



## Family-School Linkage in Environmental Awareness Communication: A Review and Inspiration for the Cultivation of College Students' Environmental Awareness

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### ABSTRACT

This study explores the role of family-school communication in enhancing environmental education for youth, with a particular focus on college-level students. The objective is to identify communication patterns, challenges, and research gaps that influence the effectiveness of environmental learning. Using a systematic literature review of 50 peer-reviewed publications published between 2000 and 2023, the study follows PRISMA guidelines and applies thematic analysis to uncover key findings. Results indicate that structured communication channels, such as Parent-

Teacher Associations and school-based environmental initiatives, contribute positively to students' environmental awareness and educational outcomes. However, barriers such as limited resources, cultural differences, and underdeveloped engagement frameworks persist. The study concludes that adopting socially supportive technologies and collaborative partnership models can significantly strengthen institutional synergy and advance the development of impactful environmental education, ultimately shaping youth into responsible and sustainability-minded citizens.

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## Introduction

Global environmental challenges such as climate change, biodiversity loss, and pollution pose severe threats to ecosystems and, consequently, to human well-being. Addressing these issues requires a heightened level of environmental awareness and management across all societal strata (Steffen et al., 2015). Environmental education (EE) has emerged as a structured process aimed at equipping individuals with the requisite knowledge, competencies, attitudes, and awareness to support sustainable practices and actively engage in environmental stewardship (UNESCO, 2017). While EE was initially conceived for implementation within academic institutions, its scope has expanded to

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incorporate familial and community contexts, recognising the interconnected nature of these domains. As foundational social units, families serve as the primary environment in which children develop early perceptions and behaviours related to nature and sustainability. Research has indicated that parental influence plays a significant role in shaping environmental attitudes and practices within everyday family routines (Ballantyne et al., 2001; Grønhøj & Thøgersen, 2017). Educational institutions complement these foundational teachings by offering structured curricula, experiential activities, and theoretical engagement. However, optimal outcomes in EE are more likely when schools and families collaborate, thereby constructing an integrated learning framework that supports holistic environmental understanding (Barrable & Booth, 2020).

The formative college years represent a pivotal period for students to cultivate environmental consciousness through active involvement. At this stage, young adults begin to articulate sustained commitments to social, ecological, and political causes. Their actions influence not only their immediate contexts but also broader societal developments, such as workplace sustainability practices and community-driven environmental initiatives. As individuals transition through key phases of personal development, they tend to reassess their values and demonstrate behaviours indicative of emerging life stages (Arnett, 2023). Therefore, understanding the interplay between familial and educational influences is essential for enhancing environmental literacy among college students.

#### *Research Problem and Gap*

As previously indicated, much of the existing research beyond the field of environmental education has predominantly examined the roles of schools and families in isolation, with minimal exploration into their collaborative engagement in fostering cohesive and sustainable approaches to environmental awareness. The available studies tend to concentrate on distinct practices, such as parental involvement in educational activities or the execution of school-based environmental initiatives, often neglecting the interconnection and mutual reinforcement of these efforts within a unified learning context (Hilder, & Collin, 2022). Furthermore, the existing literature rarely investigates how joint school-family initiatives influence the development of environmental self-identity and sustained responsibility among college students—a demographic that holds significant potential to drive environmental change (Choudhary, Saha, & Tiwary, 2020).

This research gap is particularly concerning in light of the complex nature of environmental issues, which necessitate integrated, interdisciplinary dialogue and action. Effective responses to such challenges are likely to benefit from strong partnerships between families and educational institutions, underpinned by the reinforcement of aligned values, consistent communication, proactive involvement, and routine engagement with environmental practices. For instance, coordinated strategies may allow for the theoretical insights provided within academic settings to be contextualised and operationalised through the everyday practices embedded in family life (Rickinson et al., 2019). Without a clear understanding of these interrelations, educators and policymakers risk overlooking critical elements that contribute to the efficacy of environmental education.

### *Research Questions*

- What frameworks and strategies exist to foster collaboration between families and schools in environmental education?
- How do family-school collaborative efforts influence the development of environmental awareness among college students?
- What gaps exist in current research on family-school linkages in environmental education, particularly regarding their impact on college students?

### *Significance of the Study*

The significance of this research lies in its potential to inform the design and execution of integrated EE initiatives. By concentrating on the collaborative dynamic between families and educational institutions, the study offers valuable insights for educators, families, and policymakers aiming to establish cohesive and impactful strategies for fostering environmental consciousness. The research specifically targets the college student population, a critical stage of individual development during which environmental beliefs may solidify. This group encompasses not only prospective professionals and leaders but also influential participants in shaping social norms, behavioural standards, and decision-making processes concerning environmental matters ([Fielding et al., 2008](#)). Consequently, addressing global environmental challenges necessitates innovative and cooperative approaches in educational delivery. By examining how familial and institutional interactions influence environmental attitudes, this study contributes to the advancement of scholarly understanding and practical application in EE. The findings are positioned to serve as a foundational model for developing integrated interventions aimed at equipping college students with the skills and awareness necessary to assume active and responsible roles as environmentally engaged citizens.

## **Literature Review**

### *The Role of Families in Environmental Awareness*

Parental impact on children's environmental attitudes and behaviours is shaped through various modes of interaction. The extent to which parents are perceived as valuing and engaging in eco-friendly practices within the home setting significantly contributes to the development of pro-environmental behaviours in their children ([Grønhøj & Thøgersen, 2017](#)). Activities such as consistent communication about environmental topics, modelling environmentally responsible actions, and fostering open discussions with children have been shown to enhance their confidence in internalising these values. Intergenerational collaboration, involving the transmission of knowledge and practices across generations, further strengthens the commitment to sustainable living ([Rohmalimna et al., 2022](#); [van Heezik et al., 2021](#)).

