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INSTRUCTIONAL APPROACHES TO IMPLEMENTING ESD-SDGs IN SECONDARY SCHOOL GEOGRAPHY: A QUALITATIVE STUDY AMONG GEOGRAPHY TEACHERS

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Abstract: *The implementation of Education for Sustainable Development and the Sustainable Development Goals (ESD-SDGs) in Geography teaching depends on how effectively teachers translate sustainability into classroom practice. This study investigates how secondary school Geography teachers integrate ESD-SDGs into teaching and learning. A qualitative design was employed, using semi-structured interviews with five experienced teachers, each with more than ten years of service. The interview protocol was developed through literature review, focus group discussion, and expert validation. Data were analysed thematically, with the fifth interview confirming the stability of the thematic structure. Four interconnected themes emerged: (1) developing students' sustainability-related potential, (2) planning Geography lessons around ESD-SDGs, (3) enacting ESD-SDGs through contextualised and active teaching, and (4) managing assessment of sustainability learning. Findings reveal that ESD-SDGs were generally embedded within existing Geography instruction rather than implemented as a separate programme. Teachers linked sustainability to local geographical issues and employed fieldwork, projects, discussions, and digital resources, though the depth of integration varied according to content, student characteristics, instructional time, and professional judgement. Sustainability-specific assessment and systematic identification of students' potential were less evident. The study concludes that strengthening ESD-SDGs in Geography requires greater support for teachers to establish coherent connections among geographical content, sustainability issues, local contexts, learning activities, student responses, and assessment practices.*

Keywords: *ESD-SDGs; Geography education; Geography teachers; instructional practice; sustainable development; qualitative study.*

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Introduction

The 2030 Agenda for Sustainable Development has placed education at the heart of global efforts to address interconnected environmental, social and economic challenges. Climate change, environmental degradation, biodiversity loss, resource pressures and social inequalities are increasingly interconnected, requiring learners to understand the relationships between human activities, environments and societies. In this context, Education for Sustainable Development (ESD) provides an important educational approach for connecting knowledge, values, critical thinking and action towards sustainable development (Timm & Barth, 2021; Vare et al., 2022). This global commitment is reinforced by SDG 4.7, which emphasizes the development of learners' knowledge and skills for sustainable development, sustainable lifestyles and global citizenship.

Geography is particularly well positioned to contribute to this agenda because its subject matter addresses relationships among people, places, environments, resources and spatial processes. Geographical learning provides opportunities for students to examine sustainability issues through concepts such as place, environment and interconnection (Maude, 2023). However, the presence of sustainability-related content within Geography does not necessarily mean that ESD is consistently enacted in classroom practice. Recent research indicates that Geography teachers make pedagogical decisions about sustainable development in response to curriculum content, students and classroom circumstances, suggesting that ESD implementation is shaped by teachers' professional judgement as well as curriculum expectations (Huh & Jo, 2024).

This issue is particularly relevant in Malaysia, where sustainability-related elements are incorporated into the secondary school curriculum, including Geography. Existing Malaysian studies have provided useful evidence concerning Geography teachers' knowledge, attitudes and reported teaching practices related to the SDGs. For example, Geography teachers in Penang have demonstrated positive attitudes towards the SDGs, while studies of their teaching practices have reported the use of active, experiential and student-centered approaches (Mohd Zaki & Mohammad Zohir, 2021, 2024; Mohd Zaki et al., 2024). However, these findings provide limited insight into how teachers translate ESD-SDGs into classroom instruction.

This limitation is important because quantitative findings can indicate the prevalence or frequency of reported teaching practices but provide less insight into the reasoning and circumstances underlying those practices. For example, a teacher may report using project work, real-world examples or student-centered activities, but a survey may not fully explain how these activities are connected with Geography content, adapted to students, negotiated within curriculum demands or used to support sustainability learning. International research similarly indicates that Geography teachers' pedagogical decisions are influenced by both planned instructional intentions and classroom realities (Huh & Jo, 2024), while teachers' understandings of ESD may vary according to their professional and educational contexts (Nguyen, 2018).

A qualitative examination of teachers' experiences is therefore necessary to understand how ESD-SDGs is interpreted and enacted within Geography classrooms. Such an approach allows teachers to describe their practices in their own terms and provides insight into contextual factors that may not be captured through predetermined survey categories. This is particularly relevant in the Malaysian context, where existing research has established patterns of teachers' knowledge, attitudes and reported practices but has provided less detailed evidence of the instructional processes underlying those practices.

