

Theoretical Analysis, Classroom Practice, Opinion Essays

Supporting EAL Secondary Students in Thinking Critically about Online Information

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Abstract

Evaluating the credibility of online information, a key component of digital literacy, is challenging for secondary students because they often rely on superficial strategies that do little to help them differentiate between information and disinformation. For example, our research has shown that students are prone to believe sites that appear professional but are in fact of a more nefarious nature (e.g., fake news sites designed to intentionally deceive). For this *Description of Classroom Practices* report, we describe a series of six lessons that we designed with secondary EAL teachers that help students think critically about online information while supporting their growth as additional language learners. We found that the lessons helped students evaluate the credibility of online sources holistically by evaluating within and across content, source, and context. After reporting the students' overall positive comments about the materials, we describe their favourite activity in more detail with scaffolding suggestions.

Background and Rationale

Information evaluation processes are implicit in reading. These processes include discriminating reliable from unreliable evidence and communicating the claim-plus-evidence structure of academic writing (Wiley et al., 2009). However, evaluating the credibility of online information, a key component of digital literacy, remains a challenge for secondary students who often rely on superficial strategies that do little to help them differentiate between factually accurate and inaccurate information or recognize exaggerations and misleading statements (Corrigan, 2019; Corrigan et al., 2023; Forzani, 2016; Kiili et al., 2018). For example, a recent survey showed that two thirds of American high school students could not tell the difference between online news stories and advertisements due to their reliance on superficial strategies such as aesthetics, domain names, or descriptions in the About section (Stanford History Education Group, 2019). While there is limited research in Canadian contexts, one province-wide study of first year

undergraduate students entering Quebec universities found that students were ill-equipped to evaluate online information, with only 23% of students able to identify credibility indicators for online information such as currency, authority, and site sponsorship (Mittermeyer, 2005). Recognizing that misinformation (i.e., false information not intended to cause harm), disinformation (i.e., false information intended to manipulate and cause damage), and malinformation (i.e., information stemming from the truth but exaggerated to mislead) threaten their academic studies and pose challenges for civic life, Canadian teenagers have called on educators to provide them with critical literacy skills (Wong, 2023).

For educators, the key question is how to help students develop the ability to carefully evaluate the information that they consume and disseminate online. Research with language arts teachers has shown that teachers value information literacy, which is the ability to find and use information, and recognize their responsibility to help students evaluate the credibility of the information they find (Kasperski et al., 2022; Yondler & Blau, 2023). Digital literacy includes technical skills as well as the ability to draw on cognitive, social, and emotional skills to comprehend and communicate ideas in digital formats (Gilster, 1997). Facilitating students' ability to evaluate resources is particularly important for teachers of English as an Additional Language (EAL) because research has shown that people are worse at detecting fake news (i.e., false or misleading information presented as news) in their additional language (Muda et al., 2023). For EAL contexts specifically, the emerging digital needs of EAL students, innovative digital forms of communication, and learner participation in digital spaces (including out of class learning) have received attention in recent special issues of *TESOL Quarterly* (Darvin & Haffner, 2022) and *Language Learning & Technology* (Sauro & Zourou, 2019).

Reflecting the importance of resource evaluation for secondary students, provincial authorities have incorporated digital literacy into their curricula. For example, in the Quebec secondary school system (Grades 7–11), online evaluation is targeted in *Broad areas of learning* and *Cross-curricular competencies* that transcend particular subject areas such as mathematics, science, or languages. These learning areas and competencies include digital literacy, media, and informational technology with the goal of enabling students “to exercise critical, ethical and aesthetic judgment with respect to the media” (Ministère de l'Éducation du Québec [MEQ], n.d. p. 11). The Quebec Ministry of Education's *Digital Action Plan* (2018) also emphasizes the integration of internet resources in education so that students can become better digital citizens with critical decision-making skills.

