

Language as a Sustainability Competence: A Conceptual Framework for Education for Sustainable Development

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ABSTRACT:

Sustainable development is a communicative undertaking: negotiating shared goals across cultural, disciplinary, and ideological boundaries requires language, yet Education for Sustainable Development (ESD) frameworks continue to treat language as a vehicle for delivering sustainability content rather than as a sustainability competence in its own right. This conceptual paper addresses that gap by asking how existing ESD competence frameworks conceptualize language and what alternative framework could position language as a sustainability competence. Synthesizing literature from applied linguistics, communication studies, and sustainability education, the paper makes three contributions: it reconceptualizes language as a sustainability competence rather than a delivery mechanism; it integrates ESD with communicative-competence and critical-pedagogy theory; and it proposes the Sustainability Language Competence (SLC) Framework, comprising five interconnected dimensions, critical dialogue, intercultural communication, collaborative communication, participatory communication, and reflective communication. Each dimension is modelled as a conceptual pathway linking communicative practice to sustainable action, and the framework is compared against existing ESD competence models to clarify its novelty. The paper concludes with implications for curriculum design, pedagogy, assessment, and policy, and outlines an agenda for the empirical validation this conceptual work now requires.

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1. Introduction

The 2030 Agenda for Sustainable Development frames the world's environmental, social, and economic challenges as interdependent and, crucially, as requiring coordinated global action (United Nations, 2015). Sustainable Development Goal 4 (Quality Education) explicitly identifies education as the mechanism through which the knowledge, skills, and values needed for this coordination are built, and it is within this mandate that Education for Sustainable Development (ESD) has developed as a field. Where SDG 4.7 calls for learners to acquire the knowledge and skills to promote sustainable development, ESD has translated that call into competence-based curricula built around systems thinking, critical thinking, collaboration, and global citizenship (Rieckmann, 2018; Wiek et al., 2011).

Within this competence-based turn, communication is consistently assumed rather than examined. Systems thinking is exercised through explanation and argument; collaboration is a communicative act; global citizenship depends on cross-linguistic and cross-cultural exchange. Yet across major frameworks, including GreenComp (European Sustainability Competence Framework) (Bianchi et al., 2022), the key competencies model (Wiek et al., 2011; Rieckmann, 2018), and subsequent syntheses (Cebrián et al., 2021; Sposab & Rieckmann, 2024), language and communication are commonly regarded as a supporting skills within the broader competencies like collaboration, instead of being used individually. There are several core concepts underpinning this phenomenon.

Education for Sustainable Development (ESD)

Education for Sustainable Development (ESD) is an educational strategy to provide the knowledge, capacities, skills, values, and attitudes needed for contributing to a more sustainable future. It goes beyond the transfer of environmental knowledge by allowing students to reflect on the social, economic, cultural and environmental aspects of sustainability and recognize the interdependencies of these aspects. (UNESCO,

2020). Through active learning, critical thinking, problem-solving, participation, and reflection, ESD allows for informed, sustainable, and responsible responses to complex sustainability challenges. It also prompts students to identify the implications of individual and collective action and think about other ways to achieve sustainable development. In this study, ESD is viewed as an educative process that involves the development and articulation of sustainability principles into meaningful learning and action, including pedagogical practices that enable learners to interact with sustainability issues in a variety of educational contexts.

Sustainability Competence

Sustainability competence is defined as the fusion of knowledge, skills, attitudes, values and dispositions that help an individual grasp and act on complex sustainability challenges (Wiek et al., 2011). The concept is not limited to what learners have learnt about sustainability, it places emphasis on knowing how to apply the knowledge, think critically, predict the future, consider alternatives, and be decision makers. Hence, the ability to address uncertain, complex problems that relate to more than one of environmental, social and economic aspects, is linked to sustainability competence. Wiek et al. (2011) list a number of competencies that are particularly important, such as Systems-thinking competence, Anticipatory competence, Normative competence, Strategic competence, and 'Interpersonal competence'. These skills will help students to understand the relationships in complex systems, to imagine sustainable futures, to consider values and goals, to plan for change, and to engage in collaboration with others. Sustainability competence is understood as a practical competence which can help learners from becoming mere spectators to becoming active participants in sustainability-oriented problem solving and action.

Language and Dialogue

The relationship between language, communication and dialogue is very close and together they form the basis by which people perceive, elaborate and communicate meaning.

Language is the symbolic system that gives expression and meaning to ideas, experiences, values and knowledge. Communication is the act of passing meaning between people or groups, using speech, writing, pictures or other languages. Dialogue is a more particular way of communication in which there is a reciprocity of action, active listening, exchange of viewpoints and seeking understanding (Freire, 1970). In a school environment, these are especially relevant as learning is not just a process of information transfer, but a social process, in which meanings are negotiated and viewpoints explored. Language is used to articulate sustainability concepts, communication is used to exchange those ideas and dialogue provides the opportunity for learners to challenge assumptions and discuss different perspectives.