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Literature Review

The literature review begins by examining ESD-SDGs in school education and establishing its relevance to Geography as a disciplinary context. It subsequently considers how ESD-SDGs is translated into instructional practice, particularly through teachers' interpretation, planning, implementation, and assessment of sustainability-oriented learning. Based on these discussions, the review identifies a research gap in the limited qualitative understanding of how Geography teachers integrate ESD-SDGs into classroom practice within specific instructional and contextual settings.

ESD-SDGs in School Education

Education for Sustainable Development (ESD) is an educational approach that enables learners to develop the knowledge, skills, values and attitudes needed to contribute to sustainable development (UNESCO, 2020). Its emphasis extends beyond the transmission of sustainability-related information by encouraging learners to examine relationships, consider alternative perspectives and respond to sustainability challenges. The role of teachers is therefore important because ESD requires sustainability knowledge to be translated into meaningful learning experiences. Research on ESD teacher competencies indicates that implementation involves content knowledge, pedagogical knowledge, pedagogical content knowledge and teachers' willingness to engage with sustainability issues (Timm & Barth, 2021; Rieckmann & Barth, 2022).

ESD is closely connected to the Sustainable Development Goals (SDGs), particularly SDG 4.7, which emphasizes the development of learners' knowledge and skills for sustainable development, sustainable lifestyles and global citizenship. Although ESD and the SDGs represent conceptually distinct frameworks, they share an educational orientation towards sustainability. In this study, ESD-SDGs is therefore used as an integrated term to refer to the translation of ESD principles and SDG-related aspirations into teaching and learning. The term does not imply teaching the 17 SDGs as separate curriculum content. Rather, it refers to the incorporation of sustainability-related knowledge, issues, values and perspectives associated with ESD and the SDGs within existing subject content and classroom learning processes.

This interpretation places emphasis on what occurs during instruction, rather than on teachers' awareness of sustainability alone. Accordingly, instructional implementation of ESD-SDGs involves how teachers connect sustainability with curriculum content, students, learning activities and classroom circumstances. This provides the conceptual basis for examining how ESD-SDGs is implemented within a specific subject, particularly Geography.

ESD-SDGs in Geography Education

Geography provides a relevant disciplinary context for ESD-SDGs, with a focus on relationships among people, places, environments, resources and spatial processes. Many contemporary sustainability challenges, including climate change, environmental degradation, resource use, population change and urban development, can be examined through geographical concepts and different spatial scales. Maude (2023) argues that the concepts of place, environment and interconnection provide important geographical ways of thinking for developing students' understanding of sustainable development.

However, the potential of Geography for ESD-SDGs does not automatically result in consistent classroom implementation. Nguyen (2018), in a qualitative study of Geography teachers, found that teachers' understandings of ESD were influenced by their professional experiences, teacher

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education and educational context. This suggests that sustainability is interpreted through the particular curriculum and classroom settings in which teachers work.

Evidence from Malaysia similarly indicates variation in how Geography teachers engage with sustainability. Mohd Zaki and Mohammad Zohir (2021) found that active learning approaches were reported more frequently than real-world learning and critical problem-solving among Geography teachers in Penang. Mohd Zaki et al. (2024) subsequently reported the use of experiential and student-centred approaches in ESD-SDGs teaching among Geography teachers, although the implementation of such approaches could still be strengthened. These findings indicate that Geography provides opportunities for ESD-SDGs, while also suggesting that how these opportunities are translated into classroom practice may vary across teachers and contexts.

Instructional Implementation of ESD-SDGs

The implementation of ESD-SDGs in classroom practice involves teachers making decisions about geographical content, sustainability issues, pedagogical strategies, students and learning contexts. Huh and Jo (2024), through a multiple-case study of seven high school Geography teachers, found that teachers' pedagogical reasoning involved both planned instructional actions and responses to challenges encountered during teaching. This suggests that ESD-SDGs implementation is shaped by teachers' instructional decisions and classroom circumstances rather than by a fixed sequence of teaching strategies.

