Critical Literacy as a Pathway for Integrating Sustainability Literacy into Language Arts: A Proposed Framework

Rachel Tidd[1,*] **and Paula DeHart**[2,^]
[1] Doctoral Candidate, School of Education, University of Wisconsin-Stevens Point, Stevens Point, WI, 54481, USA
[2] Professor Emeritus, School of Education, University of Wisconsin-Stevens Point, Stevens Point, WI, 54481, USA
[*] Correspondence: rtidd785@uwsp.edu
[^] Correspondence: pdehart@uwsp.edu

Abstract: A sustainability literate person possesses the knowledge, skills, values, and ecological worldview needed to make decisions and engage in actions that move society toward a more sustainable existence. Often, students learn about an environmental issue, such as deforestation, and are then encouraged to take action, like planting a tree. While this approach allows students to engage in action quickly, it misses an opportunity for students to delve more deeply into sustainability issues by exploring diverse perspectives, examining assumptions, and imagining a more just future before taking that action, skills that are rooted in critical literacy. This article presents a framework for integrating sustainability literacy into K-12 language arts using a critical literacy approach. Drawing from multiple fields, it highlights how critical literacy can be employed with sustainability literacy to help prepare not only critical readers and writers but also problem solvers and changemakers ready to address the challenges of a changing climate. Along with the framework, an explanation will be provided for how educators can equip students with the skills needed to take sustainable action while strengthening their reading and writing abilities and harnessing the power of words to influence change in their communities.

Keywords: sustainability literacy; language arts; K-12; literacy; critical literacy; civic action; sustainability education

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Most educators recognize the need and urgency of teaching about climate change and sustainability, preparing students with the knowledge, skills, and dispositions needed to face a rapidly changing world (Dropkin et al., 2023). However, many schools' primary focus, especially during the elementary and middle school years, is on reading and writing proficiency, with issues of sustainability and climate being relegated to science class (Hagerman, 2024). This science-oriented approach to learning about climate change and sustainability is inadequate and misses the opportunity for students to engage with the social, historical, ethical, and environmental dimensions of these issues (Beach et al., 2017; National Council of Teachers of English, 2019). The language arts classroom is an ideal setting for engaging deeply with these dimensions of climate change and sustainability issues, fostering creative solutions through critical reading, writing, reflection, and discussion (Beach et al., 2017; Sherry, 2019; Woodard & Schutz, 2021). This article introduces a framework, created as part of a larger research study, that guides teachers in using critical literacy as a means to integrate and support students in acquiring the knowledge, skills, and dispositions (i.e., sustainability literacy) necessary to adopt sustainable ways of living within language arts curricula.

This framework was developed in response to the following question:

(1) How can we integrate sustainability literacy development into the K-12 language arts curriculum by utilizing critical reading and writing skills?

The ensuing sections bring together theories, perspectives, and insights from multiple disciplines to showcase the nexus between critical literacy and sustainability literacy. This is followed by an introduction and explanation of the proposed framework, which illustrates how critical literacy and sustainability literacy can be integrated to simultaneously build the knowledge, skills, and dispositions needed to empower students to address local sustainability issues through meaningful civic action while also enhancing their reading and writing proficiency.

Navigating and Understanding Terminology

The term "sustainability literacy" is often used in similar ways and contexts as "environmental literacy" and "climate literacy," so clarification of their meanings and relationships is necessary. While these literacies are related and share common goals, each also carries nuanced meanings, historical roots, and specific educational purposes. A summary of each term and its definitions is provided in Table 1, followed by a more detailed description of each term.

Table 1. Summary of Key Terms and Definitions

Term	Definition
Sustainability Literacy	The knowledge, skills, values, ecological worldview, and dispositions individuals need to understand complex sustainability issues (environmental, sociocultural, economic), make informed decisions, and take action (Nolet, 2009; Sass et al., 2020; UNESCO, 2017).
Climate Literacy	An understanding of how the climate system works, how human actions influence climate, and how climate influences people and other parts of the Earth system (U.S. Global Change Research Program, 2024).
Environmental Literacy	The capacity to perceive and interpret the relative health of environmental systems and take appropriate action to maintain, restore, or improve the health of those systems (Roth, 1992).