Communicative Competence

Communicative competence is about the individual's ability to use language appropriately, effectively and meaningfully in various social, cultural and situational contexts. The concept goes beyond the grammatical correctness to the understanding of the function of language in specific interactions and to adjust communication to the audience, purpose and context. The concept of communicative competence as appropriate use of language in social situations was first proposed by Hymes (1972) and then elaborated by Canale and Swain (1980) in terms of four dimensions: grammatical, sociolinguistic, discourse, and strategic. In educational settings, students can use communicative competence to communicate ideas, comprehend the meaning of others, engage in conversations, interpret their meaning, and respond to various communication contexts

Building on these concepts, it is highly significant to consider the wider linguistic and cultural contexts in which sustainability knowledge is communicated and understood. The role of language in sustainability education reaches beyond individual communicative competence, increasing broader questions about access, participation, and equity in global and multilingual sustainability discourse. Much of

international sustainability discourse, from IPCC assessments to UN resolutions, is produced and circulated predominantly in English, positioning English as a de facto lingua franca for international environmental and developmental communication (Xiao et al., 2024). The dominance has equity consequences: non-native English speakers and communities whose home languages do not have sustainability terminology might be seriously challenged in their ability to participate in the global sustainability conversation, negotiation, and knowledge sharing.

In multilingual educational settings (MES), like those that are found throughout the Gulf region, this tension is evident, as students are often asked to engage in multiple sustainability concepts simultaneously in two or more languages (Hillman, 2023). Moreover, linguistic justice and multilingualism capacities are also relevant to the positioning of language as a competence for sustainability, as it is not enough to rely on a single global language of sustainability for meaningful participation, which was picked up again in the discussion of the implications of the use of language in higher education. This paper argues that this omission is not a matter of emphasis but a substantive theoretical gap, and it proposes a framework to close it.

1.1. Research Gap

The gap can be demonstrated rather than simply asserted by examining what existing frameworks actually specify. GreenComp (Bianchi et al., 2022) organizes competencies into four areas, embodying sustainability values, embracing complexity, envisioning sustainable futures, and acting for sustainability, none of which names language, dialogue, or communicative practice as a distinct competence area. Whereas, collaboration appears only as a sub-descriptor under acting for sustainability. Wiek et al.'s (2011) widely cited five-competence model (systems thinking, anticipatory, normative, strategic, and interpersonal competence), defining interpersonal competence as the ability to motivate, enable, and facilitate collaborative action. However, it does not specify the

communicative mechanisms, such as argumentation, negotiation, and perspective-taking, through which such collaboration is achieved. Corres et al.'s (2020) systematic review of 14 papers examining educator-competence frameworks determined communication and dialogue among the competencies addressed across the reviewed frameworks. However, the terminology and classification of competencies varied considerably between frameworks, suggesting that communicative competencies have not been conceptualized consistently across the field.

This lack of conceptual clarity is theoretically significant, rather than merely descriptive because sustainability competencies cannot be exercised without language and communication. Systems thinking becomes actionable when relationships are explained and contested; collaboration is constituted by turn-taking, listening, and negotiation; and anticipatory competence requires envisioning futures that must be articulated and debated before they can be pursued. If language is the medium through which every other sustainability competence is negotiated, enacted, and translated into collective action, then treating it as a background skill rather than a competence in its own right leaves the central mechanism of ESD theoretically unaccounted for. The gap, is not that scholars have failed to mention communication, they mention it constantly, but that no framework has yet conceptualized language itself as a sustainability competence with defined dimensions, pathways, and assessment criteria.

A further dimension of the gap concerns the pedagogical and assessment implications of this omission. If language and communication are not explicitly addressed as part of a larger sustainability skill set, there is no specified guidance for teachers on how to address these skills explicitly in the classroom when developing, practicing or assessing them. This is especially challenging when many sustainability issues are also debatable, have divergent values, involve cultural differences, and are uncertain, meaning that the student needs to communicate with various perspectives, rather than just regurgitate

facts. A learner can recognize how environmental, social, and economic issues are related, but not be able to clearly express these relationships to others and may not be able to articulate them to differing audiences or advocate for them when presented with solutions that contradict their own. All of these competency frameworks offer only a small number of conceptual tools to differentiate these communicative competencies from the wider competency categories that they fit into.