Digital literacy is also important in other jurisdictions across Canada. For example, in British Columbia, digital literacy is part of the critical thinking and reflective thinking sub-competency in the Thinking core competency for K–12 education (<https://curriculum.gov.bc.ca/competencies/thinking/critical-and-reflective-thinking>). It is also targeted in Grades 6 to 8 as part of the K–9 Applied Design, Skills, and Technologies (ADST) content (BC Ministry of Education, n.d., a). To illustrate, as part of digital citizenship, students are expected to learn search techniques, how search results are selected and ranked, and apply criteria for evaluating search results. However, since there is variation in when EAL students enter the British Columbia educational system, it is possible that students begin the later secondary years without having had prior ADST instruction. Their first exposure to digital literacy skills may occur through the English language arts competencies for New Media (Grades

10–12), which includes skills like exploring the relevance, accuracy, and reliability of a text (BC Ministry of Education, n.d., b). With a recent survey by the Canadian Foundation for Innovation (CFI) reporting that over half of the surveyed youth (aged 18–24) agreed that they had trouble knowing what online information they can trust, online evaluation skills are crucial for secondary students across the country (CFI, 2021).

Although the importance of digital literacy is widely recognized, secondary teachers have reported that there is a general lack of suitable materials for language arts students in English schools and EAL students in French sector schools in Quebec (Stockbauer, 2023). In addition to lacking resources, EAL teachers also have few strategies for reacting when students share disinformation during class discussions (Correa & Hall, 2022) or techniques for presenting information that challenges students' beliefs in ways that do not make them cling to those beliefs more strongly, in other words, the backfire effect (Lewandowsky et al., 2012). EAL students face the challenge of having to do this in their additional language, which makes acquiring digital literacy even more difficult. Research into source-based academic writing has shown that EAL students have difficulty representing source information accurately (Neumann et al., 2019; Storch, 2012; Wette, 2010), citing this information adequately (Doolan, 2021; Du, 2019; Weigle & Parker, 2012), and integrating it in linguistically appropriate ways (Cumming et al., 2005; Shi, 2004; Wette, 2017).

To address the need for Canadian youth to have the ability to critically evaluate online resources, we worked with secondary teachers of History (Grade 9), English Language Arts (Grades 10 & 11), and EAL (Grade 11) to create pedagogical materials for secondary students. We created EAL versions of the lessons to accommodate the students' need for focused vocabulary and pronunciation support. After assessing the students' online evaluation skills in January of the year when this project was first carried out, the teachers then implemented the materials with their students over a four-month period, after which we administered another online evaluation assessment. In response to feedback from students and teachers, the materials were revised and published online, including the versions for EAL students that include more scaffolding and language support. In this *Classroom Practice* article, after explaining our theoretical framework, we describe the EAL materials and share students' perceptions about the lessons.

Theoretical Framework

Our theoretical framework was guided by perspectives on information credibility, which we define as information accuracy (Kiili et al., 2008) or the *believability* of information (Hovland et al., 1953). Within the new literacies of online research and comprehension (Leu et al., 2013), online research involves both traditional offline reading skills as well as online reading skills (see, for example, Cho, 2014; Coiro & Dobler, 2007). It further views online reading as an inquiry process of defining questions (Leu et al., 2004) and locating (Bilal, 2000), synthesizing (Goldman et al., 2005), evaluating (Sanchez et al., 2006), and communicating information (Greenhow et al., 2009). Prior empirical research studies have examined the effectiveness of pedagogical interventions designed to help students become adept at online information evaluation, but they have not reported widespread learning outcomes. One reason for this might be that they focused on relatively narrow tools for helping students conceptualize and learn

online evaluation, such as lists of questions, checklists, or other quick heuristics. For example, many studies have focused on a single aspect of evaluation (e.g., sourcing; see, e.g., Perez et al., 2018), on a single evaluation strategy (e.g., lateral reading; Wineburg & McGrew, 2019), or even on multiple evaluation strategies without much attention to how to integrate information comprehensively to evaluate a resource overall (see, e.g., McGrew, 2020; Zhang & Duke, 2011). Another potential reason may be their overall orientation to online evaluation as being about competencies or strategies as opposed to encompassing social practices. Whereas a competencies orientation emphasizes technological skills, digital literacy as a social practice incorporates key concepts related to identity and social context (Weninger, 2022).