This perspective is particularly relevant because teachers may recognize the importance of sustainability without consistently translating that recognition into classroom practice. Malaysian evidence has shown positive orientations towards the SDGs among Geography teachers, while reported teaching practices varied across different pedagogical approaches (Mohd Zaki & Mohammad Zohir, 2021, 2024; Mohd Zaki et al., 2024). The distinction between teachers' orientations and their instructional practices suggests that understanding ESD-SDGs requires attention to what teachers do and the circumstances that shape their instructional decisions.

Instructional implementation therefore involves more than identifying whether a particular teaching strategy is used. It requires attention to how teachers connect sustainability with subject content, plan learning activities, engage students and manage assessment. These processes may involve local and contemporary issues, student-centered activities, experiential learning, inquiry and problem-solving. However, their use may vary according to curriculum requirements, instructional time, students and available resources. Understanding these variations requires attention to teachers' own experiences rather than relying solely on predetermined quantitative measures.

Research Gap

Previous research has established the relevance of ESD-SDGs to Geography and has provided evidence concerning teachers' knowledge, attitudes and reported instructional practices. International studies have shown that teachers' interpretations and pedagogical decisions are influenced by their professional and educational contexts (Nguyen, 2018; Huh & Jo, 2024). Malaysian studies have likewise identified positive orientations towards the SDGs and the use of various sustainability-related teaching approaches among Geography teachers (Mohd Zaki & Mohammad Zohir, 2021, 2024; Mohd Zaki et al., 2024).

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Nevertheless, empirical evidence on Geography teachers' experiences of implementing ESD-SDGs in classroom practice remains limited. In particular, previous research provides limited qualitative insight into how teachers identify sustainability within Geography content, plan learning around sustainability issues, implement classroom activities, and use assessment within these learning experiences. Quantitative measures show the prevalence of practices but provide less insight into the reasoning, adaptations, and contextual conditions underlying those practices.

The present study addresses this gap through a qualitative investigation involving five secondary school Geography teachers. It focuses on teachers' accounts of developing students' potential, planning teaching and learning, implementing teaching and learning, and managing assessment. The study examines how ESD-SDGs is interpreted and implemented within secondary school Geography teaching, recognizing variation across teachers and classroom contexts.

Research Questions

This study is guided by the following research questions:

1. How do secondary school Geography teachers integrate ESD-SDGs into instructional practices through developing students' sustainability-related potential, planning teaching and learning (T&L), implementing T&L, and managing assessment?
2. How do contextual considerations shape the patterns and variations in Geography teachers' integration of ESD-SDGs into secondary school Geography teaching?

Methodology

This study used a qualitative research design based on semi-structured interviews to explore how secondary school Geography teachers integrate ESD-SDGs into teaching and learning. The interview protocol was developed through three stages: a review of relevant literature, a focus group discussion (FGD), and expert review. The literature established the initial areas of inquiry, the FGD provided contextual insights into ESD-SDGs and Geography teaching, and expert review refined the relevance and clarity of the interview questions. Five Geography teachers with more than 10 years of teaching experience were purposively selected and assigned the pseudonyms GG1 to GG5 to protect their identities. In the findings, participant codes are presented together with the interview date; for example, GG5/13/11/2024 refers to Geography Teacher 5, interviewed on 13 November 2024. This coding system was used consistently to provide a clear evidence trail while maintaining participant confidentiality.

Data were collected through semi-structured interviews covering teachers' understanding of sustainability, connections between ESD-SDGs and Geography content, planning, classroom implementation, student development and assessment. Interviews were transcribed verbatim and analysed concurrently with data collection using thematic analysis following the six phases of Braun and Clarke (2006): (1) familiarising with the data, (2) generating initial codes, (3) searching for themes, (4) reviewing themes, (5) defining and naming themes, and (6) producing the report. GG1 provided the starting point for initial coding, after which emerging codes and categories were compared and refined through GG2, GG3 and GG4. GG5 was subsequently examined to determine whether further data required modification of the emerging thematic structure.

Data saturation was assessed progressively during data collection and analysis. By GG4, the main categories relating to student development, planning, implementation and assessment had

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become stable, although further examples were identified. GG5 confirmed and elaborated the existing categories without generating a substantively new category. Data collection therefore concluded at GG5 based on the stability of the thematic structure within the defined study focus, rather than on a predetermined numerical threshold (Hennink et al., 2017; Hennink & Kaiser, 2022).

