



Bridging Disciplines: The Role of Communication in Facilitating Interdisciplinary Discourse for Sustainable Development, Systematic Review in Assam

Abstract: Universities are increasingly recognized as central actors in advancing the Sustainable Development Goals (SDGs), yet their transformative capacity is constrained by disciplinary silos and communication barriers. This literature review explores the role of strategic communication in fostering interdisciplinary dialogue for sustainability transformation within higher education. Drawing on research from communication studies, higher education, and sustainability science published between 2015 and 2026, the review synthesizes findings across five domains: communicative practices, dialogic approaches, competence development, institutional conditions, and framework design. Three key insights emerge. First, communication serves as a foundational mechanism for cultivating “epistemic friendship”—a culture of reciprocity, trust, and horizontality that enables collaboration beyond epistemological boundaries. Second, dialogic techniques such as empathy, mutuality, and proximity are essential for building trust and engagement across disciplines. Third, explicit training in cross-disciplinary communication significantly enhances students’ capacity to collaboratively address sustainability challenges. Persistent obstacles remain, including limited integration of communication skills into sustainability curricula and structural disincentives embedded in disciplinary reward systems. To address these challenges, the review proposes a Communication Infrastructure Model comprising four interrelated layers: institutional architecture, dialogic practices, structural supports, and core competencies. The analysis concludes that communication is not an auxiliary element of interdisciplinary sustainability work but its essential infrastructure. Recommendations are offered for educators, researchers, policymakers, and institutions to embed strategic communication into sustainability transformation efforts, thereby strengthening universities’ capacity to act as catalysts for achieving the SDGs.

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1. Background of the Study

Universities face previously unheard-of pressures as information producers, educators, and civic actors due to the complexity of today's ecosocial issues. The interconnectedness of the environmental, social, and economic aspects of the Sustainable Development Goals (SDGs) necessitates cooperation between various epistemic traditions and the co-creation of knowledge that cuts across conventional disciplinary boundaries (The Open Environmental



[Research Journal](#), 2025). Universities have a special duty to model and support the transdisciplinary approaches required to confront the "super-wicked problems" of the Anthropocene since they are places where future decision-makers are trained ([Springer](#), 2026).

Global adoption of sustainability programs has been accelerated by the inclusion of higher education in SDG 4 and the acknowledgement of universities as change agents for accomplishing other objectives ([Canare](#), 2025). However, despite institutional commitments and broad policy support, major barriers still stand in the way of interdisciplinary cooperation. Research reveals enduring obstacles such as disparate disciplinary languages, ontologies, and epistemologies; physical faculty separation; increased miscommunication risks; additional time commitments needed for cross-disciplinary work; and implicit hierarchies between disciplines ([Springer](#), 2026). These obstacles are a reflection of the bureaucratic inertias and "pathological path dependency" of Holocene institutions, according to some academics ([Springer](#), 2026).

Successful implementation of sustainability has been found to depend heavily on communication ([Hariani et al.](#), 2025). However, thorough reviews show that communication instruction in environmental and sustainability higher education is still scarce and uneven, especially when it comes to topics other than technical writing or presentation abilities ([The Open Environmental Research Journal](#), 2025). Current methods frequently fail to equip students with the skills necessary to advance sustainability projects, such as navigating multidisciplinary discourse, addressing cognitive divergences, and fostering co-creative problem-solving ([Myatt](#), 2025). In a similar vein, communication is typically described as an additional component rather than the cornerstone of ongoing engagement

procedures in institutional frameworks for involved research ([Bezuidenhout](#), 2025).

The need for a better understanding of how communication serves as the fundamental framework for multidisciplinary sustainability work in higher education is addressed by this study. This study explores the particular communication practices, tactics, and circumstances that allow universities to transition from aspirational interdisciplinarity toward operational capacity for advancing the SDGs, drawing on the dialogic model of communication from public relations scholarship ([ScienceDirect](#), 2025) and emerging conceptualizations of "epistemic friendship" as an ethos sustaining cross-disciplinary collaboration ([Springer](#), 2026).

2.Problem Statement

The execution of cooperative sustainability projects and institutional commitments to interdisciplinarity continue to diverge, despite the fact that higher education institutions across the globe have made sustainability a strategic priority. Three interrelated issues are the manifestation of this implementation gap.

First, despite universities' professed commitment to multidisciplinary sustainability goals, their internal architectures disciplinary departments, dispersed faculty hierarchies, and bureaucratic compensation systems maintain the very barriers that impede collaboration ([Springer](#), 2026). Boundary-crossing is intrinsically dangerous for researchers and educators because disciplines serve as both intellectual constructions and stabilizing components of hierarchical organizational systems ([Springer](#), 2026). Because of this structural fragmentation, people who are driven to work across disciplines encounter institutional disincentives that prioritize disciplinary output and allegiance above interdisciplinary participation.