Within this general framework of information credibility, we adopted the Critical Online Resource Evaluation (CORE) framework for helping students evaluate relevancy and credibility during online inquiry (Forzani, 2019; Forzani et al., 2022). The CORE framework (illustrated in Figure 1 on the next page) considers the multifaceted and situated nature of online evaluation and challenges students to evaluate across three tiers of information:

- *Content*: What does the information say? For example, the accuracy of ideas, strength of argumentation, strength of evidence [anecdotal vs. factual/empirical];
- *Source*: Who is saying it and why are they saying it? This includes ideas about the credibility of the author and/or publisher; and,
- *Context*: When, where, and how is the information being presented? For example, one might look at the URL, currency [publication date], genre [e.g., blog], endorsements [e.g., advertisers and sponsors]).

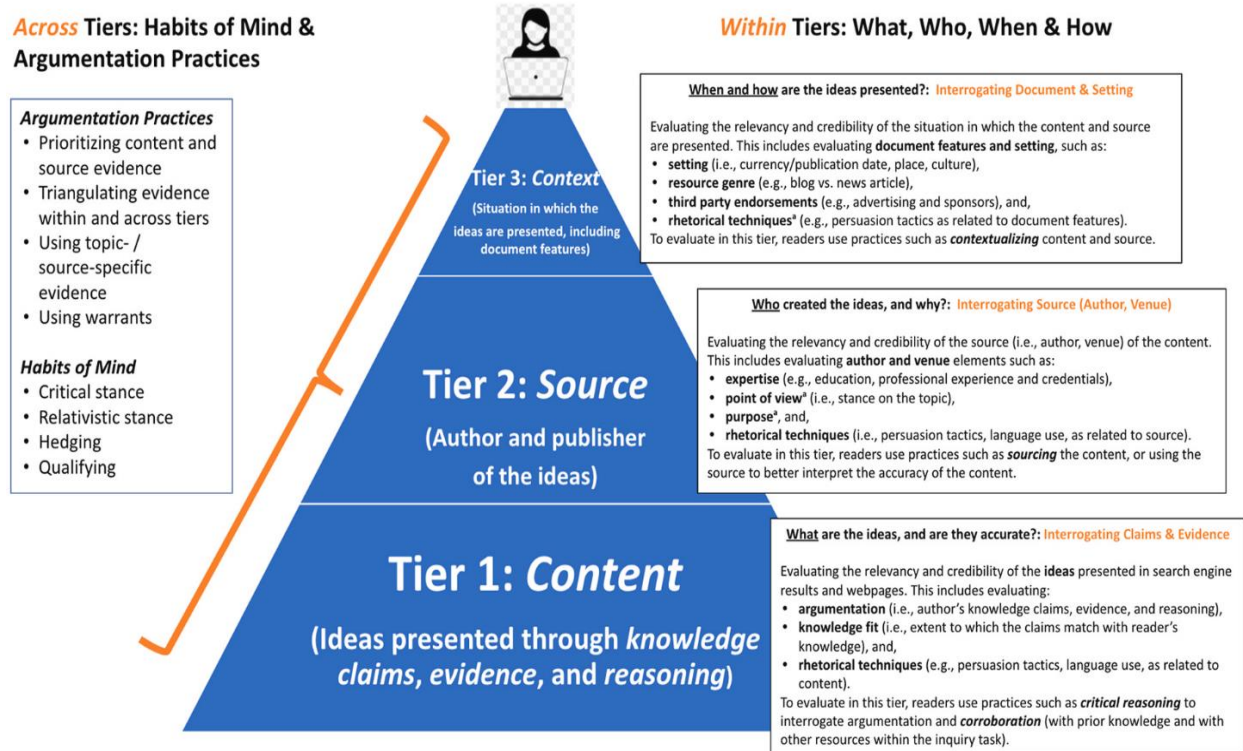
Besides focusing on information within tiers, the framework also targets argumentation practices across tiers to foster triangulation of evidence and using warrants while developing mental habits like critical stance, qualifying, and hedging.

