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Learning for sustainability in Scotland: when best practice is not enough

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ABSTRACT

Research commissioned by the Scottish Government in 2022 investigated Learning for Sustainability (LfS) as it is experienced through the Scottish Curriculum for Excellence (CfE) by young people (14+ years), practitioners in secondary schools (teachers), and in community learning and development (CLD) settings. The research sought to identify best practice in LfS, its challenges, and successes since the implementation of the Scotland's Learning for Sustainability Action Plan. The research included a guestionnaire for practitioners, exploring their awareness of and engagement with LfS: along with a series of World Café events/Three Horizons focus groups with young people and practitioners. This paper situates the findings and analyses them in an international context and through the lens of critical and transformational theories of education for sustainability to provide further insight into LfS in Scotland in light of the policy and legislative backdrop for teaching and learning in this field. It contends that despite Scotland being a world leader in policy and curriculum integration regarding learning for sustainability, there are considerable gaps in what is promoted in policy and what occurs in schools and communities, in effect, denying young people the transformational educational opportunities needed to become effective agents of change.

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KEYWORDS

Learning for sustainability; young people's agency; integrated learning; outdoor learning; transformational education

Introduction

The devolution of Scotland's educational system from the UK government to the Scottish Parliament situates this study in an educational context separate from the rest of the United Kingdom (Beresford-Dey, Ingram, and Lakin 2024). Scotland's state schools are organized hierarchically, with the national government at the top (Sibieta and Jerrim 2021). This central authority sets and oversees the 'broad framework of schooling' (Murphy 2016, 38), which is implemented in individual schools through various directorates, agencies, and local government bodies. Each of Scotland's government-funded schools is located within one of 32 local authorities (Draper 2016), which are

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essential to the school system. Additionally, the General Teaching Council for Scotland and Education Scotland (an executive agency of the Scottish Government) are responsible for promoting quality and improvement in Scottish education (Education Scotland 2023).

In recent years, Scotland's education system has undergone several reforms. These changes include the introduction of new curriculum, transformation of the General Teaching Council for Scotland into an autonomous professional-led organisation, and establishment of Regional Improvement Collaboratives. The aim of the latter initiative was to 'bring together local authorities and Education Scotland to develop different ways of working, bring together capacity across a region, and add value through collective efforts' (Scottish Government).

The CfE, developed from 2004 to 2010 and implemented in 2011, formally integrated sustainability education. This significant educational shift emphasized essential 21st-century skills, knowledge, and values, aligning with the United Nations Decade for Education for Sustainability (2005–2014) and the subsequent *Global Action Plan* (UNESCO 2015). The 'One Planet Schools' working group in 2011 (Higgins 2012) and the Learning for Sustainability National Implementation Group in 2014 guided Scotland's sustainability education, culminating in the *Vision 2030+ Report Concluding Report of the Learning for Sustainably National Implementation Group* (Scottish Government 2016). This work informed the first action plan for LfS¹: *Scotland's Learning for Sustainability Action Plan* (Scottish Government 2019b).

The UK's Presidency of the 26th United Nations Framework Convention on Climate Change Conference of the Parties (COP26) in Glasgow, November 2021, heightened sustainability awareness in Scotland. Concurrently, the Scottish Government initiated a revision of *Scotland's Learning for Sustainability Action Plan* (2019b), commissioning the Children's Parliament in Scotland to research sustainability education for children from nursery to 13 years (Children's Parliament 2022). Additionally, the research and report (Ward et al. 2023) underpinning this paper was commissioned to provide an overview of LfS understanding and implementation in CLD and school settings for youth aged 14 and above. The specific questions posed by Education Scotland for the research included:

- How is LfS understood and implemented by the school and CLD workforce?
- What can we learn from LfS 'best practice' taking place around the system?
- What can the voices of young people and practitioners feed directly into LfS policy and the refresh of the Action Plan?
- What are the successes and challenges LfS has faced since 2019?
- What is the impact of the COP26 on LfS?

Combined, this and the Children's Parliament research informed the the refreshed action plan *Target 2030: A movement for people, planet and prosperity'* which aims to build a movement for change to ensure every 3 to 18 place of education becomes a sustainable learning setting by 2030 (Scottish Government Education Reform Directorate 2023). This paper interrogates the findings of the Learning for Sustainability: Young People and Practitioner Perspectives research in the context of global LfS and through the lens of critical and transformative theories for education for sustainability. This analysis shows that in Scotland, LfS has long been supported by a 'world leading' ongoing process of policy enrichment and integrated curriculum development (Scottish Government Education Reform Directorate 2023), but in practice there is still considerable room for improvement for it to generate robust critical engagement and to result in transformative educational outcomes.

Related literature

The United Nations Educational, Scientific and Cultural Organization (UNESCO) asserts the need for high quality education for sustainable development, calling it a key mechanism for supporting action to address climate change and just transitions (UNESCO 2015). This work is undertaken and is known by various names in different countries around the world.

The term Environmental Education (EE) reflects the initial focus on conservation and protection of the natural world that arose in the 80s and 90s. This term been largely replaced by the term Education for Sustainable Development (ESD) introduced by the United Nation's 1992 'Agenda 21' with its expanded focus on future social and economic aspects of sustainable development (Taylor et al. 2019). An alternative term, Education for Sustainability has developed in Australia, which Taylor et al. (2019) say is 'arguably differentiated from the other approaches by a more socially critical and action-oriented edge' (P. 104). The authors recognise that the terminology can be problematic, and this is indeed one of the findings of the research being reported on in this paper. New terms are emerging such as climate change education and education for regenerative living. In Scotland the term currently used is Learning for Sustainability (LfS), which, it could be argued is closer to the emphasis articulated in Australia's EfS. LfS is used throughout this paper except where referring to an official program from UNESCO, other international bodies or specific research reports.