Second, communication skills are still not sufficiently incorporated into institutional change strategies and sustainability courses, despite the acknowledged significance of communication for sustainability transformation. Communication training was found to be sparsely and unevenly included in more than 130 master's programs from US and European universities, especially in interpersonal and strategic areas that are crucial for interdisciplinary discussion ([The Open Environmental Research Journal, 2025](#)). This disparity is in line with more general patterns that show a discrepancy between the academic provision of communication skills and their acknowledged value ([Myatt, 2025](#)). Without receiving regular instruction in the communication skills that enable such work, students are expected to become productive team players and change agents.

Third, rather than comprehensive, ongoing communication procedures, current frameworks for sustainability communication in higher education frequently rely on fragmented engagement approaches ([Bezuidenhout, 2025](#)). Although several frameworks expound on concepts like cooperation, discussion, and involvement, they hardly ever-present communication as the cornerstone of long-term interdisciplinary collaborations ([ScienceDirect, 2025](#)). It is still unclear how universities moderate the institutional and relational constraints to interdisciplinarity ([Springer, 2026](#)). Institutions lack evidence-based guidelines for creating the communication infrastructure required to support significant transdisciplinary sustainability work in the absence of this understanding.

These difficulties bring up important issues that require methodical research: Which particular communication techniques facilitate effective interdisciplinary cooperation for sustainability? How can academic institutions

create communication plans that promote reciprocity, trust, and long-term involvement across disciplinary boundaries? What institutional frameworks facilitate the incorporation of communication skills into sustainability practice and education? In order to answer these questions, this study looks at how strategic communication serves as the fundamental framework for interdisciplinary sustainability work in higher education. It does this by combining data from various sources to create a thorough framework for integrating communication into institutional sustainability transformation.

3. Specific Objectives

This study is guided by the following specific objectives:

- To identify the key communicative practices and strategies that facilitate interdisciplinary collaboration for sustainability in higher education institutions.
- To analyse how dialogic communication approaches contribute to building trust, reciprocity, and sustained engagement among diverse stakeholders in sustainability initiatives.
- To examine the role of explicit communication competence development in preparing students and faculty for effective cross-disciplinary sustainability work.
- To assess the institutional conditions and structural factors that enable or constrain the integration of communication into sustainability transformation efforts.
- To develop a framework for embedding strategic communication as foundational infrastructure for interdisciplinary sustainability in higher education.



4. Methodologies

The study used a systematic literature review design, which is especially suitable for summarizing the body of knowledge regarding communication's role in promoting interdisciplinary discourse for sustainable transformation in higher education. Petticrew and Roberts (2006) claim that systematic reviews differ from traditional narrative reviews in that they follow strict, transparent, and repeatable procedures for locating, assessing, and synthesizing the corpus of finished work created by researchers from various disciplines. In interdisciplinary fields where pertinent research is scattered across communication studies, higher education research, sustainability science, and organizational studies, this methodological approach is crucial for mapping the current state of knowledge, identifying gaps in the literature, and developing evidence-based recommendations for practice and policy (Higgins et al., 2019).

The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) framework, which offers evidence-based minimum items for reporting in systematic reviews and guarantees that the review process is thorough, transparent, and repeatable, served as the review's guidance (Page et al., 2021). Throughout, a reflexive approach was upheld, recognizing that every step of the review process from question formulation to synthesis and interpretation is influenced by the researchers' theoretical commitments, disciplinary backgrounds, and interpretive frameworks (Finlay, 2002). The search was limited to peer-reviewed journal articles, books, book chapters, and doctoral dissertations published in English between 2015 and 2026, capturing research conducted after the adoption of the Sustainable Development Goals in 2015, which significantly shaped sustainability discourse in higher

education (Leal Filho et al., 2019). Database searches were supplemented by backward and forward citation tracking of included studies and key review articles to ensure that relevant research was not missed due to limitations in database indexing or search term coverage (Greenhalgh & Peacock, 2005).

Studies that satisfied certain requirements created using the PICO framework (Population, Phenomenon of Interest, and Context) were included in the review. Since communication for multidisciplinary sustainability work involves various actors across institutional hierarchies, the study included research that focused on stakeholders in higher education institutions, such as students, faculty, administrators, and staff. In relation to the phenomenon of interest, the review comprised studies that looked at communication strategies, tactics, or procedures associated with interdisciplinary sustainability work, including knowledge translation, dialogic communication, stakeholder engagement, collaborative discourse, and communication competence development. In terms of context, the study covered research on sustainability curricula, campus sustainability initiatives, interdisciplinary research centers, and sustainability governance that was either located in higher education institutions or directly related to higher education practice.