It is important to highlight that the CORE framework does not encourage the implementation of the three tiers as checklists or tools that may lead students to “gather lists of disconnected information” (Forzani, 2019, p. 4). Instead, CORE-based materials enable students to evaluate online information comprehensively and critically in a way that is responsive and contextualized to the student’s online inquiry task. Students’ attention to content, source, and context must be supported by metacognitive practices that enable them to critically evaluate information, despite the well-documented phenomenon of my-side bias (Perkins et al., 1991) or confirmation bias (Lord, et al., 1979). Because students naturally gravitate towards information that supports their existing beliefs, online evaluation instruction must foster the development of critical habits of mind (Forzani, 2018), including flexible thinking, i.e., the ability to change one’s mind, when confronted with better evidence (Barzilai & Zohar, 2012), and assuming a proactive, critical stance towards information (Corrigan, 2019). For example, it is important for students to recognize that context means that all online resources are situated, which creates opportunities for consideration of the historical context, social conditions, political movements, and identity and encourages awareness of social practices. Adopting the CORE approach, we created open access online lessons (<https://doe.concordia.ca/core/>) for teaching EAL secondary students how to evaluate the credibility of online resources (Digital Literacies Research Group,

2023). For this *Classroom Practices* article, we describe our open-access CORE lessons, EAL secondary students' reactions to the lessons, and a sample activity.

Figure 1

The Three-Tiered (CORE) Framework (Forzani et al., 2022)



Instructional Context

As part of the larger study, we implemented lessons we created using the CORE framework with EAL students at a French sector private school in a suburban Francophone community on Montreal's south shore. Language proficiency of EAL students varies widely depending on the geographic location of the school, but it is our estimate that EAL students in our study were between the *expanding* and *consolidating* level for Grades 8–12 on the BC ELL levels (<https://www2.gov.bc.ca/assets/gov/education/kindergarten-to-grade-12/teach/pdfs/ell/ell-standards-full.pdf>). Quebec secondary schools follow a competency-based approach with the EAL (which is referred to as English as a second language [ESL] in official documents) curriculum targeting three core competencies: Interacts orally in English, Reinvests understanding of texts, and Writes and produces texts. The fifth researcher, who is an experienced EAL teacher, incorporated the lessons into her Secondary V (i.e., Grade 11) EAL class during one school year. EAL instruction in most Quebec secondary schools is provided through four 75-minute classes in nine-day cycles throughout the year. In this particular class, the lessons were implemented across 12 periods overall (over 3 nine-day cycles), which included time for students to work on a research project.

Although all the students in the class completed the lessons, 16 students provided parental consent and student assent for us to share their comments outside the school setting. The students (10 female, 4 male, 2 unreported), who were in their last year of secondary school, had a mean age of 17.3 years ($SD = 0.7$) and reported either French ($n = 9$) or both French and English ($n = 3$) as their first languages (L1). Quebec law only allows students with an English eligibility certificate (EEC) to attend English-medium schools (<https://www.education.gouv.qc.ca/en/contenus-communs/parents-and-guardians/instruction-in-english/eligibility>). Therefore, students with an English-speaking immigrant parent or students who use English as a family language are still required to take EAL classes in French sector schools. Furthermore, students with an EEC may choose to attend French sector schools. While there was a generally high English proficiency in this particular class, the materials include adaptations that can be used across a broader range of language proficiency levels.

CORE Lessons

We created six CORE lessons, each of which was designed to take approximately 75 minutes. The lessons are structured so that teachers can use them as scaffolding to help students prepare for any type of project that requires source use. For example, our EAL teacher (Barrios Guerrero) used the CORE lessons to support her students in conducting a research project about a social debate of their choice, such as male birth control. Students posed a research question (e.g., *Is male birth control safe and effective?*); located online information; evaluated the credibility of the information within and across content, source, and context; synthesized the results of their findings; prioritized credible information; and then communicated their findings through a video or oral presentation. The History and English Language Arts instructors in the larger study similarly incorporated the CORE lessons into their existing project assignments as a way to help students learn how to select relevant sources for their oral and written reports. Because digital literacy is a cross-curricular competency in the Quebec secondary curriculum, all teachers are expected to incorporate it into their subject-specific learning targets. However, their assessments tended to focus on subject-specific competencies.