Cultural context also plays a substantial role in shaping the nature of EE within the home environment. The modes and depth of environmental engagement among families are influenced by both cultural traditions and economic conditions. In numerous Asian contexts, collectivist perspectives dominate, assigning environmental responsibility to the community at large. For instance, in Japan, students often participate in group-based

initiatives such as Eco-clubs, which focus on collective tasks like waste sorting and tree planting within school premises. Conversely, in individualistic cultures such as that of the United States, environmental learning tends to centre on personal responsibility, with practices including plastic reduction or individual recycling habits receiving greater emphasis (Tam and Chan, 2017). Socioeconomic status also markedly affects the implementation of EE at home. Families with higher socioeconomic backgrounds are more likely to possess access to educational materials, green technologies, and structured extracurricular environmental activities, all of which contribute to enhanced learning opportunities in domestic settings. In contrast, households facing economic hardship may prioritise immediate needs over environmental concerns, limiting their participation in or exposure to EE initiatives (Ogunbode et al., 2019). Therefore, it is essential to tailor environmental communication strategies in ways that bridge these disparities and support inclusive awareness-building across all social groups.

### *Schools as Catalysts for Environmental Awareness Communication*

#### *Curriculum and Communication Development*

Educational institutions serve a critical function in advancing environmental awareness, as they are the principal formal settings where sustainability is methodically incorporated into the curriculum. Internationally, frameworks such as UNESCO's Education for Sustainable Development programme have provided recommendations on how curricular content should embed sustainability principles (UNESCO, 2017). Research has demonstrated that students exposed to project-based, solution-focused instruction—featuring the use of tools, models, and the replication of real-world scenarios—tend to exhibit stronger environmental literacy, particularly when these activities reflect authentic ecological challenges (Rickinson et al., 2019). As illustrated in Figure 1, such experiential learning techniques enhance understanding and engagement. Nevertheless, some schools have yet to consistently integrate these pedagogical approaches into broader environmental collaboration models that involve families and local communities, thereby limiting the potential of a cohesive EE framework.



**Figure 1:** Teachers Engaging Students with a Project-Based Environmental Curriculum, Fostering Awareness and Understanding of Ecosystems through Creative Classroom Activities

### *Extracurricular Activities as Communication Platforms*

The establishment of Eco-clubs, recycling initiatives, and environmental campaigns offers students meaningful opportunities for active participation in sustainability-related activities. These programmes facilitate the practical application of environmental concepts acquired in school to domestic contexts, promoting a continuous exchange between educational settings and the home. School-led efforts often provide learners with materials and messages that are carried into the household, thereby supporting the development of consistent environmental partnerships between institutions and families. Illustrative examples from Finland and Japan reveal that participation in Eco-clubs – through activities such as tree planting, waste audits, and climate action – cultivates a sense of accountability and cooperation among students (Smith, 2019). In South Korea, structured waste management schemes within schools have shown that students engaged in systematic waste separation are more inclined to replicate such sustainable behaviours outside the academic environment (Lee et al., 2023). This outcome is depicted in Figure 2.



**Figure 2:** Promoting Sustainability through Effective Waste Segregation: An Initiative by Eco-Friendly Clubs to Encourage Recycling and Environmental Awareness

### *Teacher Training in Communication for Environmental Education*

Educators often encounter challenges in effectively conveying the principles of environmental communication within EE. A key issue stems from the fact that many teachers lack formal academic training in environmental science or sustainability, which can hinder their ability to deliver content accurately and confidently. Addressing this gap requires the implementation of innovative professional development strategies, including online training platforms, peer-led workshops, and collaborative learning models. An illustrative example is the Green Schools Initiative in the United States, which offers



educators both instructional resources and targeted professional development opportunities aimed at integrating sustainability themes into classroom teaching.

### *Family-School Communication in Environmental Awareness*

#### *Collaborative Communication Models*

The effectiveness of EE initiatives is significantly enhanced when implemented through collaborative partnerships between families and schools. Such partnerships typically involve structured interactions, including parent-teacher meetings focused on specific sustainability topics and the initiation of joint engagement activities – such as community clean-ups and environmental fairs – that actively involve both students and their families (see Figure 3). Epstein (2018) model highlights the importance of shared responsibility between parents and teachers, with a particular emphasis on environmental stewardship. In practical terms, this collaboration may take the form of student-led projects involving parents, such as composting initiatives, water conservation efforts, and innovations addressing natural resource management within school settings. Educational institutions that actively involve families in environmental communication initiatives tend to experience greater student engagement. Empirical evidence supports the efficacy of these collaborations. For instance, a study conducted in Sweden on water conservation projects that included school and community participation demonstrated substantial improvements in household water-saving behaviours among students and their families (Akter & Islam, 2020). Similarly, schools in Australia that integrated parents into curriculum-based ecological programmes – such as those focusing on native vegetation – reported enhanced student understanding of biodiversity-related concepts (Molinario et al., 2020).