Education, and or learning for sustainability is a global movement that recognises the interdependence of environmental, social, and economic systems and seeks to empower individuals with the knowledge, skills, and values necessary to contribute to a more sustainable future (UNESCO 2015). UNESCO's Education for Sustainable Development (ESD) program (2030) is a leading example of this effort, emphasizing the need for a holistic approach to education that includes not only cognitive understanding of sustainability challenges but also the development of practical skills and values to motivate action. Key components of the ESD framework and toolbox include advancing policy, transforming learning environments, building educator capacities, empowering youth, and accelerating local actions (UNESCO 2015). The principles espoused by this program are reflected and or integrated into education programs with varying emphasis depending on where in the world they are being implemented.

Taylor et al. (2019) report on their review of case studies about education for sustainability (EfS) in the secondary school sector from more than 25 countries, albeit most of them from developed nations. Despite 28 countries reporting that they embedded EfS in curricula, they cite issues related to alignment of curriculum, lack of resources, and siloed teaching methods. The current perception of EfS, and the lack of professional development of teachers as key determinants of the successful implementation and effectiveness of EfS are also prevalent. Issues related to a mismatch between intentions of curriculum documents and teaching approaches were also noted, particularly in non-western countries. Taylor et al. (2019) cite Feinstein's (2009) claim that in the USA, EfS has never gained a strong foothold and that much of the activity by educators of EfS is related to informal learning or out of school learning settings. By contrast they highlight Finland as a country whose curricula related to EfS has a strong history of project learning integration but still requires curriculum reform to embed it into the educational culture. They also report positively on the green or eco-school networks embedding ESD and rewarding teachers with accreditation for their work in Scotland.

Notwithstanding the work being done in Scotland and the UK, Anderson (2024) drew on the perspectives of more than 8,000 UK teachers and found that climate change education and sustainability literacy was more focused on impacts than solutions. It was still taught in silos in the UK more broadly and responded to exam specifications in secondary education rather than being embedded across the curriculum. A majority of teachers and students felt LfS subjects areas should be integrated across all areas of the secondary school curriculum which would enhance climate literacy and critical thinking on the topic. These are similar findings to those in the Ward et al.'s (2023) report so it is logical to ask how this should and could be done?

An example of alternative practice includes the shift from content-focused education to outcome-based competence approaches (Vare, Lausselet, and Riekman 2022) which reflects a broader trend in sustainability education, emphasizing the development of key competencies that enable individuals to contribute to sustainable development. These competencies include systems thinking; anticipatory competence or the ability to think ahead; normative competence,

the ability to understand and reflect on the values and principles that underpin sustainability; and strategic and interpersonal competence, which includes the ability to problem solve and collaborate respectively. Elements of these competencies have been in focus through various educational approaches introduced over the decades, such as Environmental Education, Education for Sustainable Development, and Education for Global Citizenship, which collectively aim to incorporate complex socio-environmental issues into mainstream education and highlight children's rights to a sustainable environment (Leite 2022).

The right to a sustainable way of living is intergenerational in nature. A key focus of the 'One Planet Schools' and the LfS National Working Groups in Scotland was the need to educate children and young people, so they understood the need for equitable and sustainable use of resources. By this they mean that current generations must use resources in a manner that is sustainable and equitable across all nations of the world and replenishable to the extent that future generations will have access to similar and sustainable standards of living (LfS National Implementation Group 2016). The recommendations from the Vision 2030+ Concluding Report of the Learning for Sustainability National Implementation Group (Scottish Government, 2016) were taken directly into Scotland's Learning for Sustainability Action Plan (Scottish Government 2019b) further supporting, legislative mechanisms for children to have agency. However, there are not necessarily the societal or organisational structures for them to exercise it.

Transformational LfS aims for children and young people to develop knowledge and confidence for engaging in individual and collective agency (Hart 1992; Lundy and McEvoy 2012) and this, according to Stirling and Jickling (2017), is a key responsibility of schools. Opportunities to engage with and apply these skills assist children in understanding their capacity for action (Cutter-Mackenzie and Edwards 2013) and provide opportunities for altering perspectives and frameworks of reference, changing assumptions and incorporating new knowledge; key tenets of transformational education (Michel et al. 2020). Rousell and Cutter-Mackenzie-Knowles' (2019) systematic review of climate change education highlights the dominance of 'scientistic' or 'cognitivist' approaches and asserts that we need to go beyond this approach and engage with 'children's own attitudes and beliefs as the basis for experimenting with visionary alternatives' that include creative and embodied experience (2019, 203). Michel et al. (2020) reflect similar ideas, but further expand upon transformational and creative education to include feminist and indigenous perspectives to place and sustainability, where questions of past use of land and resources, contested ownership and belonging bring in a much-needed critical perspective. Further emphasising the need for interdisciplinary approaches for climate change education to engage learners with the cognitive, affective and somatic dimensions, Häggström and Schmidt (2022) advocate learning that is fit for the sociological world of children in the twenty first Century and that provides the necessary elements for transformative and critical education.