This leaves another gap in the conceptual and practical application of sustainability knowledge, in terms of being able to transfer the knowledge through dialogue and shared decision making. Language is not just a tool for describing what skills are there to demonstrate, but can influence who is listened to in a sustainability issue and how it is defined (Hasibuddin, 2026). Without sufficient attention to language, this risks missing the process of discursive agency and engagement in sustainability transitions that learners in the process of learning acquire. A clearer language concept of a sustainability competence, in turn, would enhance the theory of and the practice of ESD by pinpointing the language skills needed to take individual awareness into more meaningful collective action

1.2. Research Questions

- How do existing ESD competence frameworks understand the role of language and communication in the development of sustainability competencies?
- What conceptual framework can be developed to frame language as a sustainability competence within ESD?

1.3. Conceptual Contributions

This paper makes three contributions to the ESD literature. It reconceptualizes language from a delivery mechanism for sustainability content into a sustainability competence in its own right, one that enables the negotiation, enactment, and collective translation of every other competence named in existing frameworks. Moreover, it integrates ESD competence theory with applied

linguistics and communication theory, specifically communicative competence (Hymes, 1972; Canale & Swain, 1980), intercultural communicative competence (Byram, 1997), critical pedagogy (Freire, 1970), and social learning theory (Vygotsky, 1978; Lave & Wenger, 1991), to explain how sustainability competencies are communicatively constituted rather than individually held. Additionally, building on this integration, it proposes the Sustainability Language Competence (SLC) Framework, which specifies five interconnected dimensions of language-as-competence and models each as a conceptual pathway from communicative practice to sustainable action.

2. Literature Review

2.1. Sustainability Competencies in Education for Sustainable Development

ESD has increasingly adopted a competence-based approach to preparing learners for the challenges of the twenty-first century (Cebrián et al., 2021; Redman & Wiek, 2021; Sposab & Rieckmann, 2024; Wiek et al., 2011). Instead of focusing only on the transmission of knowledge, ESD aims to enhance skills, values, attitudes, and dispositions needed for sustainable action (Olivadese et al., 2026). This has led to the development of several different sustainability competence frameworks, which state that systems thinking, critical thinking, anticipatory competence, strategic competence, collaboration, and self-awareness are key to dealing with environmental, social, and economic challenges (Bianchi et al., 2022; Corres et al., 2020; Scalabrino, 2022; Rieckmann, 2018; Wiek et al., 2011). These competencies emphasize learners' ability to understand interconnected systems, evaluate alternative futures, engage in ethical problem-solving, and cooperate in support of sustainability, and they have become a central feature of ESD policy, curriculum, and research (Cebrián et al., 2021).

Despite differences among frameworks, most share the assumption that sustainability challenges require collaboration, participation, and engagement with diverse stakeholders (Bianchi et al., 2022; Corres et al., 2020).

Sustainable development is therefore not only the learning of new knowledge, but also interaction, negotiation and a joint problem-solving process. Communicative practices in which such competencies are cultivated and deployed are relatively under-studied (Sposab & Rieckmann, 2024). Although language and communication are crucial for facilitating the exchange of ideas, negotiating differences, and engaging in collective action for sustainability in education, it remains largely implicit in current approaches.

2.2. Language and Communication in Sustainability Education

The link between language education and sustainability has been investigated in a parallel body of research studying, for example, how sustainability themes are integrated in language curricula, sustainability knowledge in language classrooms, intercultural communication, and transformative language teaching (Borgnia & Luchini, 2025; Hubscher-Davidson & Panichelli-Batalla, 2016). These studies illustrate that the language courses offer a meaningful opportunity to solve sustainability problems while fostering learner engagement skills, such as class conversation, group work, critical reading, and cross-cultural communication (Qin, 2024).

However, much of this literature does not look at the language use as developing sustainability competence but rather as a means to transfer sustainability knowledge (Kazazoglu, 2025). Of particular importance is that language is not seen as the main component of sustainable development, whereas the issues surrounding sustainable development are communicative and involve people in creating meaning and making decisions together (Ulmer & Wydra, 2022). This limited conceptualization of language is specifically evident when analyzing how communication is structured within existing dimensions of ESD competence frameworks.

2.3. The Missing Language Dimension of ESD

Current ESD frameworks emphasize distinct competencies but say comparatively little about the communicative processes required to exercise them (Wiek et al., 2011). Collaboration

presupposes communication with others; critical thinking is exercised through argument and dialogue; global citizenship entails communicating across languages and cultures (Borgnia & Luchini, 2025; Scown et al., 2023). Collaborative decision-making, stakeholder engagement, and community action are, in this sense, communicative acts. While some theorists have highlighted communication, intercultural competence, and dialogue in sustainability education (Fantini, 2020; Scown et al., 2023), an explicit framework treating language as a sustainability competence has not yet been developed, the gap this paper addresses.