**Figure 3:** Parents Engaging in Environmental Education, Teaching Children the Importance of Tree Planting and Sustainability

### *Barriers to Communication*

Although the advantages of implementing a collaborative family-school model in promoting environmental awareness through EE are evident, several barriers hinder its effective realisation. Constraints such as limited time due to demanding work schedules, cultural differences in environmental values and priorities, and the lack of clearly established communication frameworks contribute to reduced parental involvement. Additionally, financial limitations, particularly in under-resourced schools, can impede the establishment of structured programmes aimed at fostering parent engagement. To mitigate these challenges, adaptive strategies have been proposed, including the utilisation of digital communication tools and the development of culturally inclusive programming that reflects the diverse backgrounds of participating communities (Rickinson et al., 2019). These obstacles not only restrict meaningful family-school collaboration during the early stages of education but also persist into higher education, thereby influencing college students' environmental awareness and their propensity to engage in sustainable practices.

### *Impact on College Students' Environmental Awareness Communication*

#### *Pre-College Communication Dynamics*

Environmental awareness communication among college students often reflects the nature and extent of their earlier experiences with family-school collaboration in pre-college years. Findings from a longitudinal study by Kollmuss and Agyeman (2002) demonstrate that students who were actively involved in environmental programmes during high school are more likely to exhibit environmentally responsible behaviours and higher levels of activism during their college education. These results support the broader consensus within the field, emphasising the importance of fostering structured engagement at earlier educational stages to sustain pro-environmental attitudes as students advance academically.

#### *Emerging Trends in Technology-Driven Environmental Communication*

Technology-based approaches have increasingly played a vital role in bridging communication gaps between families and schools within the context of EE. Digital platforms offer interactive tools that facilitate shared environmental learning and engagement across both settings. One such example is the Eco-Schools App, which allows students and their families to track thematic progress, access guidance on sustainable household energy practices, and stay informed about environmental actions undertaken by the school. Complementary resources, including downloadable lesson plans and toolkits, are also available to assist educators in guiding parents on how to actively contribute to environmental initiatives. Additional innovations encompass virtual workshops, eco-themed games, interactive eco-challenges, and mobile applications designed to help monitor progress toward sustainability objectives (see figure 4). Despite these advancements, the body of research examining the practical application and measurable effectiveness of such technologies remains limited (Hsu & Chen, 2023). Further investigation is necessary to explore how digital tools can maintain meaningful engagement, particularly within low-income and culturally diverse communities.

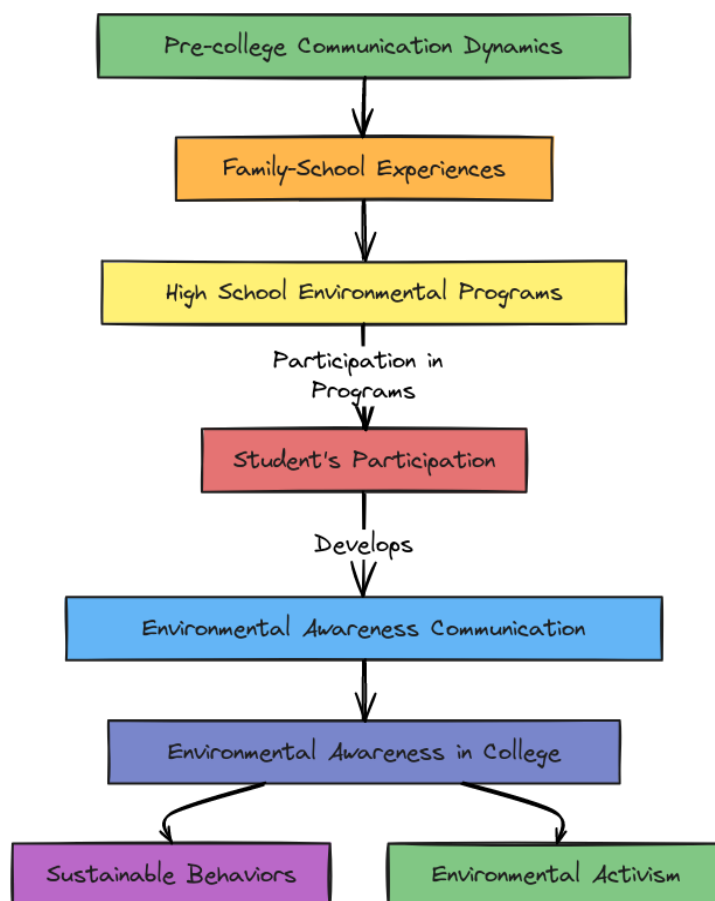


Figure 4: Pathway from early experiences to college environmental awareness and outcomes.

## Methodology

### Systematic Literature Review (SLR) Design

This study employs a systematic literature review (SLR) approach, structured according to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines. The PRISMA framework ensures transparency and replicability by clearly delineating each stage involved in the identification, appraisal, and synthesis of the most pertinent scholarly works. The primary aim of this review is to examine existing literature on family-school collaboration in environmental awareness and its relationship with college students. Through the SLR method, new insights are generated by systematically evaluating and integrating prior research to respond to clearly defined research questions (Kitchenham & Charters, 2007). Moreover, by adopting PRISMA protocols, the review



reduces potential bias through a standardised and objective process for sourcing and selecting studies.

### *Search Criteria*

#### *Databases*

The search process was undertaken using four principal academic databases to ensure comprehensive coverage of interdisciplinary research. These sources included:

Scopus: Chosen for its extensive repository of peer-reviewed publications across a wide spectrum of academic fields.

Web of Science: Utilised for its robust citation tracking system and the depth of scholarly literature it provides.