In addition, alternative disciplines and pedagogies offering the potential to facilitate LfS include: inquiry-based teaching (Murdoch 2015); place-based pedagogies (Sobel 2005; Somerville 2012); arts-based pedagogies (Inwood et al. 2017; Ward 2017a, 2017c); collaboration, critical thinking and advocacy (Golinkoff and Hirsh-Pasek 2016); and community-based knowledge sharing in the form of communities of practice (Wenger et al. 2002). These creatively oriented inquiry processes are also reflected in the Project-Based Learning (PBL) approach (Yew and Goh 2016) which provides students with opportunities to build competencies through identifying local problems, critically analysing them, and collaboratively designing creative solutions. In so doing, learners develop the confidence to effectively address the challenges of the climate crisis and apply their newly-acquired knowledge to real-world problems (Yew and Goh 2016). This presages Vare, Lausset, and Reikman's (2022) notion of normative competence as a key feature in sustainability education.

Outdoor education plays a key role in LfS (Ward et al. 2023), but should not be used as a classroom replica, or what Lloyd, Truong, and Gray (2018) call a 'drag and drop approach'. Innovative, inquiry-based pedagogies and creative correlations between concept and skill development are required (Ward 2017). Indeed, the *Scottish Curriculum for Excellence* (2010) identifies "collaborative and independent learning; discussion and informed debate; interdisciplinary learning experiences; learning outdoors, field trips, visits and input by external contributors" (p. 280) as key elements of learning in the curriculum. What has been unclear up to this point is the extent to which these approaches are used in Scottish secondary schools or CLD programmes, and the affordance or barriers to implementing such an approach. The research reported on in this paper helps to fill that gap.

Methodology

This research engaged a pragmatic approach which meant mixed methods were employed for the data collection producing data with breadth and depth (Creswell and Plano Clark 2018). The six Regional Improvement Collaboratives (RICs)² across Scotland were the initial point of contact and they recommended Follow with (LAs) for engagement. A quantitative questionnaire was distributed by LfS lead officers in the eight LAs/municipal councils to all secondary schools and teachers within their boundaries. This approach aimed to capture a broad spectrum of perspectives from educators actively engaged in secondary education. In total, 46 individuals from secondary schools across five local authorities responded to the questionnaire (N=46) with the distribution of respondents detailed in Table 1. We did not capture data about the number of schools represented. Given that Scotland has approximately 25,000 secondary school teachers and 361 secondary schools, (Scottish Government Education Learning Directorate 2023), the response rate was lower than anticipated. However, the insights gathered from these responses offered meaningful contributions to the analysis.

The questionnaire itself comprised 35 items and was strategically designed around five themes exploring practitioner opinions and perspectives on their 'familiarity with LfS'; 'LfS in teaching and practice'; 'perceived learner engagement in LfS'; 'stakeholder engagement in development of whole-school approaches'; and 'whole-school engagement with LfS'. This thematic design was carefully aligned with the Scottish Government's priorities for the project, ensuring relevance and focus. Moreover, the questionnaire drew on insights and structures from a previous unpublished pilot study conducted by members of the research team, which informed the refinement of the instrument to better address the aims of the current research.

Qualitative data formed the second data set. Field work was conducted after purposive sampling within the RICs, engaging six secondary schools and two CLD settings across eight LAs (See Table 1 below) which were selected across the range of the Scottish Index of Multiple Deprivation (SIMD) (see Table 1). There was no correlation between the LAs from which questionnaire respondents came and the LAs who participated in field work. Data collection events occurred with two groups of participants at each site: one session with young people aged 14+ years and another with adult practitioners (teachers and/or CLD professionals). The sampling approach ensured there was participation and representation from across all geographical areas of Scotland, SIMD contexts and included a Gaelic-medium setting (See Table 1).

Local authority	SIMD decile ranking	CLD or school groups	Quantitative scoping questionnaire. Phase 1	Qualitative data young people. recordings, table notes, post-it notes. Phase 2	Qualitative data practitioners recordings, table notes, post-it notes. Phase 2
Local Authority 1: Islands	7	CLD	0	8	9
Local Authority 2: Rural/East	2	School	2	11	8
Local Authority 3: Urban/Central	4	CLD	5	8	4
Local Authority 4: Rural/South	9	School	15	6	10
Local Authority 5: Rural/North	7	School	0	24	5
Local Authority 6: Urban Central	6	School	1	11	6
Local Authority 7: Rural/Central	10	School	13	8	7
Local Authority 8: Urban/Central	4	School	10	11	6
Total Individual Participants			46	87	55
Total Recordings Young People				48	
Total Recordings Practitioners					40

Table 1. Location of local authorities, SIMD ranking and data collected at each site.

Qualitative data were collected at eight sites through World Café events (Brown and Isaacs 2005) followed by a focus group, using the Three Horizons framework (Sharpe 2020). Since 1995, World Cafés have globally facilitated large group conversations (Brown and Isaacs 2005) and recently in academic research as participatory qualitative methods (Löhret, Weinhardt, and Sieber 2020). A World Café involves small groups seated at tables with refreshments to foster discussion in a relaxed environment. Each table had a specific question on young people and practitioner experiences respectively, aiming to identify LfS successes and opportunities for improvement in Scotland, and were directly related to the research questions requested by the Scottish Government. Practitioner events had four discussion questions (four tables), while young people events had five questions (five tables). Participants exchanged knowledge and ideas, creating table notes and/or post-it notes, which were collected. Groups rotated to address all questions, with discussions recorded and transcribed.

The Three Horizons framework (Sharpe 2020) applied in the focus groups at the end of each World Café framed questions directly informed by the research questions about the extent to which existing educational provision and systems were supporting the delivery of LfS (Horizon 1), to identify future aspirations (Horizon 2) and models for transformational change (Horizon 3) (Leicester et al. 2013) that encompass interdisciplinary and holistic future pathways. These focus group discussions were recorded and transcribed and table notes were collated. For a summary of participants and data collected, see Table 1.