2.4. Theoretical Foundations of the Sustainability Language Competence (SLC) Framework

Language plays a more important role in sustainability education than it is currently recognized in existing ESD frameworks. While competencies such as collaboration, participation, critical thinking, and global citizenship are well explored, the communicative strategies and practices involved in developing and enacting these competencies require more attention. Considering this view, this paper presents the Sustainability Language Competence Framework (SLC), which views language as an integral competence rather than simply a medium of communication. The SLC framework is informed by social learning theories (Vygotsky, 1978; Lave & Wenger, 1991), communicative competence (Hymes, 1972; Canale & Swain, 1980), intercultural communicative competence (Byram, 1997), and critical literacy (Freire, 1970). These theories view language as a social practice, in that it is employed to create knowledge, negotiate meaning, and participate in communities (Fantini, 2020). From this perspective, sustainability competencies are developed through conversations, interactions, reflections, and collaborations. The SLC Framework draws on four theoretical traditions explains how communicative practice constitutes rather than merely supports sustainability competence.

Social learning theory (Vygotsky, 1978; Lave & Wenger, 1991) establishes that competence is developed through social interaction and situated participation in communities of practice, implying that sustainability competencies are learned through, not prior to, communicative engagement. From this perspective, language operates as the mediating tool which helps learners to internalize the ways of acting and thinking that are initially established through interactions with people. Dialogue with peers, teachers and community members can assist learners in evolving from individual understanding towards collective competence and shared knowledge,

Communicative competence theory (Hymes, 1972; Canale & Swain, 1980) supplies the internal structure of that engagement, distinguishing grammatical, sociolinguistic, discourse, and strategic sub-competencies that determine whether communication is effective in context. This perspectives, when applied to sustainability education, represents that communicating sustainability problems needs more than just possessing factual knowledge or relevant vocabulary. It is important for the learners to recognize how language should be adapted as per the context, purpose, audience, and the sensitivity of the issue being highlighted. Therefore, communicative competence provides grounds for analyzing the particular linguistic capability required to transform sustainability knowledge into meaningful action.

Intercultural communicative competence (Byram, 1997) extends this to cross-cultural settings, which is essential given that sustainability problems routinely cross linguistic and cultural boundaries. Communities understand and prioritized sustainability challenges differently because they are influence by social values, relationships with the environment, local histories and cultural practices. Therefore, intercultural competence enables learners to recognize that their own interpretation of sustainability is not necessarily universal and to engage respectfully with alternative perspectives. In an educational context, this can involve questioning

assumptions, interpreting meanings across cultural contexts and negotiating divergent views without arranging them in single prominent viewpoint.

Critical pedagogy (Freire, 1970) contributes the dimension of power and voice, arguing that dialogue is not neutral information exchange but a means through which learners critically examine and transform their relationship to social and environmental conditions. This perspective is particularly relevant to sustainability because decisions about environmental and social priorities often involve unequal access to knowledge, resources, and opportunities to influence decision-making.

Together, these four traditions justify treating language not as a delivery mechanism sitting outside sustainability competence, but as the medium through which situated learning (Vygotsky; Lave & Wenger), competent expression (Hymes; Canale & Swain), cross-cultural negotiation (Byram), and critical

consciousness (Freire) are jointly accomplished, which is precisely the theoretical space the five SLC dimensions are designed to occupy. Since the sustainability concerns are innately communicational, the parties involved need to be engaged in dialogue, harmonize their divergent positions, transcend cultural and scientific disciplines, and reach agreement (Qin, 2024). On the basis of this premise, the Framework of Sustainability Language Competence comprises of five dimensions of sustainability language competence that include critical dialogue, intercultural communication, collaboration, participatory communication, and reflective communication (Corres et al., 2020).

2.5. Conceptual Pathway:

Each SLC dimension is modelled as a conceptual pathway: a sequence of communicative sub-practices that link everyday language use to sustainable action. (Table 1) presents the five pathways; each is discussed in turn below.

Table 1: Conceptual pathways from communicative practice to sustainable action

Dimension	Step 1	Step 2	Step 3	Step 4	Sustainable Action Outcome
Critical Dialogue	Argumentation	Deliberation	Negotiation/ Conflict Resolution	Consensus-Building	Reasoned, collectively owned decisions on contested sustainability issues
Intercultural Communication	Cultural Self-Awareness	Perspective-Taking	Cross-Cultural Meaning Negotiation	Mutual Accommodation	Cooperation across worldviews on shared sustainability problems