As shown in Figure 2 (from Lesson 3), each of the six lessons (<https://doe.concordia.ca/core/>) is divided into four sections:

- The **Overview** presents a brief description of the lesson and its guiding question, learning outcomes, and key terms. The overview also lists the relevant cross-curricular competencies, broad areas of learning, and competencies associated with the lesson.
- The **Lesson** outlines the different parts of the lesson with a brief description of each component and includes recommended time limits for each part. Language support for EAL students is provided through vocabulary and pronunciation information in the lesson slides.
- The **Accommodations** present alternative ways of teaching the content (e.g., remote versus in-person instruction as well as vocabulary support, in certain lessons).
- The **Extension** presents suggestions for teachers who want to explore certain aspects in more detail with their students.

Figure 2*Organization of CORE Lesson 3*

Overview Lesson Accommodations Extensions

ESSENTIAL QUESTION

How do I locate credible online information?

OVERVIEW

The first section of this lesson introduces students to the concept of fake news, and discusses the spread of misinformation online. Then, students will learn how to develop strategies to combat the spread of fake news or online misinformation by examining the CORE strategies in detail. Finally, students learn about the strategy of lateral reading, and will be exposed to some fact checking websites. The lesson ends with students continuing the Town Hall Meeting preparation that they have started in previous lessons.

DOCUMENTS

- Lesson 3 Slide Deck
- "How false news can spread"
- Worksheet 3.1
- Reality check, the game (MediaSmarts resource)
- Worksheet 3.2

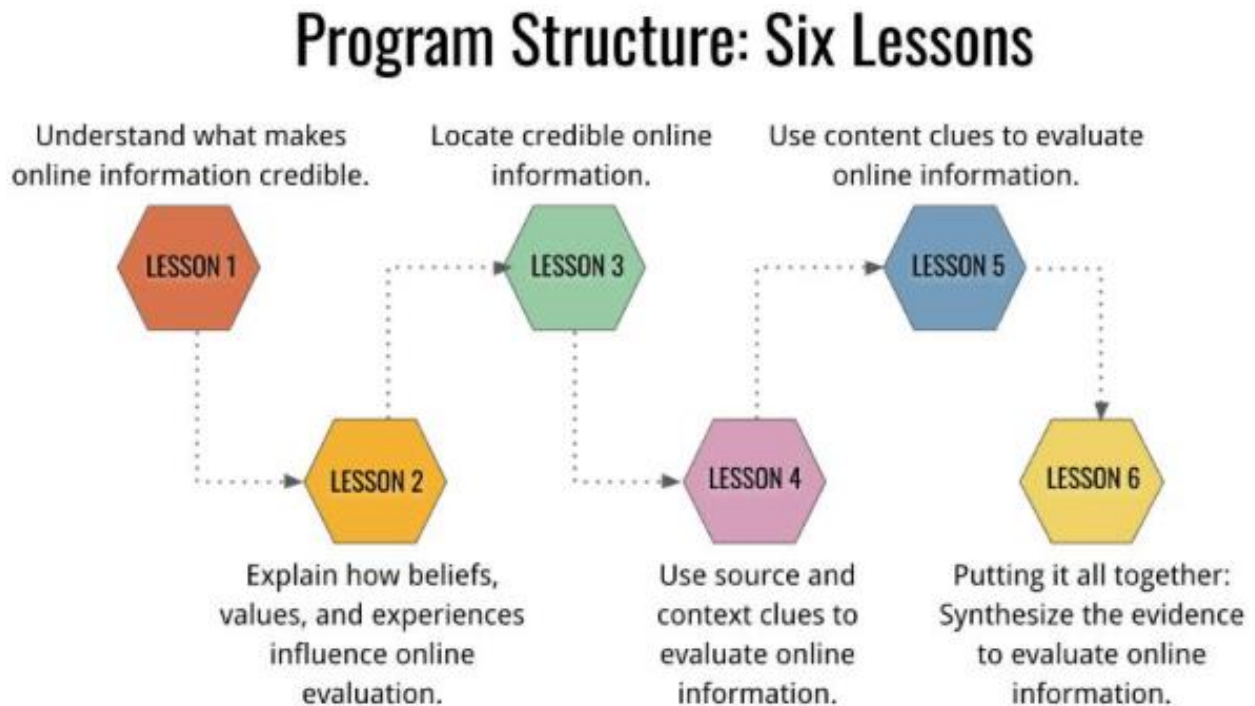
Under **Documents**, teachers can download the presentation slides for each lesson to use in class along with suggestions about timing and instructional materials. The Documents section also contains links to student handouts, which contains individual, pair, and group work activities. All lessons share a similar structure consisting of teacher-fronted activities, peer-to-peer tasks, and self-monitoring activities.