ProQuest: Selected for its rich collection of specialised academic content, particularly theses, dissertations, and niche studies not widely available elsewhere.

Google Scholar: Employed as a supplementary platform to access grey literature and expand the inclusivity of the document search.

#### *Search Terms and Boolean Strategy*

The following keywords and Boolean operators were employed:

Environmentalism AND cooperation between the family and the school or partnership between the parent and the teacher.

Environmental + education + college students + youth attitudes

Teaching for sustainability OR environmentally conscious action AND (parent participation OR teacher preparation)

Search terms were tailored to align with the advanced search functionalities specific to each database, allowing for greater precision and contextual relevance in retrieving related studies.

#### *Inclusion and Exclusion Criteria*

To ensure the review concentrated on rigorous and contextually relevant studies, the following selection criteria were employed:

#### *Inclusion Criteria*

- Only peer-reviewed academic publications were included, limited to the period from 2000 to 2023, to ensure the findings reflect contemporary developments and emerging trends.
- Original scientific manuscripts adhering to established publication standards were selected, encompassing peer-reviewed journal articles, conference proceedings, and reputable high-quality documents.

- Studies were considered if they focused on topics related to EE, environmental attitudes and behaviours, family or school involvement, or student academic outcomes.

#### *Exclusion Criteria*

- Journals comprising non-academic content such as newspaper opinion pieces, editorials, or letters to the editor were excluded.
- Articles not published in English were omitted due to the lack of accessible translated versions.
- Papers lacking a focus on educational or behavioural dimensions of learners, as well as environmental science or pollution studies that were not strictly research-oriented, were not considered.

#### *Study Selection Process*

An initial search across the four selected databases yielded approximately 1,000 records. Following the removal of duplicate entries, titles and abstracts were examined to eliminate studies not aligned with the research scope. This process narrowed the pool to 86 articles, which were then assessed against the predefined inclusion criteria. Ultimately, 50 studies were selected for in-depth review and synthesis.

Identification – Research articles were retrieved exclusively from the specified databases.

Screening – Duplicate entries and materials unrelated to the core research themes were removed.

Eligibility – Full-text documents were examined, and all publications were evaluated based on the established inclusion and exclusion parameters.

Inclusion – A total of 50 relevant studies were finalised for comprehensive synthesis.

#### *Data Extraction and Analysis*

##### *Data Extraction*

A structured data extraction framework was established to systematically gather key details from the selected studies. This framework included the following elements:

- Study Context: Information such as geographical setting, demographic features of the participants, and the specific area of investigation.
- Research Focus: Core themes addressed in the studies, including family-related influences, school initiatives, and collaborative dynamics.
- Methodology: Qualitative approaches employed, such as interviews, case study methods, and thematic analysis techniques.
- Findings: Principal outcomes that directly addressed the research questions.

Initially, two independent reviewers conducted the data extraction process separately. Their results were subsequently compared to verify consistency. Any discrepancies that arose were resolved through mutual discussion.

### *Qualitative Analysis*

Accordingly, thematic analysis was employed to classify the extracted data into coherent categories. This approach, commonly applied in qualitative research, facilitates the identification of patterns, interconnections, and recurring themes within qualitative datasets (Braun & Clarke, 2006). The analytical process comprised the following stages:

- Familiarisation: A preliminary phase involving immersion in the dataset to begin identifying initial codes.
- Coding: Assigning labels to specific text segments based on their relevance to the research questions.
- Theme development: Grouping the generated codes into broader thematic categories, such as parental influence, collaborative models, and obstacles to effective family-school engagement.
- Refinement: Iteratively adjusting the themes to ensure they align logically with the overarching research aims and objectives.

To ensure methodological transparency, inter-coder reliability was assessed through comparative analysis of the coding outputs produced by multiple reviewers. The results demonstrated a high degree of consistency and agreement.

## **Findings and Discussion**

### *Synthesis of Key Insights*

A critical examination of the role of family-school communication in shaping environmental awareness among college-level students, based on the systematic literature review, revealed several recurring themes and notable research gaps.

### **Key Themes**

#### *Communication in Parental Influence on Environmental Awareness*

Several studies indicate that early parental communication and family-based exposure to environmental awareness play a pivotal role in shaping children's attitudes towards sustainable development. Grønhøj and Thøgersen (2017) found that children raised in households where family members engaged in environmentally responsible practices are more likely to develop pro-environmental attitudes as they mature as shown in table 1. Intergenerational communication serves as a vital channel through which environmental values are transmitted, with activities such as gardening and recycling fostering a shared understanding of ecological responsibility. Nevertheless, the effectiveness of such familial

practices is significantly strengthened when supported by structured, school-based initiatives that provide deliberate and targeted learning experiences.

Table 1: SLR for theme 1, *Parental Influence in Environmental Awareness Communication*

### Theme 1

#### *Parental Influence in Environmental Awareness Communication*

Sub-Theme	Key Insights	Examples/Studies	Implications
<b>Parenting Styles</b>	Authoritative parenting that relies on open communication fosters autonomy and environmentally responsible behaviour in children.	<a href="#">Rohmalimna et al. (2022)</a> : Warm and responsive parental communication is associated with heightened environmental engagement among youth.	Provide parental education on effective communication methods that support the development of sustainability values.
<b>Modelling Behaviours</b>	Parents' verbal and non-verbal cues regarding environmental consciousness significantly influence children's behaviour.	<a href="#">Ballantyne et al. (2001)</a> : Environmentally friendly practices conveyed within households positively shape children's eco-conscious actions.	Encourage parents to combine explicit communication with consistent eco-friendly behaviours to reinforce sustainability values.
<b>Intergenerational Learning</b>	Communication through shared family activities supports the long-term transmission of environmental values across generations.	<a href="#">van Heezik et al. (2021)</a> : Adolescents engaged in collaborative family projects demonstrated sustained environmentally responsible habits.	Design family-based educational programmes that strengthen intergenerational communication around sustainability.
<b>Cultural and Socioeconomic Factors</b>	Cultural orientation influences communication patterns and sustainability practices within households.	<a href="#">Tam &amp; Chan (2017)</a> : Collectivist and individualist values shape environmental behaviour differently across families.	Adapt environmental education strategies to align with distinct cultural and socioeconomic backgrounds.