Result and Discussion

The thematic analysis of interviews with five Geography teachers identified four interrelated dimensions of instructional ESD-SDGs: (a) developing students' potential, (b) planning teaching and learning, (c) implementing teaching and learning, and (d) managing learning assessment. Across these dimensions, the findings indicate that ESD-SDGs was present in teachers' practices, but its integration was generally contextual, embedded within Geography teaching and dependent on teachers' initiative, topic suitability, students' characteristics and available instructional time.

Developing Students' Sustainability-Related Potential

The findings show that the teachers recognised the importance of developing students beyond understanding geographical content towards awareness of sustainability and its implications for their lives and future. GG5 explained:

> "We do not teach merely for students to understand the topic, but so that they become aware of the impact on their lives and future… that is the potential we want to develop."
>
> (GG5/13/11/2024)

However, this orientation was not supported by a consistent procedure for identifying students' sustainability-related potential. GG1 stated:

> "At present, we do not have a specific way to identify students' potential in relation to sustainable development; it is more about observing them during teaching."
>
> (GG1/4/10/2024)

GG3 similarly indicated that opportunities to develop students' potential depended on available time:

> "If there is sufficient opportunity and time, then I carry out activities that can develop students' potential, but not for every topic."
>
> (GG3/8/11/2024)

In contrast, GG2 described fieldwork and project activities as situations in which students' capabilities became more visible:

> "When we conduct fieldwork or projects, that is when we can see the students' potential… some can suggest ideas, while others can develop solutions."
>
> (GG2/7/11/2024)

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The findings indicate that teachers primarily recognised students' sustainability-related potential through their participation in learning activities rather than through a formal sustainability-specific identification process. This finding is consistent with the disciplinary potential of Geography, where geographical learning can engage students with environmental relationships, interconnections, and place-based issues (Maude, 2023). However, a distinction emerged between teachers' intentions to develop students' sustainability-related potential and the systematic enactment of this intention in practice. Although teachers expressed a clear intention to develop students' awareness and potential, opportunities to do so remained dependent on classroom activities, available time, and the suitability of topics. This finding supports Huh and Jo's (2024) observation that Geography teachers' instructional decisions involve both planned actions and responses to classroom circumstances.

Planning Geography Teaching and Learning around ESD-SDGs

The second finding concerns teachers' planning practices. Sustainability was generally not planned as a separate instructional component. Instead, teachers connected it with existing Geography topics, local issues and students' experiences. GG2 explained that textbook content alone was insufficient for sustainability-related topics:

> "For topics related to sustainable development, I cannot rely on the textbook alone. I plan by adding videos, pictures and current issues from the internet so that students can see real situations."
>
> (GG2/7/11/2024)

GG1 similarly began planning from issues familiar to students:

> "When planning teaching and learning, I first think about what issues are close to the students, for example waste and electricity use at school. From there, it is easier to relate them to sustainable development."
>
> (GG1/4/10/2024)

GG3 described transferring ideas gained from activities outside the classroom into Geography lessons:

> "Sometimes ideas for teaching come from experiences outside the classroom, such as a sustainability carnival. Then I try to bring the idea back into the classroom."
>
> (GG3/8/11/2024)

Teachers also adjusted planning according to students' ability. GG4 noted:

> "If the students are weak, we need to plan simpler materials. We cannot immediately discuss heavy global issues."
>
> (GG4/13/11/2024)

GG5 similarly stated:

> "I plan activities that are appropriate for the students' level. If the students are at an intermediate level, I use simple examples first before moving to global issues."
>
> (GG5/13/11/2024)

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The evidence therefore shows that planning was context-sensitive and differentiated, rather than uniform. This finding is consistent with Nguyen's (2018) argument that Geography teachers' understandings and enactment of ESD are shaped by curriculum, professional experience and educational context. It also corresponds with Maude's (2023) emphasis on *place* and *interconnection* as geographical ways of thinking that can support sustainability learning.

However, the planning process was constrained by curriculum and time. GG4 stated:

> "Not every topic is suitable for us to take to the level of values and attitudes. Usually, we follow what is in the syllabus and the time allocated."
>
> (GG4/13/11/2024)

Thus, although Geography provided opportunities for ESD-SDGs, teachers did not necessarily pursue those opportunities to the same depth across topics.

Enacting ESD-SDGs through Contextualised and Active Geography Teaching

The third finding concerns classroom implementation. Teachers described the use of fieldwork, projects, discussion, digital resources and problem-solving activities. These practices provided opportunities for students to engage with sustainability through geographical situations.