Each lesson's title reflects the overall learning object for the lesson. In terms of content, *Lesson 1—Understand what makes online information credible*, introduces the CORE framework and activates students' prior knowledge and introduces the Town Hall task for Lesson 3, in which students participate in a formal discussion about a complex question from multiple stakeholder perspectives. *Lesson 2—Explain how beliefs, values, and experiences influence online evaluation*, helps students reflect on the impact of confirmation bias on the research process. This lesson also helps students prepare to take on a stakeholder's perspective for the Town Hall task. In *Lesson 3—Locate credible online information*, students learn about search engine algorithms, social media echo chambers, fake news, and lateral reading to verify information. Lesson 3 concludes with the Town Hall task. *Lesson 4—Use source and context clues to evaluate online information*, is divided into two sub-lessons. The sub-lessons each explain how to use the source and context tiers as clues when evaluating the credibility of online information. These lessons provide students with tools and strategies for evaluating these aspects in their own research process. It also includes an interactive four corners activity (where students indicate their answers by walking to one of the four corners of the room, with each corner representing a different answer) to apply their skills and gain formative feedback. *Lesson 5—Use content clues to evaluate online information* challenges students to look at the source information itself to challenge the evidence of a claim by learning strategies that include lateral reading, fact checking, and backwards-reference searching. Finally, in *Lesson 6—Putting it all together*, students focus on the final stages of the research process when they are reading to integrate information from different sources and using it as part of their own project. Each lesson contains a learning objective to guide the lesson and to signify what information in the lesson is most

important to learn. Figure 3 provides an overview of all six lessons including their learning objectives.