Analysis of the quantitative questionnaire findings was conducted using numerical tabulation to identify Likert rankings and are included in the findings below (N=46). The findings were narratively interpreted and thematically integrated with the qualitative data. Qualitative data included more than 80 recorded discussions from the World Café events, sets of table notes completed during the discussions and recordings and table notes from the focus groups. Reflexive Thematic Analysis (Braun and Clarke 2012, 2019) was used to analyse the transcribed post-it notes, table posters and discussion transcripts in NVivo. Each transcript was reviewed and coded independently by two researchers who then met to discuss refinement of codes and themes. The themes were further reviewed by the whole research team and revised where applicable. This process enabled thorough engagement with the data using Braun and Clarke's six stages including familiarisation, coding, active generation of themes, checking, consolidating and naming themes, and incorporating them into written reports.

Ethics

University of Dundee ethical approval was obtained (approval number SREC22-002). Informed consent was gained from all participants over the age of 16 and by all participants and their parent/guardian for those under 16. Verbal assent was also gained from participants at the beginning of each data gathering event. All participants were informed about the process and timeframe for requesting withdrawal of their data from the research. Ethical conduct was guided by the guidelines as in the 'Social Research Ethics Guidance', (Scottish Educational Research Association 2005) and British Education Research Association (2018) ethical guidelines. All research team members held a Protecting Vulnerable Groups certificate to comply with requirements for safeguarding participants.

Findings

Understanding of learning for sustainability

The findings indicate variation about the meanings ascribed to the term Learning for Sustainability and its constituent parts. The questionnaire responses³ from practitioners show widespread agreement (44 of 46) about its definition⁴, however, qualitative data from young

people demonstrated mixed understanding of this term, ranging from no recognition of LfS as a concept, to enthusiastic discussion of its constituent parts, including climate change, global flooding, species decline and environmental science. Practitioner questionnaire responses suggested broad familiarity (37 of 46) with LfS as part of the CfE, and awareness (32 of 46) of how LfS aligns with Teaching Council standards, but lower levels of familiarity with the Sustainable Development Goals (SDGs) (26 of 46) or other national strategies (21 of 46). Analysis of practitioners' responses about their understanding of LfS in the curriculum identified a few who were unfamiliar with it, but the majority said they were engaged in its delivery in school and community settings even though most had received no training on the topic. Practitioner's questionnaire responses (39 of 46) suggested they thought young people had broad understanding of the term LfS, but young people in World Café events identified confusion around terminology as obstacles to understanding, with 'sustainability' being viewed as 'vague', 'jargon' and a 'buzzword'. In the young people's discussion, the introduction of documents depicting word clouds and diagrams linking 'sustainability' to all facets of life seemed to exacerbate their confusion:

When you think about sustainability, you think about the environment. We do little things like sustainability, but that's about environment stuff here at school, like the school environment, and not like the...I don't know. The global one. (Site 6, Young Person)

However, 'sustainability' became relevant with further discussions with young people, linking it to community, inequality of resources, their concerns for their future and mixed messages of consumerism and restraint.

Experience of learning for sustainability

There was some variation in young people's experience of LfS depending on whether they attended CLD settings or were engaged in LfS through school curriculum. Likewise, the questionnaire results suggest some divergence in views between practitioners (adults) and students.

Qualitative data from young people attending CLD settings emphasised the effectiveness of partnerships and community projects for learning about sustainability. Examples included beach clean-ups, community park maintenance, eco days, Prince's Trust activities, organising food banks, fundraising for UNICEF, and supporting community initiatives like horse riding, Scouts and Guides. These activities were generally seen as worthwhile, despite their infrequency.

To highlight the contrast in tangible examples of LfS in their current school, one student said:

So, around school, there are little posters about not using plastic. I've noticed there's one right next to the HE [Home Economic] classroom. That's about the only examples there are in the school, but we also have a recycling bin in the corridor, which has always been there... (Site 5, Young Person)

In schools, young people indicated that experiences of the LfS curriculum were limited to subjects such as geography, biology, modern studies and home economics. Extra-curricular activities (Fairtrade Fortnight, Fridays for Future 2022, or Earth Day) and school initiatives (Eco Clubs and Student Councils) were also mentioned, but were limited by frequency, resources, timing and cost. In one school, students discussed their participation in COP26 events (in Glasgow), which was possible due to the school securing a small grant, while another school engaged with COP26 online.

This contrasts with the questionnaire results where practitioners reported demonstrating LfS in their practice (30 of 46), and knowing where to find LfS information and resources (28 of 46). A similar proportion felt empowered to teach sustainability (26 of 46) or were confident using LfS supporting pedagogies (26 of 46). COP 26 prompted slightly more respondents (29 of 46) to adapt their teaching to incorporate LfS-related themes. Many respondents asserted

that they (39 of 46) or their school setting (35 of 46) encouraged sustainable practices, and their learners discussed sustainable actions (28 of 46). Almost half believed learners were aware of sustainable practices across their settings (24 of 46), and fewer were involved in developing their settings' LfS approach (21 of 46)

Learning for sustainability exemplars

Practitioners and young people shared examples of impactful practices, though they noted connections to LfS were not always made explicit. Young people spoke enthusiastically about their enjoyment of various activities, including school lessons with guest speakers and school-facilitated or youth club-run outdoor learning sessions and fieldtrips, either free-standing or linked to awards schemes (e.g. Duke of Edinburgh or John Muir Awards). Similarly, many young people at the school-based events enthused about their involvement in Eco/Sustainability Clubs and Student Councils, and this was also the case in one of the CLD settings. Community partnerships, advocacy initiatives, targeted projects (e.g. filmmaking to raise awareness about endangered environments, craft classes, etc.) and attending conference events were also impactful. However, they noted limited opportunities to participate in these kinds of activities, reducing their chances of exercising agency.