#### *Schools as Communication Hubs for Environmental Awareness*

Schools hold a fundamental role in advocating for environmental consciousness, as they are positioned to deliver structured and continuous information. Curriculum designs that incorporate elements such as classroom discussions, project-based tasks, and debates enable educators to effectively transmit environmental concepts to students (Rickinson et al., 2019). Beyond formal instruction, many schools engage pupils in practical environmental initiatives, including ecological clubs, recycling programmes, and

awareness campaigns as shown in table 2. These activities not only foster student involvement but also facilitate the bidirectional exchange of environmental knowledge between schools and families. Nonetheless, the effectiveness of these strategies is often limited by inadequate teacher training. A significant number of educators report a lack of confidence or resources to convey sustainable development concepts competently, which diminishes their role as effective environmental communicators (Öhman & Sund, 2020). This challenge may be mitigated through targeted professional development initiatives that enhance teachers' capacity to integrate environmental education within the framework of school-based programmes.

Table 2: SLR for theme 2, *Schools as Communication Hubs for Environmental Awareness*

## Theme 2

### *Schools as Communication Hubs for Environmental Awareness*

Sub-Theme	Key Insights	Examples/Studies	Implications
<b>Curriculum Development</b>	Project-based curricula that incorporate communication foster enhanced environmental literacy among students.	Rickinson et al. (2019): Hands-on learning approaches improve learners' understanding of sustainability.	Incorporate communication-oriented instructional methods such as debates and collaborative discussions focused on sustainability.
<b>Extracurricular Activities</b>	Eco-clubs and related initiatives promote environmental responsibility and effective communication.	Smith (2019): Schools in Finland and Japan have successfully raised environmental awareness through eco-club activities.	Establish eco-clubs as communication platforms to disseminate sustainable practices to both students and families.
<b>Teacher Training</b>	Limited environmental science education among teachers reduces their capacity for effective sustainability communication.	Öhman & Sund (2020): Professional development equips educators with the necessary tools to enhance environmental messaging.	Invest in teacher training programmes that emphasise sustainability content and communication competencies.
<b>School-Community Linkages</b>	Collaboration with local organisations improves the reach and impact of school sustainability programmes.	Lee et al. (2023): School-community recycling initiatives in South Korea significantly improved waste management practices.	Promote partnerships between schools and community bodies to achieve wider and more effective sustainability outcomes.



*Family-School Communication for Environmental Awareness*

Collaborative relationships between families and schools are widely acknowledged as pivotal in delivering coherent environmental messages and fostering effective communication as shown in table 3. According to Epstein (2018), family-school involvement encompasses joint initiatives, active engagement between parents and teachers, and a shared commitment to enhancing student outcomes. Despite these potential benefits, the implementation of such partnerships is frequently hindered by practical limitations, including time constraints and cultural differences (Hilder, & Collin, 2022).

Table 3: SLR for theme 3, *Family-School Collaboration in Environmental Awareness***Theme 3***Family-School Collaboration in Environmental Awareness*

Sub-Theme	Key Insights	Examples/Studies	Implications
<b>Models of Collaboration</b>	Collaborative communication methods such as environmental projects and regular meetings support effective partnerships.	Epstein (2018): Parent-teacher collaboration strengthens environmental communication efforts.	Establish well-structured models to support family-school communication in environmental education.
<b>Case Studies</b>	Involving families in school-led environmental communication initiatives increases student participation.	Akter and Islam (2020): Water conservation efforts in Sweden involving families led to reduced household water use.	Implement and adapt proven family-school communication approaches in various educational environments.
<b>Barriers</b>	Cultural mismatches and limited time availability can obstruct meaningful engagement between families and schools.	Gubbels et al. (2021): Parental involvement in environmental programmes is affected by socioeconomic challenges.	Promote inclusive and adaptable communication strategies to address cultural and time-related barriers.
<b>Communication Strategies</b>	Strong communication promotes shared understanding and more cohesive collaboration.	Rickinson et al. (2019): Technological tools improve engagement between parents and educators.	Leverage digital technologies to facilitate effective interaction and collaboration between families and schools.

*Impact of Communication on College Students' Environmental Awareness*

Environmental awareness communication programmes initiated during the pre-college years within family and school settings tend to extend into postsecondary education, contributing to heightened environmental concern among students. [Collado and Evans \(2023\)](#) found that college students who had participated in family-school environmental activities during childhood were more likely to engage in sustainable practices, such as conserving energy and participating in environmental activism.

