

# NatureScot Research Report 1313 - Teaching, learning and play in the outdoors: a survey of provision in Scotland in 2022

[nature.scot/doc/naturescot-research-report-1313-teaching-learning-and-play-outdoors-survey-provision-scotland-2022](https://nature.scot/doc/naturescot-research-report-1313-teaching-learning-and-play-outdoors-survey-provision-scotland-2022)

**Year of publication: 2023**

**Authors: Mannion, G., Ramjan, C., McNicol, S., Sowerby, M. and Lambert, P.  
(University of Stirling)**

**Cite as:** Mannion, G., Ramjan, C., McNicol, S., Sowerby, M. and Lambert, P. (2023) *Teaching, Learning and Play in the Outdoors: a survey of provision in 2022*. NatureScot Research Report 1313.



## Contents

1. Keywords
2. Background
3. Main findings
4. Summary Recommendations
5. Acknowledgements
6. Abbreviations

7. Introduction
  1. Context
  2. Policy
  3. Research Outputs on Outdoor Learning (Scotland)
  4. Young People's Research
  5. Professional Learning for Schools and Practitioners
  6. In-service Supports and Professional Learning
  7. Educational Self-Evaluation and Inspectors' Review
  8. Summary
8. Methodology
  1. Research design
  2. Survey instrument
  3. Data collection process
  4. Summary of Participants
9. Findings
10. Section 1: Outdoor Learning Provisions
  1. Duration of outdoor provision: Early Years
    1. Duration of outdoor provision: Primary School
    2. Practitioner confidence and outdoor provision
    3. Range of Duration Per Week and School Size
    4. Areas of Deprivation and Outdoor Learning
    5. Location of Outdoor Learning: Early years
    6. Location of Outdoor Learning: Primary
    7. Distance from school
    8. Costs of Provision Outdoors
    9. Focus of outdoor provision: Early years
    10. Focus of outdoor provision: Primary School
    11. Themes across Learning: Primary School
    12. Outdoor Learning Impacts
      1. Early Years Settings
      2. Primary Schools
  2. Section 2: Practitioner Confidence and Professional Learning
    1. Professional confidence in outdoor learning and Learning for Sustainability
    2. Practitioner confidence and outdoor provision
  3. Section 3: Perception of Provision Post-Covid
    1. Perceived changes in provision
    2. Reasons for perceived increased provision post-Covid
    3. Reasons given for reduced provision
    4. Reasons given for provision staying the same

## 11. Conclusion and Recommendations

1. Early Years
2. Primary Schools
3. Professional Confidence and Professional Learning
4. Covid and Post-Covid
5. Locations of Outdoor Learning and Play
6. Woodland, Nearby Nature, Green and Blue Spaces Post-Covid
7. Future Surveys and Future Research

## 12. Recommendations

## 13. References

## **Keywords**

---

Outdoor; learning; outdoor play; education; school; pre-school; early years; Curriculum for Excellence; Learning for Sustainability; professional learning

## **Background**

---

The provision of outdoor educational and play-based experiences are entitlements in Scotland's Curriculum for Excellence for children aged 3-18 (Scottish Executive, 2004; Learning and Teaching Scotland, 2010; Scottish Government, 2016a). Outdoor learning is also embedded across the Professional Standards for teachers by the General Teaching Council for Scotland (GTCS 2021). Within the curriculum, outdoor learning can be an approach in any subject and in interdisciplinary learning. Alongside 'global citizenship' and 'sustainable development education', outdoor learning is a core component of 'Learning for Sustainability' (Scottish Government, 2012). Outdoor learning and play are keystone elements of Scotland's Curriculum for Excellence. They contribute to a wider set of policy imperatives dedicated to improving young people's health, wellbeing, and educational outcomes, achieving the United Nation's Sustainable Development Goals, and Scotland's target to become a Nature positive, Net Zero country.

This survey of outdoor learning builds on two previous surveys funded by NatureScot and partners, which assist us in understanding the duration, focus and locations of provision. Conducted in 2022 as the pandemic eased, the findings are timely allowing us an opportunity to reflect on changes in provision, supports for practice, and targets set by government in the Action Plan for Learning for Sustainability (Scottish Government, 2016).

This report provides an in-depth picture on teaching, learning and play provisions in early years and in primary schools, replicating an approach taken in both 2006 and 2014. We report here on circa 200 outdoor learning events provided by staff working in 19 early years centres and 25 primary schools randomly sampled across diverse catchment areas. This cross-sectional survey allows for comparison over time. Secondary school

participation in the survey was too limited to include here. The low response rate from secondary schools most likely reflects a sustained period of pressure and stress in this sector as they returned to examinations after Covid.

Findings indicate sustained uplift in outdoor provision in early years settings but considerable decline to an average of 7 minutes per week in the primary school sector when comparisons are made with previous surveys. In addition, in 2022, we asked participants to self-report on professional learning experiences and confidence levels with respect to outdoor learning and play and Learning for Sustainability. Findings show low and inconsistent levels of professional learning and confidence across both sectors. Taken together, our analysis provides a critical starting point: further action is needed to improve outdoor learning provision and Learning for Sustainability, particularly through policy change and enhanced support for pre- and in-service professional learning opportunities in these areas.

## Main findings

---

### **Early Years' provision outdoors has increased compared to 2014 survey findings.**

As in 2006 and 2014, this 2022 survey of outdoor provision occurred over a two-week period within May and June. We had 19 randomly sampled settings participating. The survey showed that on average 39% of the time at the centre was spent outdoors. This figure has risen from 23% in the 2006 survey, and from 36% in 2014. Early years provision continues to focus strongly on 'play' (as in 2014). 2022 data show a small increase in 'off-site' provision in woodland locations.