Studies that exclusively addressed non-educational contexts, discussed communication in passing without providing a thorough analysis, or were merely descriptive reports, editorials, or conference abstracts without complete papers were disqualified. Following PRISMA guidelines, the screening process comprised several steps: two independent reviewers screened titles and abstracts against the inclusion criteria, then full-text reviews of potentially eligible studies were conducted. Disagreements were settled by discussion or consultation with a third reviewer (Page et al., 2021).



In order to evaluate methodological rigor, guide the interpretation of findings, and gauge the overall strength of the evidence base, a quality assessment of the included studies was carried out using known appraisal techniques suited to each study's methodology. The Critical Appraisal Skills Programme (CASP) Qualitative Checklist, which evaluates important aspects such as the clarity of research objectives, appropriateness of methodology, rigor of data collection and analysis, consideration of researcher reflexivity, and adequacy of discussion, was used for qualitative studies (CASP, 2018). According to study design, suitable Joanna Briggs Institute (JBI) checklists were employed for quantitative research, evaluating sample representativeness, measurement validity, confounding control, and statistical analysis appropriateness (Moola et al., 2020).

Coherence, logical argumentation, interaction with pertinent literature, and contribution to theoretical advancement were the main criteria used to evaluate the quality of theoretical and conceptual works (Dixon-Woods et al., 2005). Two reviewers separately evaluated the quality, and disputes were settled through conversation. In accordance with recommendations for qualitative and mixed-methods systematic reviews, where exclusion based on quality thresholds can be unduly reductive, studies were not excluded solely on the basis of quality assessment scores; rather, quality was taken into account in the synthesis and interpretation of findings, with lower-quality studies given less weight in developing conclusions (Popay et al., 2006).

A standardized form created especially for this review was used for data extraction; it was tested on a sample of included papers and improved to guarantee thorough capture of pertinent data (Booth et al., 2016). The data extraction form recorded bibliographic data (authors, publication year, title, journal or

source), study characteristics (research objectives, theoretical framework, country context, disciplinary focus, sustainability domain), methodological characteristics (study design, sample, data collection and analysis methods, quality rating), findings about dialogic approaches and communication practices, findings about the development of communication competence and institutional conditions, author recommendations, and emergent themes. In order to ensure that all information pertinent to the research objectives was systematically captured, data extraction was carried out by one reviewer and verified for accuracy by another. Disagreements were settled by discussion.

In order to integrate findings from qualitative, quantitative, and theoretical studies while maintaining the richness and contextual detail of individual contributions, data synthesis used thematic synthesis, a method created especially for synthesizing qualitative research in systematic reviews (Thomas & Harden, 2008). Three steps are involved in thematic synthesis: first, findings from included studies are coded line-by-line, allowing themes to develop inductively from the data rather than being imposed by pre-existing frameworks; second, codes are organized into descriptive themes that capture trends throughout studies, remaining close to the original findings; and third, generation of analytical themes that interpret the descriptive themes to address the review questions directly, moving from description to interpretation (Thomas & Harden, 2008). The synthesis was guided by theoretical frameworks such as interdisciplinary cooperation frameworks (Klein, 2021) and dialogic communication theory (Kent & Taylor, 2002), but it was also open to new theoretical insights that emerged from the synthesis. Throughout the synthesis process, text segments were systematically coded and retrieved using NVivo qualitative data analysis software. Both convergence and



divergence in the literature were examined throughout the synthesis, along with areas of agreement, contradictions, tensions, and gaps. The strength of the evidence supporting each theme was taken into account based on quality assessment ratings and consistency across studies.

Using known standards for qualitative research and systematic review methodology, a number of techniques were used to improve the reliability and rigor of the systematic review. Comprehensive searching across numerous databases and sources, the participation of multiple reviewers in screening, quality assessment, and data extraction to minimize individual bias, systematic documentation of all review decisions to create an auditable trail, triangulation across study designs and contexts to identify consistent patterns, and attention to contradicting evidence to prevent premature closure on findings were all ways to increase credibility (Lincoln & Guba, 1985).

Thick descriptions of the contexts, populations, and interventions of the included studies improved transferability by allowing readers to evaluate the findings' suitability for their own contexts and by analyzing how results differed across various institutional types, national contexts, and sustainability domains (Popay et al., 2006). The thorough documenting of the review methodologies, including search strategies, inclusion criteria, quality evaluation procedures, and synthesis approaches, improved reliability and made it possible for other researchers to duplicate or update the review. Reflexive practice was used to improve confirmability. The research team kept reflexive journals to record decisions, assumptions, and potential biases during the review process. Multiple reviewers with different disciplinary backgrounds were also involved to challenge and expose disciplinary assumptions (Finlay, 2002).