**Theme 4***Impact on College Students' Environmental Awareness Communication*

Sub-Theme	Key Insights	Examples/Studies	Implications
<b>Pre-College Influences</b>	Early interactions between families and schools play a critical role in shaping students' sustainability perspectives.	<a href="#">Collado and Evans (2023)</a> : Students participating in pre-college environmental programmes demonstrate greater activism in sustainability.	Enhance early family-school engagement structures to improve sustainability-related outcomes in higher education.
<b>Sustainability Practices</b>	Communication-based initiatives during childhood support the continuation of sustainable behaviours into adulthood.	<a href="#">Ballantyne et al. (2001)</a> : Habits such as recycling and conserving energy tend to endure over time.	Encourage ongoing communication between families and schools to foster lasting sustainable behaviour.
<b>Emerging Trends</b>	Technological platforms are facilitating improved family-school communication on sustainability matters.	<a href="#">Hsu and Chen (2023)</a> : Mobile applications and digital tools promote collaborative environmental activities between families and schools.	Investigate the use of digital platforms to reinforce sustainability-focused communication during college education.
<b>Barriers to Continuity</b>	Breaks in communication during educational transitions can diminish sustained engagement.	<a href="#">Rickinson et al. (2019)</a> : Interruptions in family-school interaction contribute to weakened environmental commitment in later stages.	Develop continuous and long-term communication strategies to preserve sustainability awareness through transitions.

*Gaps Identified*

A review of the literature reveals a notable gap in relevant research, particularly in the following areas: there is limited scholarly attention on the long-term influence of family-school partnerships on the development of environmental self-identity among college

students; studies examining the application of technology to facilitate collaboration between families and schools remain scarce; and the influence of socioeconomic and cultural diversity on the dynamics of such partnerships has not been comprehensively explored.

### *Theoretical Implications*

The findings reinforce and build upon previous research by providing a more holistic understanding of the mechanisms underlying the development of environmental concerns.

### *Ecological Systems Theory*

Ecological systems theory, as proposed by [Xia et al. \(2020\)](#), outlines the developmental progression of children through interconnected microsystems, including family, school, and the broader community. The reviewed literature confirms that both micro-level influences (within families) and meso-level influences (within schools) significantly shape individuals' environmental attitudes. For instance, Ballantyne et al. (2011) highlight how family practices, influenced by school-based programmes, incorporate instructional strategies that encourage the cultivation of environmentally responsible behaviour.

### *Behavioural Change Models*

Expanding on the theoretical background, additional frameworks relevant to this study include the Theory of Planned Behaviour (TPB) and Social Cognitive Theory (SCT). TPB posits that behavioural outcomes are shaped by intention, attitudes, and perceived behavioural control ([Ajzen & Schmidt, 2020](#)). Within this context, coordinated efforts between family and school environments enhance a child's behavioural regulation by providing consistent reinforcement and support. In contrast, SCT emphasises the role of observational learning and reinforcement, which aligns closely with how environmental education initiatives within both families and schools encourage students to model and adopt sustainable behaviours through exposure and repetition.

### *Research Gaps*

Despite the growing scholarly focus on family-school collaboration, the review uncovered several significant research gaps that merit further investigation:

### *Long-Term Impact Studies*

There is currently a notable deficiency in longitudinal research examining the sustained effects of family-school partnerships on students' environmental attitudes and behaviours. While some studies document behavioural improvements such as increased recycling and energy conservation, the long-term influence of such collaborations on college students' environmental engagement remains insufficiently explored.

### *New Media Technologies*

Emerging digital tools, including social media, mobile applications, and virtual learning environments, offer promising avenues for strengthening family-school cooperation. Nonetheless, limited research exists on how these technologies can bridge communication gaps, particularly in contexts with constrained resources (Hsu & Chen, 2023).

### *Cultural and Socioeconomic Diversity*

A significant portion of the existing literature is rooted in Western contexts, leaving a gap in understanding how cultural and socioeconomic variations influence family-school partnerships. Addressing these factors is essential for designing context-sensitive and inclusive strategies for environmental education (Saracevic et al., 2022).

### *Practical Applications*

The findings provide practical insights for formulating strategies aimed at strengthening collaboration between families and schools, while simultaneously promoting awareness and communication concerning environmental issues.

### *Integrated Environmental Programs*

Schools and families can collaboratively design impactful programmes that effectively extend high-quality classroom-based learning into the home environment. For instance:

**Joint Projects:** Initiatives that involve both school and external stakeholders, such as tree-planting activities, campus clean-up campaigns, and household waste segregation involving students and parents. These efforts are more sustainable when strengthened through partnerships with school boards and local environmental non-governmental organisations, which can contribute logistical and financial resources. Community-driven environmental initiatives, such as water conservation campaigns co-facilitated by schools and NGOs, have proven effective in fostering positive behavioural change (see Figure 5).



**Figure 5:** Promoting Water Conservation through Community Projects that Emphasize using Water Wisely

Family Engagement Days: Events like workshops or environmental fairs in which families actively participate alongside their children, thereby reinforcing shared learning and awareness.

#### *Teacher Training and Resources*

A critical requirement is the provision of professional development opportunities for educators focused on effective strategies to engage families. For example, the Green Schools Initiative offers comprehensive resources that support teachers in integrating environmental education into both classroom instruction and co-curricular programmes.

#### *Leveraging Technology*

The utilisation of digital platforms can facilitate effective and seamless interaction between families and schools. Tools such as mobile applications that track students' participation in sustainability-related challenges and activities, as well as virtual parent-teacher meetings focused on environmental topics, offer promising avenues for enhancing collaboration.