The term “sustainability” as used here aligns with the definition outlined in the 1987 Brundtland Report, which states that it “meets the needs of the present without compromising the ability of future generations to meet their own needs” (World Commission on Environment and Development, 1987). This report emphasized that economic, social, and environmental

concerns are interconnected systems and listed education as a key factor in achieving sustainability. This was followed by *Agenda 21*, the document produced for the *Rio Declaration* in 1992, which devoted an entire chapter to the role of education in achieving sustainability (Nolet, 2016, p. 56). UNESCO was tasked with managing these educational recommendations and subsequently outlined 17 Sustainable Development Goals (SDGs) in the 2030 *Agenda for Sustainable Development* (UNESCO, 2017). The fourth SDG emphasizes the vital role of education in achieving sustainability.

Numerous researchers have attempted to create a definitive list of sustainability key competencies because having a specialized set of critical thinking skills has been identified as essential to solving the complex problems of sustainability and attaining sustainability literacy. While each list is different, there is much overlap, with many nuanced variations of the same core set of competencies. The framework proposed in this article focuses on the five competency categories outlined by Potter-Nelson & Meyers (2022): sustainability knowledge, systems thinking, futures thinking, social justice competence, and action citizenship competence. These competencies were selected based on Potter-Nelson's (2020) synthesis of prominent sustainability competency lists into four categories, later expanded to five in collaboration with Meyers, offering a simplified framework for curriculum design and clearly defined learning outcomes (Rost-Allen, 2024). To develop these key competencies, education plays a pivotal role, providing instructional activities that engage students with the interconnected social, environmental, and economic dimensions of sustainability.

Environmental literacy predates sustainability literacy, and as the Roth definition in Table 1 illustrates, it focuses primarily on the environmental component within sustainability literacy. This means that the primary focus of environmental literacy has been on understanding and acting upon the health of ecological systems, rather than the broader social or economic dimensions encompassed in sustainability literacy.

Climate literacy is the narrowest and most recent of these three terms, focusing primarily on climate science and the effects of climate change. With the global crises occurring in recent decades due to a changing climate, there has been a call for education to heighten awareness of the changing climate, identify how people influence it, and suggest actions for remediation.

Definitions of environmental and climate literacy are increasingly expanding to include broader dimensions of sustainability (Potter-Nelson & Meyers, 2022; U.S. Global Change Research Program, 2024). For example, in the most recent Climate Literacy Guide published by the U.S. Global Change Research Program, the evolving and expanded focus of climate literacy is acknowledged, broadening its definition beyond physical climate science to encompass other "knowledges," such as Indigenous knowledge, social sciences, and the political aspects of climate change.

Despite these distinctions, all of these terms emphasize the urgent need for systemic change in response to the global climate crisis and the role of education in making these changes a reality (Potter-Nelson & Meyers, 2022). Ultimately, these terms share a commitment to fostering awareness, critical thinking, and action for a more sustainable and just future (Lemons, 2011). Sustainability literacy, being the broadest of these terms, was chosen and applied in the following sections.

Challenges in Achieving Sustainability Literacy

Sustainability-related issues are inherently complex and often controversial, involving interconnected environmental, sociocultural, and economic factors that cross disciplinary barriers. Achieving a sustainability-literate society is a priority, given the rapidly changing climate, and requires intentionally building sustainability literacy throughout childhood and adulthood (UNESCO, 2024). Fostering sustainability literacy in students requires intentional

integration of sustainability across all K–12 grades and subject areas, using learner-centered, active, critical, place-based, and collaborative pedagogical practices (Nolet, 2016; UNESCO, 2024).

Many existing sustainability and climate education lessons and curricula are focused on introducing a sustainability problem and then guiding students to take some type of "action." For example, students may study deforestation and then be encouraged to take immediate action by planting a tree. However, this fast-tracked approach to "action" deprives students of the opportunity to engage more deeply with the issues and overlooks the intermediate skills necessary to fully understand, formulate their own opinions, and independently address sustainability and climate challenges in the future (Sass et al., 2020).