Figure 3

CORE Essential Questions by Lesson



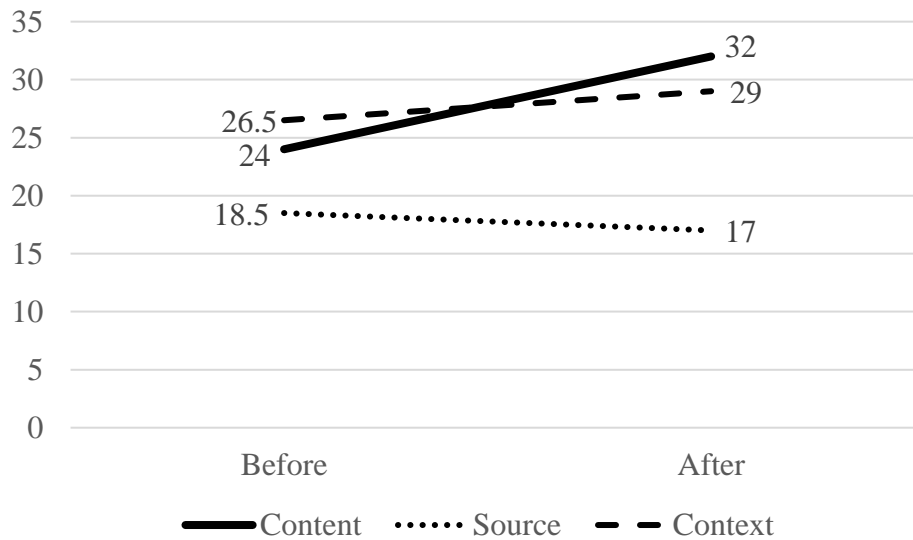
Student Reactions to CORE

To illustrate the potential for CORE lessons, we measured students' ability to evaluate online information before and after the series of six lessons. At each point in time, they were given a topic (artificial sweeteners or red meat) and read three related online articles that had been selected to represent a range of more and less trustworthy sources, as determined by three experts in source evaluation (including a journalist and two researchers of digital literacies who hold doctorates). For example, the article by Sandee LaMotte of CTV News entitled "Red and processed meat linked to heart disease, mega study says" was rated as more trustworthy by experts than the web page "Nutritional qualities of beef" by the Beef Cattle Research Council, a lobby group. After reading each online source, students were asked to what extent they trust the information (on a scale of 1–100). Then, they were asked to provide credibility justifications for their trustworthy rankings. For the 12 students who completed both tasks, their credibility justification score increased from 69 ($M = 5.75$, $SD = 2.49$) to 78 ($M = 6.50$, $SD = 3.86$) across the three articles. As shown in Figure 4, after completing the lessons, students increased in their ability to justify a source's credibility regarding content and context, but they gave fewer comments about source. It is noteworthy that content improved the most because, in the CORE framework, the content itself takes precedence over source and context. In other words, the

credibility of the content of the online information (what is being said) is more important than who is saying it (source) or how it is being said (context).

Figure 4

Student Reasons by Type and Time



To illustrate this trend, we provide comments from an EAL student who showed an improvement in her ability to evaluate sources and give reasons over time in Table 2.

Table 2

Examples of Student Reasoning Across Time

| Time | Beginning of the semester | End of the semester |
|----------|---|--|
| Topic | Artificial sweetener | Red meat |
| Comments | It is written by dietitian, but it is not approved by the government. There is a lot of reliable sources. | It is not written by a dietitian or a doctor specialized in nutrition There are many statistics and results from studies. The content is relevant and well explained. The article was written less than a year ago so the information is more recent. There are lots of studies in the article. There’s also the links of them if the readers want to look at the studies themselves. |

Her comments at the end of the year demonstrated that she oriented to content (e.g., triangulation of evidence from statistics, results, and studies), source (e.g., trustworthiness of the author), and context (e.g., publication date), which reflect an integrated evaluation across all three tiers of the CORE framework.

We also solicited students' opinions about their interest and engagement in the CORE lessons. When asked what they liked about the CORE lessons, the students' responses clustered around three themes: relevance, skill acquisition, and peer interaction. For relevance, four students commented about how the information provided would be useful for their future studies in CÉGEP (i.e., community college) or University, and throughout their lives. As one student explained, "I liked that it taught us useful information that we will need for further studies. School does not teach that information, so it was a good way for me to learn extra information this year." Although digital literacy is targeted in the Quebec curriculum through cross-curricular competencies and broad areas of learning, instructors may prioritize their subject-specific learning outcomes and struggle to incorporate additional competencies due to time constraints. These competencies are simultaneously everyone's responsibility, and nobody's responsibility in particular; therefore, they often get skipped (Corrigan et al., 2023). Also, since cross-curricular competencies are integrated into the teaching of other subject-area content, students may not have noticed that it was taught. The second theme concerned the acquisition of skills, such as how to search, verify, and consolidate information. Three students mentioned skills development, such as the student who wrote that "I liked to learn how to spot if the information or source was credible. I think it's an essential skill that everyone should have, and I'm very glad I have it now." Finally, for peer interaction, students stated that they liked the peer activities, in particular the town hall meeting in Lesson 3. One student explained that these activities were enjoyable because they got "to interact with people that I don't talk to a lot." These EAL students' positive comments reflected the findings of our larger-scale pilot test of the CORE program with secondary History and English Language Arts classes in which students repeatedly listed the Town Hall as one of their favourite activities (Jimenez, 2023). We provide more details about the Town Hall activity from Lesson 3 in the following section.

Students' Favourite Activity: The Town Hall

The Town Hall activity is a summative assessment task that is structured using a gradual release of responsibility approach, i.e., I do it / we do it / you do it (Fisher & Frey, 2014) to support students in moving towards independently locating, evaluating, synthesizing, and communicating online information. Unlike a two-sided debate, a town hall is a formal discussion about a complex question that incorporates multiple perspectives. It provides an opportunity for students to directly examine their confirmation biases by taking on alternate perspectives. Teachers and students can choose their own topic for the Town Hall, or they can vote on one of the following four topics that were selected following consultation with students and teachers: (1) Should statues of controversial historical figures be removed from public spaces? (2) Should individuals reduce their carbon footprint to combat climate change? (3) Should the government regulate social media? (4) Should we ban homework for elementary students?