#### *Policy Recommendations*

Future frameworks for environmental education should incorporate structured collaboration between schools and families. To ensure the success of such initiatives, it is essential to provide sufficient financial support for joint programmes, offer incentives to schools that implement family engagement strategies, and establish public policies that clearly outline the procedures for collaboration. These measures can enhance the effectiveness and sustainability of environmental education efforts.

### **Conclusion**

#### *Summary of Findings*

These findings underscore the critical role of family-school partnerships in advancing environmental awareness communication and fostering sustainable behaviours among students, particularly during the transition to college. Parents contribute significantly by instilling environmental values early in a child's life, both through modelling environmentally responsible behaviour and by providing environmental education at home. Schools complement this by integrating environmental values within curricular and co-curricular activities. When families and schools operate in alignment, they reinforce consistent messages about environmental responsibility, thereby strengthening students' understanding and commitment to sustainability. The review highlighted successful collaborative models, notably those involving joint efforts between teachers and parents on environment-related initiatives. These partnerships have demonstrated positive outcomes. However, their application remains relatively limited, especially in terms of understanding their long-term influence on college students' environmental awareness and practices. Furthermore, the widespread implementation of such partnerships faces challenges, including temporal, cultural, and resource-related barriers, particularly across diverse socio-economic and cultural contexts. Effectively executed family-school partnerships not



only cultivate environmentally aware individuals but also contribute to the broader objective of addressing global environmental challenges. These findings reinforce the imperative of incorporating environmental education into both formal and informal learning environments to benefit all students and promote long-term sustainability.

### *Future Directions*

To further develop the understanding gained through this review, future research should address several key gaps identified in the existing literature:

**Longitudinal Studies:** There is a pressing need for follow-up studies that examine the long-term impact of collaborative efforts between families and schools on students' environmental values and behaviours. Such research would provide valuable insights into whether early environmental education interventions translate into sustained ecological practices in later stages of life, particularly during and after college.

**Cross-Cultural Research:** Investigating the dynamics of family-school partnerships across culturally and socioeconomically diverse contexts is essential for the development of universally relevant and inclusive interventions. Comparative studies could also uncover region-specific strengths and limitations, enabling the design of more effective, context-sensitive strategies.

**Digital Innovations:** Greater attention should be devoted to exploring how emerging technologies, such as mobile applications and virtual platforms, can facilitate collaboration between families and schools in environmental education. Digital tools offer promising opportunities to overcome traditional communication barriers and enhance accessibility, especially in resource-constrained environments.

**Policy Integration:** Future studies should assess the influence of public policies that promote and support family-school partnerships in environmental education. It is important for policymakers to understand the role and effectiveness of such partnerships, ensuring that they are integrated into broader sustainability frameworks and education systems. Understanding how policies can incentivise and institutionalise collaborative efforts will be vital for long-term success.

By addressing these areas, future research can contribute to a more comprehensive and actionable understanding of how family-school collaboration shapes environmental awareness and sustainability practices over time.

### *Call to Action*

The conclusion of this review highlights the critical importance of establishing coherent and supportive policies to promote family-school partnerships within environmental education. To advance education for sustainability, coordinated efforts among local, national, and international governments, higher education institutions, and community organisations are essential. These structures must address systemic needs while embedding sustainability education across educational levels. Policy advocacy emerges as a key priority. Policymakers are urged to allocate sufficient resources and introduce incentives to facilitate the implementation of integrated family-school environmental

programmes. Such measures should be embedded within national and regional education frameworks to ensure consistency and long-term impact.

Community engagement is equally significant. As emphasised across the literature, the active participation of community stakeholders in the design and support of environmental education enhances programme effectiveness. Collaborative initiatives involving families, schools, and communities can reinforce students' learning outcomes and cultivate broader societal commitment to sustainability. Equity in access must also be addressed. Ensuring equal opportunities for accessing environmental education resources, especially in socioeconomically disadvantaged areas, is vital. Digital tools and platforms offer promising solutions for bridging gaps and improving inclusivity. Moreover, environmental challenges necessitate collaboration that extends beyond school and household boundaries. By fostering joint efforts between families and educational institutions, society can better prepare students to meet emerging environmental demands with the requisite knowledge, competencies, and values. Today's students, as future global leaders, must be equipped to lead sustainable lives, advocate for environmental justice, and inspire others to embrace ecological responsibility. Ultimately, the family-school partnership transcends educational utility, representing a broader societal imperative. This review issues a call to action for all stakeholders – parents, educators, policymakers, and researchers – to collaborate in fostering sustainability and equity. Only through a shared commitment to change and collective action can early educational steps in environmental awareness translate into meaningful, long-term contributions towards a more sustainable and just future.

## Recommendations

### *For Research*

#### *Explore Digital Collaboration Tools*

Technological advancements have increasingly been integrated into educational contexts, offering innovative avenues for interaction between schools, families, and learners within environmental education. Further research is warranted to explore the potential of mobile applications, web-based platforms, and virtual environments in addressing both practical and communicative barriers to family-school collaboration. For instance, applications that enable schools to share sustainability-related tasks with families—allowing for activity tracking and real-time feedback—may foster increased engagement and a heightened sense of responsibility among students (Hsu & Chen, 2023). Similarly, virtual learning environments offering immersive, first-person perspectives of environmental conditions can create shared learning opportunities for families. Future studies should also examine both the technical and perceived usability of such digital tools, as well as their effectiveness in promoting environmentally responsible behaviours across diverse population groups.