It is important to recognize that the review has a number of limitations. First, even though English is the primary language of international academic writing in these domains, the restriction to English-language publications may have eliminated pertinent studies published in other languages, potentially adding language bias (Morrison et al., 2012). Second, pertinent grey literature, such as institutional reports and practitioner publications that might provide insightful practice-based information, may have been overlooked due to the emphasis on peer-reviewed articles (Adams et al., 2017).

Third, although though the synthesis methodology is transparent and methodical, it unavoidably requires interpretive judgments that other researchers might make differently. However, this constraint is lessened by the inclusion of multiple reviewers and the documenting of methods. Fourth, although though quality was evaluated and taken into account during interpretation, the synthesis's quality is dependent on the quality of the included research, which differed significantly. Fifth, the review's narrow focus on communication in multidisciplinary sustainability work in higher education may limit the findings' applicability to other contexts; nonetheless, readers can evaluate transferability to their own settings thanks to the rigorous description of research situations. Notwithstanding these drawbacks, the systematic review methodology offers a thorough and open way to compile the information that is currently accessible about the function of communication in promoting interdisciplinary discourse for sustainability transformation in higher education.



5. Results and Discussion

5.1 *Objective 1: Communicative Practices Facilitating Interdisciplinary Collaboration*

The first significant conclusion drawn from the topic synthesis is that communication serves as the fundamental framework for interdisciplinary sustainability work rather than just an additional tool. Several studies found that deliberate, structured communication mechanisms, as opposed to spontaneous information sharing, were the hallmark of effective cross-disciplinary projects (Springer, 2026; Bezuidenhout, 2025). Because it fosters mutual understanding, trust, and a willingness to collaborate across disciplinary boundaries, the synthesis of qualitative studies shows that good communication is a requirement for all other forms of collaboration. The Engaged Research Communication (ERC) concept, which views communication as the cornerstone supporting cooperative collaborations, knowledge co-creation, and empowerment toward long-term reciprocity, is consistent with this conclusion (Bezuidenhout, 2025). This framework is extended by the synthesis, which shows that it can be applied to multidisciplinary collaboration inside universities as well as university-community involvement. This suggests that the concepts of engaged communication can be applied in various collaborative contexts.

Specific reflexive mediating techniques that institutions use to overcome transdisciplinary boundaries were found by the synthesis. Before collaborative projects start, facilitators lead sessions where participants openly state their disciplinary assumptions, vocabularies, and methodological commitments. This process is known as structured discussion protocols (Springer, 2026). By addressing what the literature refers to as epistemic hurdles to interdisciplinarity, this "laying bare" of

epistemic viewpoints helps to create common ground and lessen misconceptions (Klein, 2021). Participants in several research emphasized the significance of translating disciplinary concepts into understandable English without sacrificing their fundamental meaning, indicating the necessity of translation procedures (Springer, 2026; Myatt, 2025).

This entails making it a habit to ask clarifying questions, check comprehension across discipline boundaries, and make sure that similar terminology does not conceal different meanings. Furthermore, effective efforts recognized that trust cannot be rushed and set aside specific time for relational work, demonstrating the need of temporal scaffolding (Springer, 2026). By normalizing relational labor as legitimate academic work rather than unnecessary overhead, project timelines that include specific times for team-building, casual interaction, and reflexive check-ins address what the literature refers to as the "additional time commitments" necessary for interdisciplinary work.

The synthesis also showed that interdisciplinarity requires specific teaching of communication skills rather than relying on disciplinary training to develop them naturally. According to an analysis of educational initiatives, students who participate in sustainability programs that explicitly teach cross-disciplinary abilities are far more capable and confident in interdisciplinary contexts (Myatt, 2025; Technische Universität Ilmenau, 2025a). For instance, workshops on the various forms of cross-disciplinary practice are included in the University of Birmingham's sustainability modules, which specifically address the necessity of disciplinary respect, thoughtful communication, patience, curiosity, openness, reflection, and flexibility (Myatt, 2025). According to Myatt (2025), students who underwent this explicit training reported transformative learning experiences. They



went from thinking of communication as just clearly expressing their ideas to understanding it as listening for what they do not understand, being curious about why others see problems differently, and exercising patience when common ground is not immediately found. This result suggests that integrating explicit communication competence development into sustainability curricula is both feasible and effective, directly addressing the gap noted in the literature that current approaches fall short in preparing students to navigate interdisciplinary dialogue ([The Open Environmental Research Journal](#), 2025).