There's definitely not enough opportunities within the school. Not many people know. Like, not many people know about ways they can get involved. (Site 7 Young person)

Practitioners identified examples of impactful practices, highlighting strategic collaborations: partnerships between the local authority and schools; engagement with national campaigning organisations (e.g. Keep Scotland Beautiful, YouthLink Scotland); and participation in high level policy initiatives (specifically COP26). Practitioners also highlighted examples of 'real-world' opportunities for action and participation which helped them to embed sustainability in school/ community-based curricula. Examples included local campaigns around reducing/reusing/recycling, and opportunities for young people to lead/initiate community action in response to international, national and local issues (elections, energy, waste and food projects).

Challenges in delivering learning for sustainability

Practitioners identified numerous challenges to implementing LfS successfully, both in schools and CLD settings. LfS was not embedded in the curriculum or the strategic and operational realms of the schools or CLDs. Most education settings (34 of 46) lacked a whole school approach to LfS, as defined by *Scotland's Learning for Sustainability Action Plan* (Scottish Government 2019b), (Scottish Government 2019b) that was robust, demonstrable, evaluated and supported by leadership. Practitioners talked about the need for time and for LfS to be visible in all parts of school operation saying that both were essential.

But it takes time as well to make sure, like it takes time to get people who aren't normally involved or naturally involved or not confident. It takes so much time to get them involved... And that's the thing, like we're always saying that even through like pupil councils like the youth forum and stuff is, folk just think it is, you know, the really bright shiny kids. But actually the work that's gone on in the background, you know, to get them to that initial stage is huge (Site 1 Practitioner)

Additionally, fewer than a third of respondents (13 of 46) had staff in their schools with a deep understanding of LfS and its relevance to their context. Concerns were evident across all data about the lack of strategic commitment to training and the provision of time and resources to embed LfS in the wider curriculum. Whole-school policies on buildings, grounds, energy, waste management, etc.) were perceived as misaligned with the broader sustainability goals reflected in LfS and related policies.

Strengthening learning for sustainability

Practitioners in all settings identified the need for ring-fenced time within workloads to enable them to prepare and deliver the LfS curriculum, to attend training and to network. It was suggested that best practice (particularly around strategy and coordination of LfS) could be shared between settings in the same locality, and be supported by local authorities or/and other agencies through a dedicated support officer to liaise and coordinate initiatives.

And there has to be co-ordination of that as well. So, you know what I mean, all these new things that are branching up tae have a youth voice. And actually there needs, needs to be co-ordinating... So cause often it'll fall to us to lead on or co-ordinate youth [initiatives], youth forums. (Site 5 Practitioner)

The findings indicate that local progress should be complemented by national efforts to formally integrate LfS into national frameworks; provide dedicated LfS funding; cascade guidance and resources to practitioners; and support sustainable practices consistent with the LfS principles (i.e. addressing waste, energy and purchasing, etc.) across schools and CLD settings. World Cafe conversations similarly suggested expanding LfS to more subject areas and beyond current activities (Eco Clubs, Earth Days, etc.) to foster a comprehensive, inclusive approach to LfS. This includes *explicitly* incorporating LfS across all stages of secondary CfE, embedding it in more National level 4/5 subjects, and encouraging collaboration between schools and CLD settings to provide additional LfS engagement opportunities for young people.

Discussion

The discussion that follows brings the above information into an international context to problematise some of its findings, recognising it as one of the most recent reports in a decade long series of connected reports about educational policy for LfS in Scotland. It does not specifically identify the recommendations that arose from this piece of research in linear fashion as that information is already available in the public domain. Rather, the discussion integrates the findings and recommendations where relevant and highlights the strengths and weaknesses of current 'best practice' and policy in Scotland and asks to what extent they reflect international research about theories of transformational LfS and competency for engagement with LfS. Through these lenses, the discussion further explores the terminology used in LfS and the relevance it has for supporting agency for young people, transformatory education to support competency and climate change literacy, and the need for teachers and CLD practitioners to have access to resources and time to integrate LfS into their settings and curriculum.

Experience and understanding of LfS is language based and supports agentic thinking

The OECD (2021) review of the CfE noted a crowded policy landscape due to reactive curriculum and policy guidance, partly because Scotland lacks a fixed review period for the CfE. The way in which this reactivity has resulted in a proliferation of policy and guidance documents for the CfE, resulting in overwhelm and confusion for users is also a criticism cited by Humes and Priestley (2021). Similarly, our research findings highlighted issues with language and curriculum connections, likely reflecting numerous iterations of curriculum-aligned guidance for teachers on learning for sustainability. The CfE uses 'sustainability' broadly across most curriculum areas, while 'climate change' is specific to sciences and social studies. Participants indicated that if learning for sustainability is connected to everything, it becomes nothing, implying it is not treated as a distinct focus.