Civic action is not just about taking isolated action, such as planting a tree; it involves students working individually and collectively to improve their school or community and taking responsibility for pushing for changes when they observe injustices (McGinnis & Mitra, 2022). Students need educational experiences that allow them to develop both sustainability competencies and critical literacy skills, such as considering diverse perspectives, identifying power dynamics and injustices, weighing assumptions, and imagining a more equitable and just future, and support them in becoming sustainability literate. Engaging students in purposeful and critical learning, management, planning, and stewardship of the places they live fosters a sense of agency and is not only important for sustainability literacy but is essential for psychological well-being (Bandura, 2001; Chawla & Heft, 2002). Without these crucial intermediate skills, students will struggle to fully comprehend and make informed decisions that address the various dimensions of sustainability.

In the language arts classroom, these intermediate steps can be supported and developed through the teaching of critical literacy skills, which closely align with the goals of sustainability literacy. Critical literacy, a foundational element of language arts instruction, encourages students to examine how texts convey ideas, who benefits from them, how they shape our understanding of the world, and how students can design texts to influence positive change. Learning to use language effectively to communicate about sustainability, including educating, recording, amplifying, and advocating, is vital to supporting a shift toward a more sustainable society, and further research is needed in this area (Beach, 2023; Beach et al., 2017; Sherry, 2019). The following sections examine the factors contributing to poor reading and writing proficiency, as well as the overlap between critical literacy and sustainability.

In addition, an often-overlooked barrier to transitioning to more sustainable ways of living is students attaining adequate proficiency in reading and writing, both in the U.S. and globally (Crawford et al., 2024; UNESCO, 2017). The most recent results from the National Assessment of Educational Progress (2024) found that only 29% of California's fourth-grade students were proficient in reading, leaving 71% reading at or below the basic level. Similar levels are found nationwide. Understandably, concerns about reading and writing proficiency and how to improve them have dominated state and district agendas (Hagerman, 2024; Socol, 2022).

To better understand why so many students struggle to become proficient in reading and writing, it is necessary to understand the primary components required to develop fluent readers who can comprehend and write skillfully. The Simple View of Reading, developed by Gough and Tunmer (1986), highlights that reading comprehension, the ultimate goal of reading instruction, relies on two essential components: fluent word reading and language comprehension. These components are multiplicative rather than additive, meaning that a weakness in either component can significantly hinder reading comprehension. While the model has since been expanded, notably by Duke and Cartwright (2021), to provide a more detailed understanding of these components, its core framework, emphasizing the interplay between fluent word reading and language comprehension, remains a valuable tool for understanding the factors necessary for developing skilled, fluent readers.

Gaining knowledge is a central aspect of education; it has been found to play a significant role in language and reading comprehension as well as skilled writing (Berninger et al., 2002; Hwang et al., 2022; Ozuru et al., 2009; Shanahan, 2023). In his cognitive model of reading, Kintsch (1998) describes the iterative process in which students integrate new information with their prior knowledge to comprehend what they are reading. In essence, the more a reader knows about a topic, the better they are able to comprehend and learn from texts (Cervetti & Hiebert, 2019).

However, opportunities for students to build content knowledge have decreased as efforts to improve reading scores have intensified. This trend began with the high-stakes testing mandates of the No Child Left Behind Act, which led schools to prioritize skill-based language arts instruction, reducing time for science and social studies (Banilower et al., 2018; Teale et al., 2007; Wright & Neuman, 2014). More recently, an increased emphasis on phonics instruction has further diminished opportunities for building language comprehension, such as read-alouds and content area instruction, which is crucial in the early elementary grades (Shanahan, 2022). As the Simple View of Reading highlights, both language comprehension and word reading proficiency are necessary for skilled reading, requiring an approach that gives equal attention to both components (Gough & Tunmer, 1986).