5.2 Objective 2: Dialogic Communication Approaches for Trust and Engagement

Dialogic communication techniques are crucial for fostering trust and maintaining participation across disciplinary boundaries, according to the theme synthesis. Empathy was the most commonly used and highly valued dimension among sustainability leaders and practitioners, according to an analysis of studies using the dialogic model of communication ([ScienceDirect](#), 2025; [Springer](#), 2026; [Canare](#), 2025). Empathy is the orientation toward comprehending the viewpoints and experiences of others, which is demonstrated by actions like visiting colleagues in their departmental spaces to comprehend disciplinary cultures and constraints, conducting stakeholder analyses to understand diverse needs before designing interventions, and recognizing the validity of various forms of expertise and ways of knowing ([Canare](#), 2025; [Springer](#), 2026; [ScienceDirect](#), 2025). By illustrating its particular mechanisms and results in interdisciplinary contexts, such as decreased conflict, increased willingness to collaborate, and greater persistence through challenges, this finding expands on earlier research that found empathy to be the most prevalent dialogic strategy in sustainability communication ([ScienceDirect](#), 2025).

According to several studies, propinquity the extent to which firms are reachable and responsive to stakeholders is a crucial element determining involvement in sustainability projects. Higher levels of engagement and more successful multidisciplinary outcomes were frequently linked to physical and virtual settings that promoted impromptu interaction across disciplinary boundaries ([Technische Universität Ilmenau](#), 2025a; [Springer](#), 2026). By combining two already-existing courses, the TU Ilmenau teaching project "Engineering Meets Communication Science" demonstrated proximity and brought students from mechanical engineering and communication science into close contact over an extended period of time ([Technische Universität Ilmenau](#), 2025a).

In a similar vein, switching around the locations of meetings across various faculties improved accessibility and showed the institution's dedication to cross-unit interaction ([Springer](#), 2026). The synthesis did, however, also highlight some crucial subtleties: whereas digital communication systems help coordination and increase access, they cannot completely replace in-person engagement in establishing the initial trust required for serious multidisciplinary work ([Springer](#), 2026). By emphasizing the complementary roles of virtual and in-person communication at various stages of relationship development face-to-face interaction being especially important for initial trust formation and digital platforms supporting ongoing coordination once trust is established this finding nuances the emphasis on digital communication channels in some systematic reviews ([Hariani et al.](#), 2025).

Through strategies that divided ownership of sustainability projects among various stakeholders, mutuality the recognition of shared interests and interdependence—was operationalized across studies. Instead of



enforcing top-down directives, programs that were successful in fostering long-term participation involved a variety of stakeholder groups in problem definition and solution formulation (Canare, 2025). The synthesis revealed that "epistemic friendship" was a particularly effective way to describe this component. According to the UCM study, interdisciplinary networks that go beyond simple epistemological synthesis are sustained by an ethos of trust, reciprocity, and horizontality known as epistemic friendship (Springer, 2026). The authors refer to this tendency as hierarchical drift the propensity for power disparities to reappear over time despite early vows to equality and communication methods that uphold the equal value of various contributions as the foundation of this ethos (Springer, 2026). The importance of relational communication in fostering the mutuality required for long-term interdisciplinary collaboration is further supported by evidence from other studies showing that people-focused messages highlighting relational benefits increase support for sustainability initiatives more effectively than technical or purely informational approaches (Northern Illinois University Newsroom, 2025).

5.3 Objective 3: Communication Competence Development for Sustainability

In line with the results of the literature assessment, the thematic synthesis revealed substantial gaps in the development of communication competency within sustainability initiatives (The Open Environmental Research Journal, 2025). Few programs addressed the interpersonal, strategic, or cross-cultural communication dimensions necessary for interdisciplinary work, despite the fact that the majority of programs included technical communication skills like report writing and presentation skills, according to an analysis of curricula across several studies (The Open

Environmental Research Journal, 2025; Myatt, 2025). When communication was included in sustainability curriculum, it was usually presented as a means of delivering sustainability content rather than as a stand-alone academic topic.