Dimension	Step 1	Step 2	Step 3	Step 4	Sustainable Action Outcome
Collaborative Communication	Active Listening	Role and Task Coordination	Joint Problem Framing	Consensus on Shared Goals	Coordinated group action toward sustainability targets
Participatory Communication	Voice/Opinion Expression	Stakeholder Dialogue	Trust-Building	Collective Decision-Making	Community ownership of sustainability initiatives
Reflective Communication	Self-Examination of Beliefs	Evaluation of Alternative Viewpoints	Articulation of Implications	Revision of Position or Practice	Adjusted, self-aware sustainability practice

These five related aspects were identified because they represent some communicative activities that contribute to sustainable practice and competence. They can, thus, be used as an underlying conceptual framework for sustainable language use (see Figure 1 below)



Figure 1: The Sustainability Language Competence (SLC) Framework

Source: Developed by the author

Figure 1 presents the Sustainability Language Competence (SLC) Framework, which frames language as a communicative mechanism linking sustainability challenges, sustainability competencies, and sustainable action.

3. Methodology

3.1. Research Design

This study adopts a narrative conceptual research design, appropriate for theory-building work that seeks to reorganize and extend existing knowledge into a new explanatory framework rather than to generate new primary data. The approach proceeds in three stages. Initially, literature across few fields, ESD competence research, applied linguistics, and communication studies, was reviewed to identify how each treats the relationship between language and sustainability competence. Moreover, the recurring theoretical constructs from that literature (communicative competence, intercultural communicative competence, critical pedagogy, social learning theory) were examined for convergence around a shared claim: that sustainability competencies are communicatively constituted rather than individually held. Additionally, five recurring communicative practices identified across this literature, critical dialogue, intercultural communication, collaborative communication, participatory communication, and reflective communication, were consolidated into the SLC Framework and modelled as conceptual pathways connecting communicative practice to sustainable action. Conceptual research of this kind proceeds through the systematic analysis, comparison, and synthesis of existing theoretical and empirical literature, with the resulting framework constituting the study's principal output rather than a hypothesis to be tested against collected data.

3.2. Literature Search and Selection Strategy

Relevant literature was identified across three fields: ESD competence research, applied linguistics, and communication studies. Sources were located through Scopus, Web of Science, Google Scholar, and PubMed, using search terms combining sustainability, education, competence,

language, communication, and dialogue (e.g., sustainability competence AND communication; Education for Sustainable Development AND language). Priority was given to peer-reviewed journal articles and established theoretical texts published in English, with an emphasis on 2020–2026 publications to capture recent developments, while retaining foundational theoretical sources regardless of publication date. Sources were included where they addressed ESD competence frameworks, the relationship between language education and sustainability, or communicative and intercultural competence theory; sources concerned with non-educational applications of sustainability communication, such as corporate sustainability reporting, were excluded. This was a purposive, narrative synthesis rather than a systematic review, and no claim is made to have exhaustively captured every relevant publication; the search continued until additional sources ceased to reveal new treatments of language within ESD competence frameworks, rather than aiming for exhaustive enumeration.

3.3. Analytical Procedure for Dimension Identification

As this study is conceptual rather than empirical, the analysis did not involve statistical testing or the coding of primary qualitative data. Instead, the selected literature and existing sustainability competence frameworks were analyzed through a conceptual synthesis. The analysis focused on identifying how language, communication, dialogue, and related communicative processes were conceptualized across the literature. Relevant concepts were compared across frameworks to identify recurring communicative functions, including argumentation, negotiation, perspective-taking, deliberation, coordination, and reflection. These functions were then explored against existing sustainability competencies to identify conceptual overlaps, gaps and gaps that needed to be addressed. In an iterative process of comparison and synthesis, related functions were aggregated under a more wide-ranging dimension, which served as the analytical foundation for the formulation of the

five dimensions of the proposed SLC Framework.

3.4. Trustworthiness and Rigor

Conceptual research cannot be evaluated using the reliability and validity criteria appropriate to empirical studies; its rigor instead rests on different grounds. Four criteria guided the framework's development. Internal coherence requires that each dimension be conceptually distinct from the others while, collectively, the five dimensions span the communicative demands identified in the literature. Theoretical grounding requires that each dimension be traceable to at least one established theoretical tradition rather than introduced improvised facts. Parsimony favors the smallest number of dimensions capable of capturing the range of communicative demands identified, in preference to a larger, more fragmented set. Practical utility requires that each dimension be developed with a view to its translation into pedagogy and assessment. These criteria do not substitute for empirical validation, which the framework still requires and which is addressed directly.

4. Results

The five dimensions of the SLC Framework, critical dialogue, intercultural communication, collaborative communication, participatory communication, and reflective communication, were identified by mapping the communicative demands recurring across the ESD competence literature against the four theoretical traditions.