The limited opportunities to build content knowledge also hinder efforts to prepare a generation of sustainability-literate learners. First, the reduction of cohesive content knowledge-building opportunities leaves students without the foundational knowledge in science and other subjects, where topics related to climate change and sustainability are typically taught. Second, it undermines language comprehension development, ultimately affecting students' reading comprehension and critical thinking abilities necessary for engaging with, communicating about, and addressing the complex challenges of sustainability (Davidson & Liben, 2019).

Given the urgency for students to develop both sustainability literacy and reading and writing proficiency, it is crucial to address these needs simultaneously. One way to achieve this is by integrating local sustainability and climate issues and concepts into language arts, providing students with interdisciplinary content and real-world contexts that foster both language comprehension and sustainability literacy. This framework proposes utilizing critical literacy instructional practices as a pathway for supporting students' reading and writing development while also fostering sustainability literacy, enabling students to acquire the skills needed to become both proficient communicators and informed, active citizens.

Critical Literacy

This work draws on critical literacy theory, which is primarily attributed to the work of Freire (1986), who defined literacy as the relationship of learners to the world. Critical literacy theory is highly context-dependent, generally described as understanding and questioning the relationship between texts, meaning-making, and power (Molin et al., 2018; Vasquez et al., 2019). From a critical literacy perspective, texts are never neutral, and students are encouraged to critically analyze how texts communicate ideas, who benefits from those ideas, and how they shape our understanding of the world. Students are encouraged to also be critical writers who can identify the message a text sends, ways texts can be improved, design texts to send specific messages, and (re)design texts to inspire change.

Luke and Freebody (1999) outlined specific roles that readers take while critically engaging with texts in their Four Resources Model, including code breaker, meaning maker, text user, and text critic. Cervetti and Pearson (2023) recently expanded on the model by adding a fifth role, text actor, emphasizing the need for students to address today's complex challenges. This focus on taking meaningful civic action is a goal shared with sustainability literacy.

Additional shared principles include examining different perspectives, a concern for social justice, valuing students' diverse knowledge, engaging in meaningful and authentic learning, and considering the environment *as text* that can be a resource for learning (Borsheim & Petrone, 2006; Nolet, 2016; Rogers & Mosley Wetzel, 2014; Vasquez et al., 2019).

Utilizing a critical literacy approach empowers students to analyze and reflect on power dynamics, equity, ethics, and the environmental, social, and economic dimensions of sustainability while harnessing the power of words to influence change in their communities. These are the intermediate skills that students need to develop in order to achieve sustainability literacy, but are often missing from traditional knowledge-action approaches to sustainability education. By teaching critical literacy practices in this integrated manner, educators can equip students with the knowledge and skills needed to apply their learning to tackle complex, multidimensional challenges of sustainability on their own while also strengthening their reading and writing abilities.

The Language Arts and Sustainability Literacy Integration Framework

The Language Arts and Sustainability Literacy Integration Framework (Fig. 1) illustrates how sustainability literacy and a critical literacy approach to language arts can be woven together to support development in both disciplines. This framework cohesively brings together many concepts, theories, and pedagogies from different bodies of literature to support students in gaining the knowledge, skills, and dispositions needed to make informed decisions and take personal and collective actions that move us toward more sustainable ways of living. The dark green leaves form an abstract vine representing the components and progression of developing sustainability literacy, beginning with gaining knowledge and progressing to civic action. The light green leaves are situated along the vine and represent how critical literacy roles can support students' sustainability literacy development. The four steps in the diagram guide educators through the integrated learning process. The sections below explain these steps and the corresponding critical and sustainability literacy components in more detail.