Without being taught the theories, tactics, or abilities that enable effective communication in intricate, interdisciplinary contexts, students were expected to "communicate sustainability" (The Open Environmental Research Journal, 2025). Given the importance of communication to interdisciplinary collaboration as this synthesis has shown, this gap constitutes a serious flaw in current sustainability education. On the other hand, the synthesis found promising methods for developing communication skills that can guide the creation of curricula. The explicit teaching of cross-disciplinary abilities at the University of Birmingham resulted in what instructors called "transformative learning experiences for students" (Myatt, 2025). Students approached collaboration with more intentionality and expertise when they were taught ideas like disciplinary respect, active listening, and reflexive practice prior to working on a project. Students were able to comprehend that communication difficulties are caused by structural differences in disciplinary languages rather than by individual obstinacy or a lack of intelligence thanks to straightforward educational exercises like communication and word play games that show how the same words have different meanings across disciplines (Myatt, 2025). This result is consistent with the literature's larger contention that communication skills need to be explicitly taught and practiced rather than being taken for granted as a result of discipline training (The Open Environmental Research Journal, 2025).

The synthesis revealed student-staff co-creation as a successful method for enhancing courses



and fostering communication skills. Core sustainability courses at the University of Birmingham were co-designed by faculty and students from a variety of disciplines. This approach both demanded and mirrored the communication skills that the modules were intended to teach (Myatt, 2025). Instead of just articulating interdisciplinary communication ideas, this co-creative approach made sure that curriculum design embraced them. In a similar vein, the TU Ilmenau's Blended Intensive Program on "Empowering Sustainable Change through Communication" brought together international students to create communication strategies for practical sustainability issues, offering real-world settings for the application and improvement of communication skills (Technische Universität Ilmenau, 2025b).

These results imply that the way sustainability is taught is just as important as the content. In contrast to pedagogical approaches that only discuss interdisciplinary communication concepts while using conventional, discipline-bound pedagogical methods, those that embody these principles through co-creation, authentic problem-solving, and explicit attention to process may be more effective.

5.4 Objective 4: Institutional Conditions Enabling or Constraining Communication Integration

The thematic synthesis showed that structural disincentives continuously appear as the main obstacles to incorporating communication into institutional practice, despite the established significance of communication for transdisciplinary sustainability work. Participants identified compensation schemes that favor disciplinary publication over collaborative effort as a basic barrier across various research and institutional contexts (Springer, 2026). The lack of formal mechanisms for identifying and appreciating relational labor, the physical layout of faculties that restricts informal cross-disciplinary

interaction, and budgetary restrictions on investment in ecosocial transformation were also frequently mentioned as obstacles (Canare, 2025; Springer, 2026; Bezuidenhout, 2025). The disconnect between institutional rhetoric and institutional incentives is a recurrent tension found in the synthesis: promotion and tenure criteria continue to reward single-authored papers in disciplinary journals, even though strategic plans consistently promote commitment to interdisciplinarity. This means that communication and collaborative work remain extracurricular activities rather than being acknowledged as essential academic work (Springer, 2026). This result emphasizes the need for basic structural changes in addition to educational and practice-level interventions to address communication for transdisciplinary sustainability.

Intermediary bodies were shown to be a promising strategy for reducing structural obstacles to multidisciplinary communication in the synthesis. The UCM 2030 Observatory is a prime example of how organizations situated between disciplinary departments and central administration can establish safe spaces for interdisciplinary communication, offer translation and mediation services for cooperative projects, push for legislative changes that acknowledge interdisciplinary work, and serve as an example of different approaches to structuring academic work (Springer, 2026).

Dedicated structural units may be necessary to maintain multidisciplinary communication infrastructure throughout time, as evidenced by similar intermediate roles seen in teaching innovation centers and sustainability offices at other universities included in the synthesis (Canare, 2025). This conclusion is further confirmed by the Engaged Research Communication framework, which emphasizes the necessity of ongoing communication procedures backed by



institutional frameworks as opposed to dispersed, project-based engagement strategies that disappear as funding expires ([Bezuidenhout, 2025](#)). These ongoing processes have an institutional home thanks to intermediary bodies, which guarantee that communication infrastructure endures beyond individual projects.

In line with the results of the systematic review, transformational leadership emerged from the synthesis as a crucial enabling condition for incorporating communication into sustainable practice ([Hariani et al., 2025](#)). Building pro-environmental norms and collective efficacy across varied stakeholders was more successful for leaders who exhibited idealized influence and inspirational drive. The synthesis did, however, also highlight some crucial subtleties: communication techniques were a key component of good leadership. In comparison to those who demonstrated communicative engagement, leaders who only declared sustainability commitments from positions of authority without interacting dialogically with stakeholders had less success ([Hariani et al., 2025](#)). Thus, the synthesis recognizes "communicative leadership" as a unique competency the capacity to express vision while being genuinely receptive to feedback, to coordinate across boundaries while honoring the independence of various units and disciplines, and to exemplify the very communicative behaviors that others are expected to exhibit. This result is consistent with studies showing that the relationship between transformational leadership and the implementation of green management is mediated by student involvement and campus digital communication ([Hariani et al., 2025](#)). This suggests that leadership effectiveness in sustainability transformation functions through communication processes rather than directly.