For the Town Hall, the class is divided into different stakeholder groups, each representing a different perspective such as researcher, student, economist, or politician.

Throughout the unit, students work towards locating, evaluating, synthesizing, and communicating online information. During the Town Hall, each group communicates their findings from their stakeholder's perspective. Following the Town Hall, students write a reflection that demonstrates their ability to support an opinion by incorporating credible online information. In the reflection, students can maintain the position they took in the Town Hall or adopt a new position. Teachers may provide multiple formats for students to express their reflections, such as a written essay, blog, video, or interactive media following universal design for learning guidelines for communication (CAST, 2018).

Because the Town Hall is a challenging task, teachers may find it useful to provide scaffolding strategies, including use of the worksheets and template available at the CORE website. It can be difficult and time-consuming for students to locate online information at an appropriate reading level; therefore, CORE provides teachers with the choice to use pre-selected online articles for each topic. Alternatively, teachers may want to model how to find information at an appropriate reading level, so CORE includes links to recommended sites such as Britannica Kids, Kiddle, and National Geographic Kids. When reading information designed for adults, EAL students may benefit from translanguaging processes such as language alternation to locate sources and build background information, discussing source texts with same-first language peers, monitoring metacognitive search and reading skills, and comparing source texts in different languages (Cenoz & Gorter, 2022; Song & Cho, 2021). For the Town Hall reflection, EAL students may also benefit from creating multimodal and multilingual compositions that draw on their varied linguistic and media skills (Dagenais et al., 2017). To facilitate both the oral presentation and the written reflection, teachers can scaffold students with word charts, paragraph frames, lists of transitional words, and sentence starters. Pair and small group activities can be used to help students brainstorm content for the Town Hall as well as receive peer feedback on their reflection drafts.

Conclusion

Inspired by both the importance of digital literacy for secondary students and educators' need for instructional materials, we created open access online materials that encourage critical evaluation of online resources. Currently, digital literacy often reflects a competency orientation as opposed to a social practice orientation (Weninger, 2022) at the same time that teachers tend to orient to cognitive competences of online evaluation rather than socio-affective dimensions (Kasperski et al., 2022). However, an emphasis on cognitive evaluation strategies alone may not be useful when a student holds beliefs, values, and experiences that make them closed to finding credible information about a topic (e.g., an anti-vaxxer student doing research on the safety and efficacy of vaccinations). Activities that address the affective dimension of evaluation, such as CORE Lesson 2 about confirmation bias, are needed to ensure that students are equipped to consider how beliefs, values, and experiences play a role in digital literacy.

The CORE lessons are designed flexibly so that teachers can implement them in a variety of classes to help prepare students for a project that requires the use of sources. They can also be taught in one block (all six lessons in one unit) or spread out over a school term or year. Our pilot project with EAL secondary students illustrated how our teacher incorporated the CORE lessons into an original (teacher created) research project assignment in which students had to

focus on a controversial topic in current events. The students expressed more evaluative comments about online resources over time and had largely positive reactions to the CORE lessons. Our future work remains focused on the development of pedagogical resources to help secondary educators promote both the cognitive and socio-affective dimensions of digital literacy. To ensure that these materials are accessible for EAL students, we are continuing to explore ways of scaffolding students on linguistically demanding tasks like understanding academic texts, identifying author stance, synthesizing across multiple sources, and incorporating source information into their own words.

Acknowledgements

We would like to acknowledge that this work was supported by a grant awarded to the first three authors by the FRQSC Concerted Actions program (2021-OEUA-291421). We would also like to thank the teachers and students who participated in the study, along with Elena Forzani for her valuable suggestions, and all the research assistants who helped with materials development, data collection, and data analysis: Catherine Clément, Elyse Deveau, Charlotte Durocher, Dalia Elsayed, Kasha Paprocki, and Ingrid Stockbauer.

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