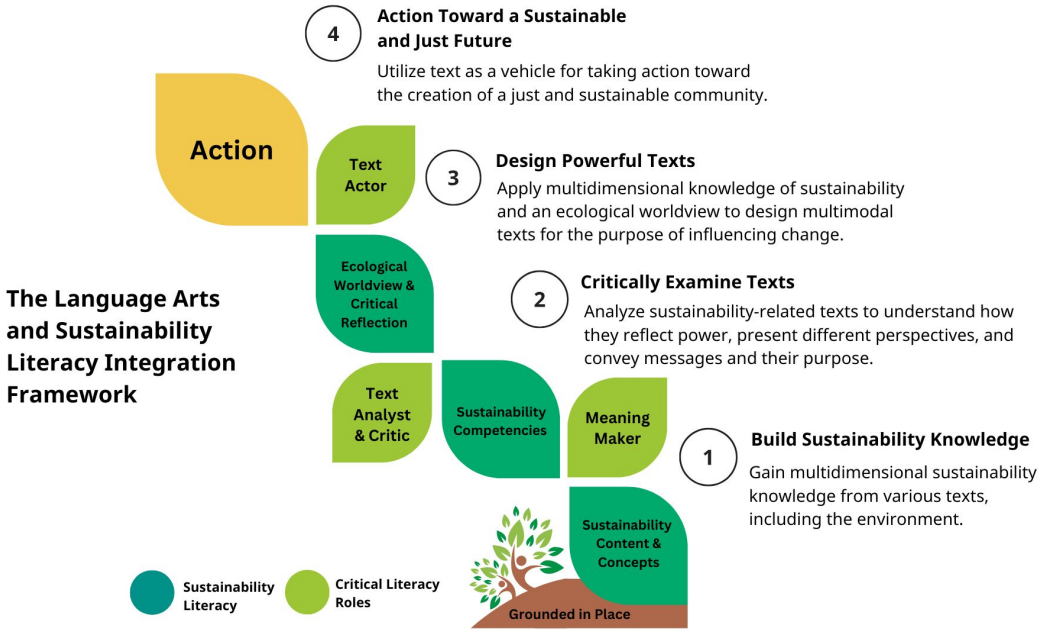

Figure 1. The Language Arts and Sustainability Literacy Integration Framework

Steps to Ensure the Curriculum is Grounded in Place

As Figure 1 illustrates, the entire Language Arts and Sustainability Literacy Integration Framework is "grounded in place." Both critical literacy and place-based learning utilize the local community and environment as a source of curriculum content (Sobel, 2013, p. 13; Vasquez et al., 2019). Place-based pedagogy emphasizes hands-on, real-world learning experiences and an appreciation for the natural world, situating students as active citizens who can improve their community (Sobel, 2013). By grounding the framework in place, students can connect abstract sustainability concepts to their local bioregion and community, providing an authentic context for reading, writing, and learning while also nurturing a sense of care, responsibility, and stewardship toward their local place (Guthrie et al., 2007; UNESCO, 2024). This local context is particularly important for elementary students, as it is essential for them to first understand sustainability issues within their community before exploring and applying them to more abstract global issues. Grounding sustainability learning in place allows teachers to draw inspiration for content and curriculum from their local area (Comber & Nixon, 2004).

Step 1: Build Sustainability Knowledge

In this first step, students take on the role of meaning-makers, gaining knowledge and understanding of local sustainability issues by engaging with various texts, including the local environment. Content and meaning-making go hand in hand; the content provides students with something to read and write about, and the meaning-making process enables students to comprehend and grow their understanding of the topic.

Sustainability Literacy Component: Sustainability Content and Concepts

Sustainability gives students rich, real-world topics to explore through reading, writing, discussion, and critical analysis. Its multidimensional focus, spanning environmental, social, and economic themes and relevance to both local and global contexts, makes sustainability ideal for bridging disciplinary boundaries. Topics such as the environment and climate change, which students are eager to learn about, can engage students, particularly when connected to their local community (Prothero, 2022; Trott, 2022). It is important to note that although ecological and sustainability knowledge alone may not directly lead to behavior change, it is a vital foundation for developing sustainability literacy, which is why building knowledge serves as the first step in this integrated framework and serves as scaffolding for students as they transfer that knowledge to demonstrate understanding and take action (Kaiser & Fuhrer, 2003; Redman, 2013; Wiggins & McTighe, 2005).

Critical Literacy Role: Meaning Maker

Students take on the role of researchers, using reading and writing to explore and deepen their knowledge and understanding of local sustainability issues. Critical literacy's broad definition of text gives students various ways to gain knowledge, including oral language, the environment, written text, objects, and digital media (Vasquez et al., 2019). By leveraging their background knowledge and reading skills, students are able to comprehend these texts and add to their growing factual and conceptual understanding of sustainability issues (Cervetti & Hiebert, 2019; Kintsch, 1998).