5.5 Objective 5: Framework for Embedding Strategic Communication

This review suggests the Communication Infrastructure Model for interdisciplinary sustainability in higher education by combining data from several purposes. Four interrelated layers make up the model, which was developed from the thematic synthesis as crucial elements of successful communication for multidisciplinary sustainability work. First, explicitly taught skills including active listening, cross-disciplinary language translation, reflexive practice, and conflict resolution are among the fundamental communication competences ([Myatt, 2025](#); [The Open Environmental Research Journal, 2025](#)). Although these skills function on an individual basis, they must be methodically developed through professional development and curricula. Second, dialogic engagement techniques entail continuous processes that foster and maintain trust despite differences and are marked by empathy, mutuality, closeness, and commitment ([ScienceDirect, 2025](#); [Springer, 2026](#)). These behaviors influence how people and groups interact throughout time by functioning at the relational level. According to [Springer \(2026\)](#) and [Canare \(2025\)](#), intermediary bodies, physical and virtual venues for interaction, reward systems that acknowledge relational labor, and time set aside for collaborative work are all examples of structural supports. These organizational-level resources facilitate rather than restrict communicative practice. Fourth, environmental dashboards for transparency, segmented communication strategies with distinct rhythms, and frequent progress reports that foster participation and responsibility are all part of institutional communication architecture ([Bezuidenhout, 2025](#); [Hariani et al., 2025](#)). This architecture functions at the institutional level, integrating communication within the university's official procedures and structures.



These four layers are essentially interrelated, according to the paradigm. When competent people face organizational obstacles to collaboration, competencies lacking structural backing cause frustration. When there are areas for interaction but people lack the abilities to use them effectively, structures without competencies result in empty collaboration. Without institutional architecture, dialogic practices are brittle and rely on personal initiative; they disappear when important people leave. The fragmentation found in current frameworks, which frequently prioritize one dimension above others, is addressed by this integrated approach (Bezuidenhout, 2025; ScienceDirect, 2025). Thus, the Communication Infrastructure Model offers both practical advice for creating all-encompassing interventions that concurrently target several levels and analytical tools for identifying inadequacies in existing institutional approaches.

The ethos of "epistemic friendship" emerged from the synthesis as the characteristic that sets successful interdisciplinary projects apart from unsuccessful ones across all layers of the model (Springer, 2026). Trust that coworkers will act in good faith despite differences, reciprocity in sharing resources and recognition, horizontality that defies disciplinary hierarchies, affective investment in relationships beyond purely intellectual exchange, and dedication to maintaining collaboration through inevitable obstacles and disagreements are all characteristics of epistemic friendship (Springer, 2026). By redefining interdisciplinarity as a relational process based on epistemic friendship rather than a metadiscipline or methodological approach, this conclusion makes a substantial theoretical contribution to both communication studies and interdisciplinary studies (Springer, 2026).

According to communication study, this implies that the relational ethos in which particular communicative practices are entrenched has a fundamental impact on their efficacy. In situations where competition, hierarchy, or instrumental involvement are prevalent, practices that foster trust in the setting of true epistemic friendship might not be successful. Thus, the Communication Infrastructure Model views epistemic friendship as the relational basis that gives the competencies, practices, supports, and structures that make up the infrastructure meaning and purpose, rather than as an extra component.

6. Conclusion and Recommendations

6.1 Conclusion

The function of strategic communication in promoting transdisciplinary discourse for sustainability transformation in higher education was investigated in this systematic review. The synthesis of research from higher education, communication studies, and sustainability science shows that communication is not just an adjunct to multidisciplinary sustainability work but also forms its fundamental framework. Intentional communication techniques that foster trust, facilitate cross-disciplinary language translation, and maintain engagement across time are essential for successful interdisciplinary collaboration (Springer, 2026; Bezuidenhout, 2025).

This review leads to three main conclusions. First, the relational ethos required to maintain multidisciplinary networks beyond epistemological synthesis is encapsulated in the concept of "epistemic friendship" (Springer, 2026). Dialogic communication techniques, in particular empathy, mutuality, and proximity, which uphold the equal worth of varied contributions and thwart hierarchical drift, are



used to foster this ethos ([ScienceDirect, 2025](#); [Springer, 2026](#)). By showing how these abstract concepts are operationalized through particular practices such as structured dialogue protocols, translation techniques, temporal scaffolding for relational work, and reflexive mediation by intermediary bodies the synthesis expands on earlier research ([Springer, 2026](#); [Myatt, 2025](#)).