Each dimension corresponds to a distinct communicative function that the literature associates with sustainability competence but does not itself theorize as language. Critical dialogue captures the argumentative and deliberative function underlying critical thinking, intercultural communication captures the cross-cultural function underlying global citizenship, collaborative communication captures the coordinative function underlying interpersonal or collaboration competence, participatory communication captures the civic-engagement function underlying stakeholder participation and reflective communication captures the self-examining function underlying normative and anticipatory competence. Other candidate dimensions were considered, for instance, persuasive communication and technical or scientific communication, but were folded into critical dialogue and collaborative communication respectively, since the literature treats them as specific applications of argumentation and coordination rather than as functionally distinct communicative demands. The resulting five dimensions were retained because each maps onto a recurring but under-theorized communicative function in the existing ESD literature, not because they represent an exhaustive taxonomy of communication in general. (Table 2 below) summarizes how each SLC dimension extends, rather than duplicates, the communicative content already implicit in existing ESD competence domains.

Table 2: Comparison between existing ESD competence frameworks and the Sustainability Language Competence (SLC) Framework

ESD Competence Domain	Treatment of Communication in Existing Frameworks	Treatment of Communication in the SLC Framework
Systems thinking (Wiek et al., 2011)	Communication assumed as a background capacity for expressing systemic relationships; not conceptualized as a distinct skill.	Reflective communication makes explicit how systemic understanding is articulated, questioned, and revised through language.
Collaboration competence	Collaboration is named as an outcome (working with others) but	Collaborative communication specifies the enabling practices, active

ESD Competence Domain	Treatment of Communication in Existing Frameworks	Treatment of Communication in the SLC Framework
(Rieckmann, 2018; Bianchi et al., 2022)	the communicative processes that produce it are left unspecified.	listening, negotiation, consensus-building, through which collaboration is actually accomplished.
Strategic and anticipatory competence (Wiek et al., 2011)	Framed as cognitive/planning capacities; the discursive work of persuading, justifying, and negotiating strategies is not addressed.	Critical dialogue and participatory communication explain the ways that strategies are being put forward, challenged and agreed upon collectively.
Normative/values competence (Bianchi et al., 2022)	Values are "individual" and how values are expressed, challenged and reconciled between groups is not theorized.	Intercultural communication and reflective communication explain how value differences are negotiated across linguistic and cultural boundaries.
Global citizenship/intercultural competence	Present in most frameworks as a listed competence, but rarely linked back to the linguistic mechanisms of dialogue and reflection identified above.	Intercultural communication is integrated with, rather than parallel to, the other four dimensions, treating language as the connective mechanism across all competencies.

Table 2 shows, the SLC Framework's novelty lies not in introducing communication as a new topic, every existing framework gestures toward it, but in specifying the communicative mechanisms that make each existing competence operable, and in treating those mechanisms as a coherent, teachable, and assessable competence set in their own right. The dimensions of this framework caters different aspect of communication while collectively illustrating how language enables sustainability competencies to be established, enacted and transformed into collaborative action.

4.1. Dimensions of SLC Framework

4.1.1. Critical Dialogue

Critical dialogue is the process through which individuals engage in reasoned discussion of contested sustainability issues (Morgan & Ramanathan, 2005). Sustainability issues are often associated with uncertainty, complexity,

and conflict, and participants must balance information and must be able to formulate arguments based on that information. Critical dialogue therefore goes beyond discussion to the construction and defense of a position in the light of evidence (argumentation); weighing up competing positions in order to make a decision (deliberation); reconciling incompatible positions (negotiation and conflict resolution); and achieving a shared, though provisional, position (consensus building). In this context, language is significant not only because it helps to share opinions, debate matters, criticize others and reach consensus, but also because it allows one to establish personal opinions and speak against others. Critical dialogue is an essential element of critical thinking and decision-making, and is therefore an integral part of the Sustainability Language Competence Model. Following Freire (1970) and Morgan and Ramanathan (2005), this pathway, argumentation → deliberation →

negotiation → consensus-building — culminates in reasoned, collectively owned decisions on contested sustainability questions, making critical dialogue foundational to the critical-thinking and decision-making competencies emphasized across ESD frameworks.

4.1.2. *Intercultural Communication*

Intercultural communication is the capacity to communicate effectively and respectfully with people who differ culturally, linguistically, or socially from oneself. Sustainability problems are rarely confined by national boundaries and typically require cooperation among people with different worldviews (Qin, 2024; Xiao et al., 2024). As Zygmunt (2016) observes, sustainability-related problems must generally be addressed at a scale that presupposes an internationally shared means of communication. The study argues,

“Since sustainability is not a local issue, all sustainability related problems ought to be discussed on the macro scale, which requires an internationally shared means of communication such as language” (p. 112).