Both young people and practitioners in this research preferred terms like 'Climate change' and 'Environmental Science' for their clarity (Ward et al. 2023) and indeed, standardising language formed the first recommendation of the report. The OECD *Teaching for Climate Action* (2022) report which gathered the perspectives of 850 teachers from 157 countries, also uses

this terminology. In their report, Scotland falls below the OECD average in terms of young people's concern for the global environment who say that looking after the global environment is important to them (approximately 73%) and their belief in their ability to address global issues (approximately 55%). The LfS research recommended young people have regular opportunities for agency as part of their education on learning for sustainability. This means stronger integration of climate change education throughout the curriculum and providing actionable opportunities in their schools and in the community. *Teaching for Climate Action* (OECD 2022) emphasized the need to extend climate literacy beyond traditional subjects such as science and geography, to include experiential, enquiry based and embodied curriculum in real world contexts. Similarly, young people in this research recommended that more 'joined up thinking' to enable agency for climate change at all levels of school and community.

Taylor et al. (2019) caution that narrow or siloed opportunities will limit capacity for development of the skills and confidence needed to become agents of change, therefore integration of LfS across the curriculum is essential – a sentiment echoed by Stirling and Jickling (2017) and recommendation two of the report on which this paper is based. This tendency to relate sustainability issues to one's own context is evident in the work of Francis and Davis (2015), who point to several studies highlighting the concerns young people have about sustainability issues in their communities. Hickman et al. (2021) remind us that these anxieties and concerns are genuine and that young people have their own contextual frameworks of reference related to their community, media exposure and the terminology and associated understandings. If LfS is to become an embedded learning topic, the related concepts, terminology and contexts must align with young people's understandings. This means distinct conceptual understandings and language clarifying what LfS, ESD, EfS and EE are and the way in which they relate to our identities as learners and agential citizens is needed to support higher order thinking of these concepts, engagement and action.

Experiences in LfS can develop climate change competencies and transform learning

The Teaching for Climate Action (OECD 2022) highlights the multidimensional and interdisciplinary nature of understanding and acting on climate change. However, the ability to integrate LfS across curriculum can be problematic and depends on teacher training and experience. Borsos et al. (2022) identify that pre-service teachers across five countries including Hungary, Spain Croatia, Norway and Serbia, indicate they do not have enough knowledge, as a result of their teacher training, to conduct outdoor education. Indeed, Education Scotland (2022) assert that school leaders must share a clear rationale, provide guidance, and support staff to use the outdoor environments effectively across the curriculum. The young people in this current study fondly remember the LfS-related activities from their primary school years where recycling and incentive-based whole-school programmes, such as 'Green Flag' status, were in place and were critical of the lack of these practical aspects of sustainability in their secondary schools. Their reports about effective LfS post-primary school focused on Eco Clubs, specific school lessons (although limited), community events and outdoor learning. Outdoor learning was considered of particular importance, and the need for it formed recommendation three of the report on which this paper is based. An example of outdoor learning, integrated into classroom learning was suggested by one of the young people:

I think what would be a good idea is if we, like, you know how we have the HE department, if we make, ... if the school plants its own vegetables then they can use them in the HE cooking and then they could like taste test them with people round the school so that everyone's getting involved and like we all take rotations in the planting. (Site 5 Young Person)

Indeed, outdoor learning can embody the experience of learning and integrate conceptual learning – a sentiment echoed by many researchers (e.g. Lloyd, Truong, and Gray 2018; Mann et al. 2022; Rousell and Cutter-Mackenzie-Knowles 2019).

Vare, Lausselet, and Riekman (2022) discuss the 'competence turn' in Education for Sustainable Development (ESD), emphasizing the importance of developing specific competencies to effectively address sustainability and climate change. They highlight several key competencies essential for sustainability education, as indicated in the related literature section of this paper. Perhaps the most important of these for young people is the normative competence: the ability to understand and reflect on the values and principles that underpin sustainability. This competency encourages learners to consider ethical dimensions and value-based decision-making, is rooted in the real world and can be related to all curriculum areas. Such real-world experiences and examples provide opportunities for critical thinking that can alter perspectives and frameworks of reference, can reframe assumptions and incorporate new knowledge (Michel et al. 2020).

Another key competence articulated by Vare, Lausselet, and Riekman (2022) is related to systems thinking. This is the ability to understand and analyse complex systems and their interdependencies, and helps learners see the bigger picture and understand how different elements within a system interact. A well-developed systems thinking competence would support young people to engage in 'joined up thinking' (their term) and make the interdisciplinary reflection of LfS content more meaningful. It is also reflective of recommendation four in the Ward et al. (2023) report for providing meaningful opportunities for young people to exercise agency in their communities.

I would like if the community celebrated Earth Day more frequently, and for example, celebrate it with, like, a dance in the hall or something like that, to raise money to pay the people who are picking up the litter on the floor. (Site 5 Young Person)

Understanding systems would help to develop capacity to anticipate and prepare for future scenarios and challenges: anticipatory competence, and opportunities to engage in real world projects in the community would help to develop skills for designing, implementing and evaluating strategies for sustainable development – or strategic competence. The final competency articulated by Vare, Lausset, and Riekman (2022) is the ability to collaborate and communicate effectively with others. This competency is crucial for working in teams, engaging stakeholders, and fostering collective action towards sustainability. There is some critique of this competency framework by Mulà, Cebrián, and Junyent (2022) related to the conceptual clarity making it difficult to implement and assess. Mulà, Cebrián, and Junyent (2022) also suggest that the competencies need to be more adaptable to different cultural and educational contexts. The one-size-fits-all approach may not be effective in addressing the unique needs and challenges of various regions and communities. This critique suggests that while the framework for sustainability competencies is a valuable step forward, there is still work to be done to refine and adapt it for broader and more effective implementation and transformative educational approaches.