In the classroom, this process is reflected in students engaging with and learning from various texts, both inside and outside the classroom. For example, elementary students may integrate knowledge gained from reading texts about how tree health is affected by soil compaction, road salting, and insects with their critical observation and evaluation of the health of trees near their school. To scaffold this for younger learners, teachers may wish to introduce

the foundational idea that texts are broadly defined and include the environment as text. For example, students can "read" leaves to gain information about the time of year, species of tree, health of the tree, and even climate. High school students could read about the economic value of trees, complete a survey of the trees in the schoolyard, "read" the environment to gain information on their value and benefits to the school community, and estimate the total value of the trees.

Step 2: Critically Examine Texts

This second step of the framework progression guides teachers in helping students take on the critical literacy role of text analyzers and critics. This encourages students to view issues from a broader, more holistic, and pluralistic perspective, which deepens their understanding of the complexity of sustainability issues (Sinakou et al., 2019). This more holistic and in-depth understanding of sustainability issues is necessary to make informed decisions, challenge assumptions, and take action.

Sustainability Literacy Component: Sustainability Competencies and Critical Thinking

As students progress from building foundational knowledge, they are able to dive more deeply into sustainability issues through utilizing higher-order thinking skills. Critical thinking is a complex cognitive process that enables individuals to evaluate and understand information, solve problems, and navigate uncertainty, complexity, and change (Bianchi et al., 2022). Critical thinking includes common reading comprehension skills such as making inferences and synthesizing.

In addition to general critical thinking skills, sustainability literacy requires specialized thinking skills, which are referred to as key sustainability competencies. Key competencies such as systems thinking, futures thinking, and social justice competence have been identified as crucial to solving sustainability problems and developing sustainability literacy (Brundiers et al., 2021; Potter-Nelson & Meyers, 2022; Wiek et al., 2011). In addition, learning and applying sustainability competencies, such as systems thinking, to real-life issues, mitigates students' negative feelings regarding climate change and cultivates a sense of agency (Chawla & Cushing, 2007; Ojala, 2012).

In the context of language arts instruction, these competencies can help students read and create texts through a holistic lens, enabling them to integrate knowledge and perspectives from multiple disciplines. For example, students could apply systems thinking to consider the positive and negative impacts that might result from cutting down or trimming trees near power lines on the electrical system, the ecological system, and human systems. Students might explore questions such as, what happens to the power grid if they stop trimming trees? How do power outages affect people? How are trees affected by trimming for power lines? How can we mitigate the negative effects on the system overall? The depth of analysis and research can be adjusted to meet the needs of elementary through high school students. Concept maps can be a helpful way to introduce or scaffold systems thinking by providing a visual way to see and make connections.

Critical Literacy Role: Text Analyst and Critic

As students assume the role of text analysts and critics, they move beyond knowledge and engage more deeply with texts and sustainability issues. As students critically analyze texts related to local sustainability issues, they expand their understanding of the complexity of these issues by considering different perspectives, uncovering power dynamics, and identifying the purpose of the text. For example, in the classroom, teachers can guide students in reading and analyzing local bylaws that protect trees, and analyze the law from different perspectives,

considering the power dynamics involved, and identifying the voices that may be left out. Elementary students can then work in groups to revise a portion of the bylaw to better protect the trees. Middle and high school students can read about other cities' bylaws concerning trees, compare and contrast, and suggest revisions to the bylaws that better protect trees.

Step 3: Design Powerful Texts

In this step, students prepare to take civic action by applying the multidimensional knowledge they have gained through Steps 1 and 2 to designing texts to influence change. A transition toward sustainability requires not only new knowledge but also critical reflection and ultimately a shift in one's worldview (Sterling, 2001). Students learn how to apply critical literacy practices that reflect this new worldview to craft texts that effectively communicate messages to educate and advocate for sustainability issues they care about. By doing so, students explore their own voices, express their ideas, and engage with their communities. This process prepares and empowers students to become active agents of change, crafting their writing to influence and inspire others (Trott, 2022).