The pathway begins with cultural self-awareness, proceeds through perspective-taking and cross-cultural meaning negotiation, and culminates in mutual accommodation, the point at which parties adjust their communicative and substantive positions to sustain cooperation despite differing worldviews (Byram, 1997). This pathway underlies the global-citizenship and equity dimensions common to ESD frameworks, positioning language as the means by which cultural barriers are navigated rather than simply acknowledged.

4.1.3. *Collaborative Communication*

Collaborative communication is the set of practices through which people work together productively (Lozano, 2007). ESD has increasingly emphasized collaboration and stakeholder engagement as core to sustainability skill development (Lave & Wenger, 1991; Leal Filho, 2024; Olivadese et al., 2026). The pathway moves from active listening through role and task coordination and joint problem framing to

consensus on shared goals, equipping learners to manage differing perspectives, resolve conflict, and pursue common outcomes with others, capacities on which most collaborative sustainability solutions depend. Through collaborative communication, the learners will be able to develop skills in listening actively, negotiating, and building consensus. Learners will be better equipped to handle different perspectives, conflict resolution, and achievement of common goals through collaboration with different people. Collaborative communication is particularly important in issues of sustainability since solutions in such matters often depend on people working together

4.1.4. *Participatory Communication*

Participatory communication concerns not merely the expression of opinions but active listening, mutual respect, and trust-building among participants (Huesca, 2008; Servaes & Malikhao, 2005; Servaes & Servaes, 2021). The social barrier between the communicator and the receiver is reduced and ideas, knowledge and experience are exchanged more equitably as (Servaes & Malikhao, 2005) explained through participation based on listening and trust. They stated,

Participation, which necessitates listening, and moreover, trust, will help reduce the social distance between communicators and receivers, between teachers and learners, between leaders and followers as well as facilitate a more equitable exchange of ideas, knowledge and experiences (p. 91).

In ESD, these participatory processes allow students to be involved in collective decision making and community action to achieve ESD sustainability objectives (Holst et al., 2024; Lave & Wenger, 1991). The civic-participation aspect of ESD is reflected in the pathway, voice and opinion expression, stakeholder dialogue, building trust and collective decision-making; language is what enables learners to ask questions, provide information and participate in decision-making processes instead of being passive receivers of information on sustainability.

4.1.5. *Reflective Communication*

Reflective communication is the ability to reflect on own beliefs, values and communication in relation to sustainability (Holst et al., 2024; Olivadese et al., 2026). Often, it takes the people to question their previous beliefs and to have to account for the consequences of their decisions. Reflective communication – the dimension linking information to practice – is seen here, as it is through language that learners externalize, examine and ultimately revise their own sustainability-relevant beliefs and practices. Language plays an essential role in reflection as it allows learners to express their experiences, conduct self-assessments, and discuss their opinions regarding sustainability issues. Reflective communication is instrumental in helping learners understand the way language constructs perceptions, attitudes, and reactions to social and environmental problems. In the suggested approach to teaching sustainability, reflective communication is the link between information and practice

4.2. **Synthesis**

Read together, the five dimensions show that sustainability competencies proposed within ESD are themselves communicative and language-based (Redman & Wiek, 2021): collaboration is exercised through collaborative communication, critical thinking through critical dialogue, global citizenship through intercultural communication, civic engagement through participatory communication, and normative and anticipatory competence through reflective communication. Language is therefore not a supplementary skill sitting alongside these competencies but the medium through which each is developed, negotiated, and enacted, and the mechanism through which sustainability competence, more broadly, is translated into collective sustainable action.

The five dimensions should not be interpreted as discrete or sequential competencies, but as interdependent communicative processes that operate simultaneously in authentic sustainability contexts. For instance, critical dialogue is needed to assess the different solutions, intercultural

dialogue to interact with culturally diverse stakeholders, collaborative communication to coordinate tasks, participatory communication to make sure that everyone is involved in the decision-making process and reflective communication to revisit one's own opinions and beliefs in light of new data. They do not operate as standalone components, but as complementary dimensions to foster continued involvement in complex sustainability issues. It is an integrated view of sustainability, as sustainability itself is a complex phenomenon, which requires a complex interaction of the various communicative capacities to act effectively.

Theoretically, the SLC Framework sees language as not an enabler of sustainability education, but as a part of sustainability competence (Yu et al., 2024). While existing ESD frameworks tend to outline the content of what students need to learn, value, or be able to do, they give relatively little attention to the communicative process by which these outcomes are realized. The specification of these processes as identifiable dimensions provides a better conceptual basis for curriculum design, pedagogy and assessment. It also provides a common language for the analysis of the sense-making processes of learners, their encounter with different perspectives and their interpretation of the knowledge of sustainability in terms of collective action (Riess et al., 2022). The framework, therefore, builds on current competence models, explicitizing the communicative basis where sustainability learning and practice rely.