Experiences that support the development of critical thinking and agency are key elements of transformative education (Michel et al. 2020). The young people's narrative about their experiences in community projects highlighted the importance of working together and working in partnership for a common cause, and was reflected in recommendation five of Ward et al.'s., (2023) report. UNICEF (2017) asserts that experience in partnerships is a necessary characteristic for effective and sustainable futures. This is echoed by Birch (2020) who discusses the need for young people to share narratives of activism and agency in order to engender a feeling of hope for their futures. The young people and practitioners in this study highlighted the limitations of the support available from the CLD or school practitioners to support special interest Eco Clubs or participation in pupil-led projects for sustainability. These experiences support critical reflection but as indicated above, there were very few of them reported. Michel et al. (2020) assert that transformative education encourages learners to critically reflect on their values, beliefs, and assumptions. This process helps them understand the root causes of unsustainable practices and consider alternative ways of thinking and acting. Reflection on real experiences then becomes a powerful learning tool.

It is unsurprising that the successes in LfS reported by the young people were based on engagement that integrated learning in context, that was creative and often outdoors. Young people talked about community partnerships with fast fashion projects, community plays for climate change advocacy, field trips through school, conferences (very limited examples) and outdoor learning. This approach to LfS education that is creative and contextually relevant echoes Malone and Truong's (2017) proposition that 'the question is not whether sustainability education has a role to play in a sustainable future for the planet – it is, can we re-imagine new ways of 'doing' education and not repeat the same old practices' (p. 8). By contrast, the young people reported that the least successful learning occurred through PowerPoint presentations in a classroom where they were sitting in plastic chairs. The outdoor learning events represent hands-on, real-world experiences which are crucial for connecting theoretical knowledge with practical applications, fostering a deeper understanding of sustainability issues (Michel et al. 2020) further contributing to transformational learning. These complex and multifaceted events also represent interdisciplinary learning requiring knowledge from various disciplines. Transformative education then, promotes interdisciplinary learning, enabling students to draw connections between different fields and develop comprehensive solutions (ibid).

Working collaboratively with others is also essential for addressing sustainability challenges. Jones (2023) highlights the outcomes of local schools in Wales partnering with the local authority and an educational charity, implementing a 'theory of change' (Taplin and Clark 2012) model to support integrated learning that involves all stakeholders identifying the desired outcomes and working backwards to plan the pathways for achieving them. Similarly, Michel et al. (2020) indicate that transformative education fosters teamwork and collective problem-solving, helping learners develop the skills needed to work effectively in diverse groups. The Duke of Edinburgh and John Muir activities reported by the young people typically included experts and guides in intense multi-day experiences, and were highly rated by the young people. The experience of attending COP 26 was reported as being particularly empowering, providing a sense of agency and belonging to something significant. While there was only one indication of this type of experience, it was clearly transformative and empowered the learners to take action, another feature of transformative education (Stirling 2024).

Addressing LfS challenges requires rethinking, time and resources

Time was the biggest challenge mentioned by practitioners in this research. The questionnaire indicated that practitioners felt they were encouraged to integrate LfS but they did not have time to do the work that this required.

Taking the time to make it clear is difficult because although some things only take a few minutes, we've got that many initiatives that will only take a few minutes. (Site 1 Practitioner)

The implication in the earlier discussion is that more than just time is needed for LfS curriculum, requiring far greater integration of climate change and social justice in each discipline area. Indeed, Jickling (2017) talks about the need to re-vision education so that all disciplines are steeped in their relationships to people, place and planet. Practitioners highlighted responses of young people when attempting this type of integration.

They love it. But also, when we're, when I'm doing this, we talk about, we talk about our responsibilities in terms of the culture that we have in Scotland about, you know, the right to roam and stuff like that, and our access laws, and how we're responsible for looking after the place and stuff...And also, how climate change, and we can actually take them to places and say climate change has affected this because..., and talk about specific animals. (Practitioners Site 2)

In addition, Dunlop et al. (2022, 965) indicate that 'barriers include resources (funding, time), staff confidence and capacity, exam pressures (linked to league tables), expectations, models of teaching and learning and school leadership'. *Scotland's Learning for Sustainability Action Plan 2023 to 2030 "Target 2030: A Movement for People, Planet and Prosperity"* (Scottish Government Education Reform Directorate 2023), partly informed by the research reported on here, contains a range of actions in the leadership and curriculum areas that seek to make significant changes to strengthen integration of LfS in the curriculum and professional development for practitioners which includes development of an LfS mentor network group. While this does not provide additional time, it may serve to support teachers and practitioners who are struggling to make the necessary connections to integrate LfS into the curricula and programmes.

Funding was a significant inhibiting factor in effective LfS. Small funding grants to support discrete special interest projects or groups, or sustained funding to support the employment of LfS leads in schools was unavailable. Practitioners talked about the 'joined up' thinking and action that could be developed with funding resources, including coordinated field trips with curriculum topics, school and community gardens as a regular part of the school experience, and integration with community partners to advocate and take action against climate change. This, they indicated, would provide young people with integrated experiences and connect the schools and communities in ways that had not been possible before.

...cause it's wider community so it's not just about, you know, a couple a' young people in a school. And I think, yeah I think schools have to, well I think everyone, education wider has to get off this notion of just ticking a box... (Site 4 Practitioner)

Accordingly, recommendations seven, eight and ten of the Ward et al. (2023) report related to appointing lead LfS coordinators to all Local Authorities, CLD services and schools, and recommendation nine also included family and community members to support these integrated activities and experiences. The *Teaching for Climate Action* (OECD 2022) report highlighted the role of school leaders in allocating resources and materials to support connected interdisciplinary projects as a way of making best use of available resources and supporting active pedagogies and innovation in climate change education. We extend this analysis to include schools in connection with communities. *Scotland's Learning for Sustainability Action Plan 2023 to 2030 "Target 2030: A Movement for People, Planet and Prosperity"* (Scottish Government Education Reform Directorate 2023) report issued a call to action for all school, regional and national bodies to include LfS in their improvement plans, reflecting recommendations 12 –15 of the Ward et al. (2023) report, and made a commitment to "review all existing national funding streams relating to LfS, with a view to re-focusing maximum possible resource around the strategic implementation of the commitment" (Theme 1: Action 2).