Sustainability Literacy Component: Ecological Worldview and Critical Reflection

Before crafting texts that propose solutions and incite change, students must understand and clarify their own values through the process of critical reflection. Reflection has long been valued in the learning process, most notably Dewey's (1933) emphasis on reflective thinking for personal and intellectual growth. Reflection differs from other ways we ask students to demonstrate their knowledge because it asks students to reflect on new information and problems in terms of their prior experiences and personal values, and to help them make connections to the values and perspectives of others (Ryan, 2013).

Through examining multiple perspectives, uncovering power dynamics, and addressing social justice issues, critical literacy practices prompt students to critically reflect and integrate new knowledge with their existing values and understandings. Asking students questions that stimulate self-reflection and exposing students to different perspectives and values can help children identify and clarify their own values and feelings and shape their approach to solving problems (Nolet, 2016). Providing students of all ages opportunities to consider their values and explore their identity is an important precursor to self-reflection.

In any grade level classroom, teachers can encourage critical reflection in students by asking a series of questions to scaffold the reflection process. These questions help students understand how their own thoughts or opinions may have changed after learning something new or hearing from a different perspective. For example, after asking students to consider two contrasting perspectives on how a vacant lot in the neighborhood should be used, ask elementary students to reflect on questions such as, "What is important to you about the issue?" followed by, "How does what is important to people affect their ideas for the vacant lot?" For young learners, introducing the foundational literary skill of understanding the perspective of characters in a story can be a good starting point for fostering this type of thinking. For secondary students, prompts might include, "Has your perspective on the issue changed after considering the different perspectives?"

Understanding one's personal values and being able to critically reflect on them is essential to moving students beyond the "facts" of sustainability and forming an ecological worldview. An ecological worldview requires integrating the understanding that all living things are interconnected through a system of relationships, with one's values, knowledge, perspectives, and beliefs (Capra, 2007; Nolet, 2016). This understanding serves as a lens through which students can view the world and explore solutions to sustainability issues. A sustainable future depends on this change of worldview and thinking (Sterling, 2001). Teachers

can encourage students to apply an ecological worldview by asking critical questions such as: Is the more-than-human world represented in this text or in the text I am creating? How is the natural world represented or portrayed in this text? Does the message of my own writing help shift us toward a more sustainable world? Picture books can be an excellent place to practice these skills for all ages. For example, while looking at a picture book, students can be asked how the natural world is represented in a fairy tale like *Little Red Riding Hood* (Hyman & Grimm, 1983). For example, what message does the description of the forest (deep, dark) send to the reader? Critical literacy focused questions such as these apply to any age, as the text and content determine the rigor (Hennessy, 2021).

Critical Literacy Role: Text Actor

A critical writer understands that texts have power and that the texts they produce can have desired or undesired effects in and on the world (Comber & Nixon, 2004). Once students reach this step, they are able to assume the role of text actors, applying and leveraging their newly acquired multidimensional knowledge of sustainability issues with critical writing practices to create texts that convey messages intended to influence positive, sustainable change. It is through this transfer of knowledge and skills that students are able to build a deep understanding of an issue, topic, or concept (Wiggins & McTighe, 2005).

Critical writing provides students with an accessible vehicle to create change. In the classroom, this means providing students with opportunities to create texts for authentic audiences in their communities. For example, after learning about the importance of community trees and becoming aware of the negative impacts on tree health caused by humans, students might create a presentation for city officials to advocate for better stewardship of the trees in their city. For younger students, this may mean learning how to write a letter to a friend or relative explaining what they are learning about the trees in their school yard or writing a letter as a class or in groups to the principal asking if they can prevent damage to trees near the playground. In this step, students move from critical readers to critical writers who understand how to harness the power of words to influence positive change.