5. **Implications for Language Teaching and Learning**

The concept of language as a sustainability competence has various implications for language education and ESD practices. Generally, language education has focused on linguistic competence and communicative abilities, often stressing grammar accuracy, vocabulary, and language fluency (Hymes, 1972; Canale & Swain, 1980). The goals described above are relevant, yet our current approach calls for a much more extensive use of language

education, which could help individuals prepare for discussion and solve their sustainability problems. With language seen as a sustainability competence, the classroom becomes a place to learn how to communicate and produce sustainable solutions.

In the last few years, sustainability-related programs have focused on the importance of having sustainability-related skills integrated into the curriculum in a meaningful interdisciplinary manner (Olivadese et al., 2026; Simon, 2026). Looking at the curriculum in its own regard, there is no room for integrating sustainability merely as topical information or as a set of modules in the language course. Instead, sustainability issues should provide the context for fostering communication skills through discourse, discussion, problem-solving, project-based learning, and reflection.

As an example, within an English language class, one may look at some case studies regarding the environmental problems around their city and organize discussions/debates about how these problems could be solved and what should be done in such cases, thereby working not only on the language aspect but also becoming aware of the issues of sustainability. Another example may include group activities in which students create a community campaign about water conservation, including creating informative messages, writing slogans, designing posters, etc. Another type of module includes the intercultural dimension, in which learners collaborate with peers from other parts of the world to discuss sustainability, write papers, and reflect on the linguistic and cultural diversity of the world.

This model highlights the importance of communicative pedagogy, which encourages learners to communicate, collaborate, and reflect. Learners can develop these aspects through activities such as group discussion, intercultural dialogue, simulations, community action programs, and reflective writing. These activities enable learners to develop language skills related to five dimensions of sustainable language competence. Learners go from using language for academic purposes to using language as an

instrument for participation. The model presents significant issues concerning the assessment of language learning. Traditional assessment methods are mainly based on language proficiency and individual success, and do not take into account what students can communicate in the context of sustainable development (Fischer et al., 2025).

The model of language as sustainability competence suggests an assessment approach that considers learners' abilities to engage in dialogue, collaborate, engage in intercultural interaction, and engage in critical thinking. By way of example, some possible modes of assessment may include portfolios showing students' involvement in sustainability-related activities, peer assessments reflecting collaboration and intercultural competence, and scenario tasks requiring students to discuss and negotiate sustainable development problems through dialogue. Such an assessment approach will allow gathering information about students' sustainable language competence

6. Limitations

As a conceptual paper, this study does not provide empirical evidence for the Sustainability Language Competence (SLC) Framework; the framework is derived from existing theory in ESD, applied linguistics, and communication, and the relationships proposed among its dimensions are theoretical propositions requiring empirical testing. The five dimensions have not been empirically validated, and their relative importance or interrelationship has not been established, it is plausible, for instance, that some dimensions matter more in certain sustainability contexts than others, but the current framework cannot specify this. The framework's applicability across different educational systems, age groups, and linguistic contexts also remains untested, and the conceptual pathways in Table 2 represent theorized sequences rather than empirically observed progressions.

7. Future Research

Future work should test the SLC Framework empirically and refine it accordingly. Three directions are proposed:

- Does explicit instruction in the five SLC dimensions improve learners' sustainability attitudes and practices compared with conventional sustainability-content instruction?
- How does sustainability language competence develop in multilingual classrooms, and what role do learners' home languages play in that development?
- How does learners' self-perceived language competence relate to their actual participation in collaborative, intercultural, and participatory sustainability problem-solving?

Case studies, classroom-based intervention studies, and longitudinal designs are all suited to these questions; developing valid and reliable instruments to measure sustainability language competence, alongside sustainability outcomes, is a necessary first step for any of them.

8. Conclusion

This paper has argued that ESD's competence frameworks have consistently under-theorized the communicative processes on which every other sustainability competence depends. Synthesizing theory from applied linguistics, communication studies, and sustainability education, it has proposed the Sustainability Language Competence Framework, which

specifies five interconnected dimensions, critical dialogue, intercultural communication, collaborative communication, participatory communication, and reflective communication, through which sustainability competencies are negotiated and enacted. Positioning language as a sustainability competence, rather than as a neutral channel for sustainability content, changes what ESD curricula, pedagogy, and assessment should target: not only what learners know about sustainability, but how effectively they can argue, negotiate across difference, coordinate, participate, and reflect their way toward it. Language, in this sense, is not merely how sustainability is taught, it is the communicative mechanism through which sustainability competencies are developed, negotiated, enacted, and ultimately translated into collective sustainable action.

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