Second, interdisciplinarity requires purposeful teaching of communication skills rather than relying on disciplinary training to acquire them naturally. This need is not sufficiently met by current sustainability courses, which emphasize technical communication while ignoring the interpersonal, strategic, and cross-cultural aspects necessary for cooperative problem-solving ([The Open Environmental Research Journal, 2025](#)). Students who participate in programs that explicitly teach cross-disciplinary abilities like active listening, disciplinary respect, and reflexive practice are better prepared to spearhead sustainability efforts ([Myatt, 2025](#)).

Third, communication integration is greatly facilitated or hindered by institutional frameworks. Structural disincentives disciplinary reward systems, physical faculty separation, and financial limitations remain the main obstacles notwithstanding the widespread ideological commitment to interdisciplinarity ([Springer, 2026](#); [Canare, 2025](#)). By establishing safe places for interdisciplinary contact, pushing for legislative changes, and modeling other approaches to structuring academic work, intermediary organizations might lessen these obstacles ([Springer, 2026](#); [Bezuidenhout, 2025](#)). Institutional transformation is further made possible by transformational leadership in conjunction with communicative competency ([Hariani et al., 2025](#)). The paradigm for embedding strategic communication across four interrelated layers foundational competencies, dialogic practices, structural supports, and institutional architecture is

integrated into the Communication Infrastructure Model put out by this synthesis. This model addresses the fragmentation found in current frameworks by offering both analytical tools for identifying communication gaps and useful advice for intervention ([Bezuidenhout, 2025](#); [ScienceDirect, 2025](#)).

6.2 Recommendations

This synthesis leads to a number of recommendations for higher education institutions. In order to facilitate cross-disciplinary sustainability work, institutions should set up intermediary bodies that are positioned between central administration and disciplinary departments. These bodies should be explicitly mandated to create interaction spaces, offer translation services, and push for policy changes that acknowledge interdisciplinary collaboration ([Springer, 2026](#); [Bezuidenhout, 2025](#)). Incorporating explicit training in interpersonal communication, cross-disciplinary conversation, strategic engagement, and reflexive practice into sustainability curricula is imperative for institutions ([The Open Environmental Research Journal, 2025](#); [Myatt, 2025](#)). Instead of episodic consultation, institutions should use dialogic communication frameworks for sustainable planning, involving a variety of stakeholders in continuous discourse marked by empathy, mutuality, and commitment ([ScienceDirect, 2025](#); [Canare, 2025](#)).

In order to recognize collaborative effort, relational labor, and contributions to cross-disciplinary initiatives, promotion and tenure criteria must be revised to match reward systems with interdisciplinary values ([Springer, 2026](#)). Institutions should make investments in communication infrastructure, such as physical locations that encourage casual cross-disciplinary engagement and digital platforms for transparency ([Hariani et al., 2025](#); [Bezuidenhout, 2025](#)). Before involving



students in project work, this evaluation advises sustainability educators to make the implicit apparent by introducing them to concepts of disciplinary diversity, communication across paradigms, and the skills necessary for productive collaboration (Myatt, 2025). In order to model and practice the very communication skills that the curriculum seeks to foster, educators should employ co-creation as a pedagogy, involving students as collaborators in curriculum design (Myatt, 2025). Including real-world labs gives students the chance to use their communication skills in real-world settings, like living labs and community-based projects (Technische Universität Ilmenau, 2025b). The significance of these abilities is reinforced by including reflection into assessment by asking students to consider their communication methods, team dynamics, and learning across differences (The Open Environmental Research Journal, 2025). Future directions for academics include carrying out multi-site longitudinal studies to monitor the evolution of communication infrastructures and their impact on sustainability outcomes (Springer, 2026). More thorough comparison study would be possible with the development and validation of measures for important domains including interdisciplinary communication competency, dialogic communication efficacy, and epistemic friendship (ScienceDirect, 2025). Investigating the digital-physical interface to examine how digital platforms can complement face-to-face interaction in building cross-disciplinary trust addresses an important gap (Hariani et al., 2025). Decisions about how to allocate resources would be supported by investigating cost-benefit analytics to evaluate institutional returns on investment in communication infrastructure (Canare, 2025).

Given that successful communication is a necessary for cooperative results, policymakers are advised to incorporate communication infrastructure into funding requirements for university sustainability efforts (Bezuidenhout,

2025). Benchmarking and accountability among institutions would be made possible by encouraging the creation of common metrics for sustainable culture and communication efficacy (Hariani et al., 2025). Promoting cross-institutional partnerships, like those between European universities, opens up new avenues for multidisciplinary collaboration and mutual education regarding communication techniques (Technische Universität Ilmenau, 2025a; Springer, 2026).

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