### *Investigate Longitudinal Impacts*

Moreover, while family-school partnerships have demonstrated potential in influencing students' environmental attitudes and behaviours in the short term, there remains a pressing need for longitudinal research to determine their sustained impact. Such investigations should track students from early childhood through adolescence and into post-secondary education, to evaluate how early involvement in collaborative environmental initiatives shapes lifelong behavioural patterns. In addition, future research should examine intergenerational effects, not only in terms of how students benefit from family-school collaboration but also how these individuals subsequently contribute to the environmental awareness of their families and wider communities.

### *Cross-Cultural and Socio-Economic Studies*

To deepen understanding of the outcomes, future research should examine the cultural and socio-economic foundations that shape family-school cooperation in environmental education. Cross-sectional studies conducted across diverse geographical and cultural regions could help uncover both facilitating and constraining factors. For example, investigations might explore how environmental education approaches in collectivist societies differ from those in individualist contexts, or how resource limitations in low-income communities influence the success of such collaborative efforts. Addressing these questions will be crucial in formulating context-specific strategies for advancing sustainability education.

### *For Practice*

#### *Develop Policy Frameworks*

The integration of family-school environmental partnerships into educational systems represents a critical area for policy development. Policymakers should consider the following measures:

- Introduce environmental education as a mandatory element within national and regional curricula, explicitly incorporating families as collaborative partners.
- Allocate funding to schools to facilitate family-school engagement in initiatives such as clean-up drives, tree planting activities, and sustainability awareness campaigns.
- Promote structural diversification by establishing dedicated roles to coordinate efforts under frameworks such as the "Environmental Partnership for Schools, Families, and Communities".

Furthermore, supportive policies should be enacted to encourage corporate sector involvement in environmental education. Businesses may contribute through financial assistance or collaboration with organisations such as eco-clubs and school-family environmental projects, thereby reinforcing sustainable development goals within communities.

### *Strengthen Community Engagement*

Family-school partnerships must be reinforced through robust connections with the broader community to maximise their effectiveness. Active involvement from local organisations, environmental non-governmental organisations, and community stakeholders is essential in developing sustainable development initiatives that align with societal values and institutional contexts. For example, in urban settings, partnerships might prioritise campaigns promoting low-carbon public transportation. In contrast, rural schools could concentrate on initiatives such as sustainable agricultural practices tailored to the local environment and needs.

### *Equity and Accessibility*

Deliberate efforts are required to guarantee that environmental education initiatives are accessible to families across all socio-economic strata. This may include:

- Providing educational resources tailored to the needs of families with disabilities or limited income, particularly through free or subsidised materials and programmes.
- Modifying and translating printed and digital content to accommodate linguistically diverse communities.
- Offering flexible participation options, such as online or weekend workshops, allowing families to engage at times that best suit their availability and comfort.

### *For Educators and Families*

#### *Practical Steps for Educators*

Educators play a central role as stakeholders in establishing and sustaining family-school partnerships. Their contributions may include:

- Designing homework tasks that actively engage families, such as home-based experiments, waste audits, biodiversity surveys, and other sustainability-related activities.
- Facilitating integrated environmental events, such as sustainability fairs and open days, where both students and parents participate in joint learning experiences.
- Providing families with actionable guidance on adopting environmentally responsible practices in daily life, including energy conservation strategies, recycling procedures, and recommendations for sustainable dietary habits.

Furthermore, teacher training programmes should incorporate modules on effective strategies for involving families, thereby equipping educators with the necessary tools to foster meaningful collaboration.

#### *Practical Steps for Families*

Families can adopt proactive approaches to reinforce environmental education, including the following:

- Actively participating in the school's sustainability initiatives and encouraging their children to do the same.
- Demonstrating environmentally responsible practices within the home, such as initiating composting, reducing plastic usage, or cultivating household gardens. Notably, existing research underscores the significant influence of parental modelling on children's environmental behaviours (Grønhøj & Thøgersen, 2017).
- Arranging meetings with educators to align household and school sustainability goals and to collaboratively develop potential environmental projects for implementation.

### *Building Shared Accountability*

The success of environmental education hinges on the shared commitment of both families and schools. Educational institutions must adopt structured, timely feedback mechanisms to ensure that collaborative activities are systematically integrated into regular school operations. Similarly, families should actively participate in the development of environmental strategies and offer consistent support, recognising their role within a collective responsibility framework. If the recommended research, policy, and practical measures are effectively implemented, family-school collaboration will emerge as a critical driver in fostering environmental accountability. Beyond equipping students with the capacity to engage in sustainable behaviours, such partnerships extend their influence to families, communities, and future generations. Addressing environmental challenges requires a united approach, and through these cooperative efforts, a more sustainable and equitable society can be cultivated for all.

### *Scope and Limitations*

#### *Scope*

This paper exclusively examines qualitative studies that investigate the dynamics of family-school partnerships in fostering environmental communication awareness and their long-term influence on college students. By focusing on qualitative research, the review captures nuanced, micro-level behavioural and attitudinal changes that may not be readily discernible through quantitative methodologies.

#### *Limitations*

The following limitations are recognised:

**Language Bias:** The exclusion of non-English language studies may restrict the breadth of knowledge, potentially omitting insights relevant to non-English-speaking contexts.

**Qualitative Focus:** While qualitative approaches offer depth and richness, the absence of quantitative data may limit the extent to which findings can be generalised.

**Regional Variability:** Certain regions may be underrepresented due to disparities in research funding or publication availability.



To address these limitations, future studies should incorporate multilingual searches, adopt mixed-method systematic review strategies, and ensure broader geographical representation in sampling.

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