing, curating, and adapting: Cultivating 21st-century critical curriculum literacy with teacher candidates. *Journal of Teacher Education*, *73*(2), 129-144. https://doi.org/10.1177/00224871221075279

Schwieder, D. (2016). Low-effort information searching: The heuristic information-seeking toolkit. *Behavioral & Social Sciences Librarian*, *35*(4), 171–187. https://doi.org/10.1080/01639269.2017.1289019

Schwartz, S. (2025, July 22). Which states have passed 'Science of Reading' laws? What's in them? *Education Week*. https://

www.edweek.org/teaching-learning/which-states-have-passed-science-of-reading-laws-whats-in-them/2022/07

Shapiro, E. J., Sawyer, A. G., Dick, L. K., & Wismer, T. (2019). Just what online resources are elementary mathematics teachers using? *Contemporary Issues in Technology & Teacher Education*, *19*(4), 670-686. https://citejournal.org/volume-19/issue-4-19/mathematics/just-what-online-resources-are-elementary-mathematics-teachers-using

Shelton, C. & Archambault, L. (2018). Discovering how teachers build virtual relationships and develop as professionals through online teacherpreneurship. *Journal of Interactive Learning Research, 29*(4), 579-602.

Slavin, R. E. (2002). Evidence-based education policies: Transforming educational practice and research. *Educational Researcher, 31*(7), 15-21. https://doi.org/10.3102/0013189X03100701

Thill, M., Rosenzweig, J., & Lambert, F. (2020). *The WHY Method research taxonomy*. https://research.ewu.edu/thewhymethod/assessment

Thomm, E., Sälzer, C., Prenzel, M., & Bauer, J. (2021). Predictors of teachers' appreciation of evidence-based practice and educational research findings. *Zeitschrift Für Pädagogische Psychologie, 35*, 173–184. https://doi.org/10.1024/1010-0652/a000301

Thomm, E., Seifried, E., & Bauer, J. (2021). Informing professional practice: (Future) Teachers' choice, use, and evaluation of (non-)scientific sources of educational topics. *Zeitschrift Für Pädagogische Psychologie*, *35*(2–3), 121–126. https://doi.org/10.1024/1010-0652/a000309

Trixa, J., & Kaspar, K. (2024). Information literacy in the digital age: Information sources, evaluation strategies, and perceived teaching competences of pre-service teachers. *Frontiers in Psychology*, *15*. https://doi.org/10.3389/fpsyg.2024.1336436

UNESCO Institute for Statistics. (2018). *A global framework of reference on digital literacy skills for indicator 4.4.2*. https://unesdoc.unesco.org/ark:/48223/pf0000265403.locale=en

van Schaik, P., Volman, M., Admiraal, W., & Schenke, W. (2018). Barriers and conditions for teachers' utilisation of academic knowledge. *International Journal of Educational Research*, *90*, 50-63. https://doi.org/10.1016/j.ijer.2018.05.003

Walsh, A. (2009). Information literacy assessment: Where do we start? *Journal of Librarianship and Information Science, 41*(1), 19-28. https://doi.org/10.1177/0961000608099896

Withorn, T. (2025). Google AI overviews are here to stay: A call to teach AI literacy. *College & Research Libraries News*, *86*(5), 214-217. https://doi.org/10.5860/crln.86.5.214

Zimmermann, M., Engel, O., & Mayweg-Paus, E. (2022). Pre-service teachers' search strategies when sourcing educational information on the Internet. *Frontiers in Education*, *7*. https://doi.org/10.3389/feduc.2022.976346

Appendix A
Evaluating Online Popular Sources - Evaluation Questions

1. What is the popular source? How does it get posted online?

a. Are you looking at a blog post, a webpage, a TED talk, a podcast, a magazine article, etc.?

b. Once you determine what kind of popular source you are looking at, think about how the information got posted online. Did it go through any kind of review?

2. Who is the creator?

a. What credentials or experience does the author have that gives weight to their information?

b. What motives does the author have for sharing this information?

c. Does the author have any biases?

3. What is presented?

a. Is the information presented as facts, opinions, personal experiences?

b. If the information is personal opinions, could these be useful? Educators have lots of classroom experience that could be relevant in relation to your research question.

4. Does this source contribute to the conversation about your research topic?

a. Research is about seeing the conversations between sources. How does this source support or conflict with other sources that you have found?

Appendix B
WHY Taxonomy Modified for Education Sources

Modified from Thill, M., Rosenzweig, J., & Lambert, F. (2020). *The WHY Method research taxonomy*.
https://research.ewu.edu/thewhymethod/assessment

Category W: Who wrote it?	**Definition**
WA: Anonymous	The source indicates that the piece was anonymously written.
WB: Nonprofessional	A person without demonstrated expertise in the area being written about.
WC: Corporate author	No single author identified on a work issued by an organization. Textbook company employees.
WD: Academic-amateur	A person with a graduate degree in another field, but demonstrating interest, dedication, or experience in the area being written about.
WE: Professional	A person with relevant experience, training or credentials relevant to the area being written about. Degreed or credentialed teacher.
WF: Academic	A person with a master's or doctoral degree in the area being written about, which they held at the time the content was published. Also includes graduate students, PhD candidates.
WZ: Cannot be determined	It was not possible to identify the author's background based on the available information.
Facet H: How was it edited?	**Definition**
HA: Self Published	Material made public directly by the author. Examples: Personal websites and blogs.
HB: Teacherpreneur marketplaces	Material the author published, generally as self-promotion to earn money. Example: Teachers Pay Teachers.
HC: Wiki	Material that is reviewed or edited by multiple possibly anonymous collaborators.
HD: Social Media	Examples: TikTok, Pinterest, Facebook.
HE: Professionally Edited	Professionally reviewed and approved by an editor and/or editorial staff. Examples: Neuhaus, Reading Rockets, Edutopia.
HF: Peer-reviewed	Reviewed and approved by academics.
HZ: Cannot be determined	It was not possible to identify based on the available information.

Category Y: whY was it published?	**Definition**
YA: Personal	
YB: Commercial	Teachers Pay Teachers or other sites that sell curriculum content or purchase tuition for courses. Examples: Cult of Pedagogy, textbook publishers, book publishers.
YC: Non-profit	Examples: Florida Center for Reading Research, Neuhaus, Edutopia, Reading Rockets.
YD: Youth	
YE: Government	Example: What Works Clearinghouse.
YF: Higher Education	
YZ: Cannot be determined	It was not possible to identify based on the available information.