As indicated in the findings section, one of the significant issues for young people was the lack of outdoor learning opportunities. The disconnect between learning experiences in class-rooms and the subject matter in focus was keenly felt by young people.

And what about maybe like outdoor learning?

There should be a lot more field trips and stuff.

Definitely a lot more.

...if people got to go out and see things and see what kinda change or difference they're making or what's happening, it would probably get in their head a lot more cause they've got the experience to take with it. (Site 4 Young People)

This reflects the need for experiences in the real world where connections to a range of related LfS issues can more readily be made, engaging Vare, Lausselet, and Riekman (2022) LfS competencies and many of the key characteristics of transformative education (Jickling 2017; Michel et al. 2020). These sentiments are supported by two recent systematic literature reviews (Jeronen,

Palmberg, and Yli-Panula 2016; Mann et al. 2022), which show that outdoor learning – particularly in natural environments where active, participatory, and interactive learning occurs – is beneficial to learning and to developing dispositions toward ethical and regenerative ways of living and being. *Scotland's Learning for Sustainability Action Plan 2023 to 2030 "Target 2030: A Movement for People, Planet and Prosperity"* (Scottish Government Education Reform Directorate 2023) report "will create a new policy workstream on outdoor Learning. This work will be supported by a national working group which will report to Scottish Ministers. The Group will be challenged to pursue a range of actions to ensure that all children receive entitlements to outdoor learning in all its forms". Indeed, there is work in progress to develop stronger links between LfS and the CfE that includes a focus on outdoor learning, but the outcome may not be known until some time in 2025.

Limitations

This research has some limitations due to the reach of the questionnaire and the number of local authorities included in the research events, along with the short timeframe for gathering data. All possible care was taken to ensure the participants are representative of the demographic, social and cultural regions of Scotland, but the authors concede that the sample could have been larger and the time frame for engagement with participants longer.

Conclusion

This paper has outlined research conducted on LfS for the Scottish Government in 2022 to provide information to support the development of their *Scotland's Learning for Sustainability Action Plan 2023 to 2030 "Target 2030: A Movement for People, Planet and Prosperity"* (Scottish Government Education Reform Directorate 2023). It has discussed the findings related to practitioners and teachers, which indicate that most are aware of LfS, feel they incorporate it into their practice and encourage learners to engage with LfS. It also highlights the need for time and resources and professional learning to enable joined-up thinking in order to link LfS with all curriculum content and Government policy frameworks. Young people demonstrated a strong awareness of issues related to LfS, both in their own communities and on a global level, but felt that the terminology used – along with the intermittent opportunities for learning – were inhibiting their ability to learn and to take action in their communities.

The analysis of these findings through the lens of transformative learning (Jickling 2017; Michel et al. 2020) and competencies for learning for sustainability (Vare, Lausselet, and Riekman 2022) raises questions about the degree of focus on LfS in Scotland over the last decade and the distance still to travel between the outcomes of this research as expressed through the Target 2030: A movement for people, planet and prosperity (Scottish Government Education Reform Directorate 2023) report and real transformative change. In a country where there has been so much research and focus on this important topic, the standing of Scotland in the OECD Teaching for Climate Action (2022) report shows there are still gaps in the way in which LfS is being conceptualised in policy and implemented in practice. The evaluation of the CFE by the OECD (2021) provides some context for the gaps, indicating a need for clarity and direction in the policy landscape. This may well have been addressed through Scotland's Learning for Sustainability Action Plan 2023 to 2030 "Target 2030: A Movement for People, Planet and Prosperity" (Scottish Government Education Reform Directorate 2023), but time is required to claim this in any definitive way. This document has significant potential to influence the LfS element of the Scottish Curriculum for Excellence and offers the potential to equip young people in Scotland with the full range of knowledge, understanding and skills/competencies to be able to take action in response to the climate emergency. We have identified several areas for further development to realise that potential, making engagement in Learning for Sustainability transformational and focussed on the enhancement of young people's agency in the face of these considerable challenges.

Notes

- 1. The term learning for sustainability is used by a number of Scottish Government policy documents upon which this report builds and was specified in the name of the commissioned research on which this paper reports.
- Regional Improvement Collaborative are virtual bodies established across Scotland with between three and eight Local Authorities in each. They were established to strengthen collaborative working in the delivery of educational improvement support to children, young people and practitioners (Scottish Government 2024a).
- 3. As discussed in the methods section and again in the conclusions, the sample size of the questionnaire was relatively small, so cannot be deemed representative of the school sector in Scotland. However, the findings represent a geographical spread across Scotland and correspond with those of the other elements of the study. They are presented here to demonstrate the robustness of the research design and its findings. NB The sample was self-selecting, probably reflecting respondents' interest in LfS, suggesting that responses may be skewed.
- 4. Summarised on the questionnaire as 'an approach to life and learning which enables learners, educators, schools and their wider communities to build a socially-just, sustainable and equitable society'.

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Data availability statement

Data is not available for this study as per requirements of the Scottish Government.

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