Step 4: Action Toward a Sustainable and Just Future

In this last step, students take civic action by disseminating the texts they created in Step 3 to their intended audience, empowering them to actively contribute to fostering a just and sustainable community. Providing authentic and meaningful opportunities to read and write is essential in motivating students to write (Guthrie et al., 2007; Purcell-Gates et al., 2007). Words are an accessible way for K-12 students to individually or collectively educate and advocate about issues that matter to them. For example, this might mean that high school students give a presentation they prepared to city officials, or elementary students write letters to advocate for better stewardship of community trees. This step moves writing from “just an assignment” to an authentic medium that has a purpose and the potential to influence meaningful, positive change in their communities.

In addition, Chawla and Cushing (2007) recommend providing action-based opportunities to promote feelings of empowerment and mitigate the sense of "doom and gloom" often associated with topics such as climate change. Research shows that students feel more hopeful and have higher levels of self-efficacy when they believe they can influence change, especially regarding climate change (Ojala, 2012; Bandura, 2001).

Conclusion

The Language Arts and Sustainability Literacy Integration Framework illustrates how critical literacy can support the development of sustainability literacy, alongside reading and writing skills. Today's students need to be sustainability literate to meet the demands of a rapidly changing climate. Yet, most students lack the reading and writing skills required to tackle complex sustainability problems. Typically, climate change and sustainability education efforts focus on knowledge acquisition and short-term action, with little attention to helping students gain the intermediate critical thinking and analysis skills needed to independently transfer that knowledge to making sustainable decisions and taking civic action in the future. The proposed framework provides a pathway for pre- and in-service educators to teach the intermediate skills necessary for individual and collective civic action by developing students' critical reading and writing abilities, as well as sustainability literacy.

The framework emphasizes developing the intermediate skills needed for students to engage deeply with the environmental, social-cultural, and economic dimensions of sustainability issues. This integrated approach teaches students essential critical literacy practices and sustainability competencies necessary to consider different perspectives, critically analyze information, recognize issues of power and social justice, and examine systemic effects of complex issues related to climate and sustainability. These skills will enable them to transfer their knowledge, make decisions, and take meaningful civic action independently in the future. In addition, equipping students with these skills helps them feel more agency regarding the effects of climate change (Ojala, 2012).

Utilizing critical literacy practices to examine sustainability issues also improves students' reading and writing proficiency. Students apply reading skills such as inferencing, synthesizing, and critical analysis, enabling them to construct a rich and holistic understanding of complex topics. Students learn to use words, particularly through writing, as a tool to communicate about issues important to them. Sustainability topics are interdisciplinary, enabling students to gain content knowledge, vocabulary, and make connections across disciplines. This integrated approach supports students' language comprehension; a key component is becoming skilled readers and writers.

All practices emphasized in the framework benefit from grounding student learning in their local place. This place-based approach makes learning relevant to students' lives. It motivates students to use reading and writing as tools to fuel their curiosity and solve problems in their local community. By situating sustainability learning locally, students gain firsthand experience with environmental issues in a familiar context that directly affects them. This experience enables students to apply their knowledge of local sustainability issues, gaining a deeper understanding of more abstract global sustainability issues in the future. Finally, utilizing the local community and environment as a context for learning provides teachers with easily accessible resources to enhance instruction and make it more relevant.

Educators and curriculum developers can use this framework to design curricula that foster both sustainability literacy and critical reading and writing skills. The framework provides actionable steps to guide teachers in designing units and lessons that develop students' foundational knowledge, skills, and dispositions, and transfer what they have learned to address challenges or issues and take action. Adjusting text complexity and depth of issues explored allows this framework to be applied in any grade. This framework was developed as part of a larger research study for the purpose of guiding the development of a model curriculum unit, which was used as an intervention in upper elementary classrooms. The instructional approaches delineated in the framework enhance the effectiveness of instruction by meeting

multiple learning objectives and equipping students with the urgent and necessary skills to lead fulfilling lives and contribute meaningfully to a sustainable society.

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AI Disclosure: During the preparation of this work, the primary author used Grammarly for spelling and editing.
ChatGPT was used as a thesaurus to refine word choice and increase clarity for a few selected sentences.
After using these tools, the author reviewed and edited the content, taking full responsibility for the content of the publication.

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