GG1 described the use of fieldwork:

> "We mainly use hands-on activities or conduct fieldwork… we leave the school area to observe examples of sustainable development."
>
> (GG1/4/10/2024)

GG2 similarly emphasised the value of fieldwork:

> "When conducting fieldwork, students can obtain a clearer picture."
>
> (GG2/7/11/2024)

Project-based activities were particularly evident in GG3's account:

> "We do many projects… greenhouse models… sustainable settlement patterns… and the use of solar energy."
>
> (GG3/8/11/2024)

Teachers also connected global sustainability issues with local geographical conditions. GG2 referred specifically to land reclamation and hillside development in Penang:

> "For example, issues related to land reclamation in Penang… development in hilly areas…"
>
> (GG2/7/11/2024)

GG4, however, explained that global issues such as climate change had to be adapted according to students' level:

> "If the global issue is climate change, we need to simplify it according to the students' level… if it is too difficult, students will struggle to understand."
>
> (GG4/13/11/2024)

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These findings show that teachers implemented ESD-SDGs through existing Geography pedagogies, rather than through a separate ESD instructional programme. This aligns with Huh and Jo's (2024) finding that Geography teachers' sustainable development teaching involves pedagogical decisions shaped by specific instructional situations. The finding also supports Maude's (2023) argument that geographical thinking about environment, interconnection and place can provide a disciplinary basis for teaching sustainable development. The present evidence extends this argument by showing how these opportunities are translated into practice through local examples, fieldwork and projects. Nevertheless, the implementation was not uniform. Teachers' use of digital resources, fieldwork and projects differed across participants. GG2 described extensive use of videos and online resources, while GG1 and GG3 also used internet-based resources but to different extents. This variation indicates that ESD-SDGs integration remained substantially teacher-mediated.

Managing Assessment of ESD-SDGs Learning

The fourth finding concerns assessment. Sustainability-related assessment was present, but it was generally embedded within existing Geography assessment rather than designed as a distinct ESD-SDGs assessment process. GG1 explained:

> "At present, in the context of sustainable development, Geography questions are included… and there is also fieldwork."
>
> (GG1/4/10/2024)

GG2 similarly indicated that sustainability-related questions appeared only in some assessment activities:

> "Not all topics are relevant… but some parts of the assessment contain questions related to it."
>
> (GG2/7/11/2024)

GG3 reported:

> "So far, I have never done [a specific analysis]; it is only based on the results of the fieldwork report."
>
> (GG3/8/11/2024)

GG5 made the conditional nature of assessment particularly clear:

> "The emphasis on sustainable development… all depends on the topic… if the topic is related, we will try to make the connection."
>
> (GG5/13/11/2024)

Assessment information was also used to support intervention. GG1 explained:

> "The intervention we carry out… is simply to correct the students' answers… [and] change them to the correct answers…"
> (GG1/4/10/2024)

GG5 similarly used students' responses to identify weaknesses:

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> "If it is the essay section, perhaps they did not answer… if too many of them cannot answer, there may be a deficiency there."
>
> (GG5/13/11/2024)

The evidence indicates that assessment was present but not consistently sustainability-specific. Teachers assessed students' understanding through questions, fieldwork reports, projects and classroom responses, but there was no evidence of a common or systematic procedure for assessing ESD-SDGs learning.

Across the four themes, the findings reveal a consistent pattern of embedded but uneven ESD-SDGs integration, as shown in Table 1. Teachers did not generally describe sustainability as a separate programme. Instead, they connected sustainability with Geography content, local issues, student characteristics and the opportunities available during teaching. This pattern was evident across their planning, classroom implementation and assessment practices. A particularly notable finding was the role of local geographical context. Teachers referred to issues such as waste, electricity use, land reclamation, hillside development, rivers and urban environments to make sustainability more meaningful to students. This finding supports Maude's (2023) proposition that place is central to understanding sustainable development through Geography.

Table 1: Summary of Qualitative Findings

Theme	Key Finding
Developing Students' Sustainability-Related Potential	Teachers recognised the importance of developing students' awareness, potential and future-oriented thinking, but the process was largely dependent on learning activities, available time and teacher observation.
Planning Geography Teaching and Learning around ESD-SDGs	Teachers integrated sustainability through existing Geography content, local issues, current resources and activities adapted to students' abilities, rather than planning ESD-SDGs as a separate instructional component.
Enacting ESD-SDGs through Contextualised and Active Geography Teaching	Teachers used fieldwork, projects, discussion, digital resources and local geographical issues to connect sustainability with Geography learning, although the extent of implementation varied across teachers and contexts.
Managing Assessment of ESD-SDGs Learning	Sustainability-related assessment was embedded within existing Geography assessment through questions, fieldwork, projects and classroom responses, but a systematic sustainability-specific assessment process was not evident.

A second pattern concerned active and experiential learning. Fieldwork, group discussion, projects and problem-solving provided opportunities for students to observe situations, exchange ideas and propose solutions. GG2 described how fieldwork and projects enabled students to generate ideas and develop solutions, while GG3 used sustainability-related models and technology projects to encourage students to develop possible solutions. These practices are consistent with Huh and Jo's (2024) finding that Geography teachers' pedagogical reasoning in sustainable development teaching is shaped by specific instructional strategies and classroom circumstances.

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A third pattern concerned the degree of intentionality in sustainability integration. Teachers recognised opportunities to address sustainability, but these opportunities were not always translated into explicit objectives, systematic learning sequences or dedicated assessment. GG1, for example, reported that there was no specific procedure for identifying students' sustainability-related potential, while GG4 noted that not every topic could be extended towards values and attitudes because of syllabus requirements and time constraints. These accounts suggest that sustainability integration was shaped not only by teachers' intentions but also by the conditions under which teaching took place.

This finding moves beyond a simple distinction between whether teachers "implement" or "do not implement" ESD-SDGs. Across the five cases, integration ranged from implicit connections within routine Geography teaching to more explicit use of contextualised activities and sustainability-related projects. Such variation is consistent with Nguyen's (2018) finding that Geography teachers' understandings of ESD are shaped by curriculum, professional experience and educational context rather than by a single uniform approach.

Overall, ESD-SDGs integration in secondary school Geography was embedded, contextual and teacher-mediated, with its depth varying according to geographical content, local context, student characteristics, instructional time and teachers' professional judgement. This interpretation does not seek to determine whether teachers possessed or lacked a particular competency. Rather, the qualitative evidence illustrates what teachers described doing and how they approached ESD-SDGs in their teaching, without making claims about the effectiveness of those practices.

The findings suggest that Geography provides natural entry points for ESD-SDGs through local environmental issues, resource use, land-use change, development and human–environment relationships. Teachers could therefore identify sustainability opportunities within existing Geography topics rather than treating ESD-SDGs as additional curriculum content. The evidence also suggests that professional support should extend beyond increasing teachers' knowledge of the 17 SDGs towards strengthening their ability to connect geographical content with sustainability issues, local contexts, learning activities, student responses and assessment. This connection can be represented as follows:

Geographical content → sustainability issue → local context → learning activity → student response → assessment

Therefore, practical guidance will strengthen teachers' capacity to develop more coherent connections between sustainability and existing Geography teaching. This aligns with research emphasising the importance of connecting sustainability knowledge with pedagogical decision-making and classroom practice (Timm & Barth, 2021; Huh & Jo, 2024). Curriculum guidance can further facilitate this process by providing examples of how existing Geography topics can be connected with appropriate local contexts, learning activities and assessment approaches, without introducing a separate body of curriculum content.

Conclusion

This study examined how five secondary school Geography teachers described the implementation of ESD-SDGs into teaching and learning (T&L). The findings show that sustainability was embedded within existing Geography content and teaching practices, including local geographical contexts, active learning, fieldwork, projects and classroom

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assessment. However, the extent and depth of integration varied among teachers and across instructional situations.

The most significant finding is that the implementation of ESD-SDGs was generally embedded rather than explicitly structured. Teachers used geographical topics and local issues as entry points but systematic planning for students' sustainability-related potential and sustainability-specific assessment was less evident. The findings therefore suggest that strengthening ESD-SDGs in Geography may require not simply additional sustainability content, but greater support for teachers in making meaningful connections between Geography content, local context, student learning, pedagogical activity and assessment.

This conclusion is consistent with international Geography education research showing that sustainable development teaching is shaped by teachers' pedagogical reasoning and contextual decisions (Huh & Jo, 2024), while also reinforcing the disciplinary contribution of Geography through concepts of place, environment and interconnection (Maude, 2023).

Conflicts of Interest
The authors declare no conflicts of interest regarding the publication of this paper.

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