**Primary Schools' outdoor provision has decreased compared to 2014.** As in previous surveys, we captured durations of all outdoor learning events (not Physical Education) for an eight-week period in May-June. The 25 randomly sampled schools provided considerably less time outdoors compared to 2014. In 2014, the duration 'per pupil per week' was 30 minutes. In 2022, this was 7 minutes. Covid restrictions meant residential visits were very uncommon, but this only accounts for part of the decline.

**Primary Outdoor Provision Location and Focus.** Use of grounds, visits to locations beyond the grounds, and beyond the local area were all down in 2022. Proportionally, by distance, 87% of the time outdoor was spent in school grounds or up to 1km from the school. By location, visits to woodlands accounted for 18% of the time spent outdoor and visits to local greenspaces (parks and gardens) accounted for 12%. Health and wellbeing, science and mathematics are the top curricular areas. 'Practical activities', 'teamwork', 'nature' and 'play' were the main foci. Less than 30% of outdoor events addressed Learning for Sustainability.

**Secondary Schools.** Only two secondary schools took part in the survey. These data are not reported upon as a result. Difficulty in recruitment was likely due to on-going pressure on the sector, pupil and staff absences, Covid restrictions, and the return to examinations at the time of the survey.

**Practitioner Confidence. Considerable numbers of staff across primary and early years lack confidence in facilitating outdoor learning and Learning for Sustainability.** Early years practitioners reported higher confidence levels than school staff with respect to both outdoor learning and Learning for Sustainability. Primary teachers had higher confidence in outdoor learning (62.9%) than in Learning for Sustainability (40.3%).

**Professional Learning. Staff in receipt of lower levels of training also report lower confidence in outdoor learning and Learning for Sustainability.** Provision of between 6 and 10 training sessions (where each 'session' considered to be approx. a half day event) was associated with increased confidence in outdoor learning and Learning for Sustainability. Participants who reported higher confidence worked in settings that had greater provision.

**Perception of Provision Post-Covid.** A little over half of all practitioners surveyed felt that provision had increased compared to pre-Covid. Just less than a third of respondents felt that provision has decreased.

**School Size and Outdoor Provision. There is a notable variation in provision. Schools providing more outdoor learning time tended also to be smaller in roll.** All schools offering more than 10 minutes per week of outdoor provision had a roll of less than 100 pupils.

**Outdoor learning continues to be experienced by teachers as curriculum-enhancing.** Teachers' reports overwhelmingly indicate outdoor learning enhances engagement and active learning, and was seen to render lessons more enjoyable and relevant. Our survey shows greenspace use for outdoor learning meets the need to provide for a wide variety of subject areas and for Learning for Sustainability, and that there is also improved engagement compared to indoor lessons.

## Summary Recommendations

---

1. Across all sectors of education, the provision of outdoor learning and play needs to be expanded to provide for the experiences and outcomes outlined in Curriculum for Excellence.
2. Evidence suggests that an essential support for the expansion of outdoor provision will be the opportunity to engage in high quality professional learning. Linking professional learning for outdoor provision and Learning for Sustainability will be necessary to increase teacher confidence and expertise in both areas.
3. In early years, greater support for off-site visits and use of local areas will further expand provision.
4. In primary schools, there is a need to increase all types of outdoor provision: in school grounds, off-site, in local areas, and through day-long, and residential trips. Larger schools, schools in urban areas, and schools in areas of deprivation will need targeted support.

5. Increased use of natural greenspaces and 'local nature' by all sectors will further enhance provision especially learner engagement, challenge and enjoyment.
6. Further research is required to understand the links among quality outdoor provision, curriculum policy enactment, and wider policy priorities, including young people's participation and rights, biodiversity loss, and climate change.
7. Further surveys are needed to understand outdoor provision in secondary schools and in special school settings.

## **Acknowledgements**

---

The research was generously funded by a consortium of government-funded agencies. The main funder was NatureScot, with further support from Scottish Forestry, Historic Environment Scotland, Loch Lomond and The Trossachs National Park Authority and the Cairngorms National Park Authority. Staff from each funder formed an advisory group which informed the work.

This research would not have been possible without the generous support of the teachers and early years practitioners who gave their time and efforts to provide the information presented here.

Thanks are due also to the 18 local authority staff for supporting and promoting the research to all the schools and early years establishments in their local authority areas.

We are grateful for responses to our requests for inputs of relevance from across the research community networks in OL and Learning for Sustainability in Scotland.

## **Abbreviations**

---

Additional Support Needs: ASN

Curriculum for Excellence: CfE

General Teaching Council for Scotland: GTCS

Higher Education Institutions: HEI

His Majesty's Inspectorate of Education: HMIE

Information and Communications Technology: ICT

Initial Teacher Education: ITE

Organisation for Economic Co-operation and Development: OECD

Physical Education: PE

Social Index of Multiple Deprivation: SIMD

Learning for Sustainability: LfS, capitalisation used throughout to denote the policy context specific to Scotland.

Outdoor learning: Herein, the term includes all kinds of provision for learning and play outdoors: outdoor learning, education in outdoor settings, outdoor education including residential-based outdoor provision, outdoor play. It did not include breaktime activity or timetabled outdoor physical education for schools in the survey.

## Introduction

---

### Context

---

In this section, for the period since the last national survey (published in 2015), we refer to some of the outputs and practices of relevance to outdoor learning and Learning for Sustainability. We refer to some relevant policy initiatives, research outputs (from researchers based in Scotland), and developments in professional learning and teacher education. Our contextualising summary is of course partial.

### Policy

---

Following critical commentary from an OECD (Organisation for Economic Co-operation and Development) report published in 2021, the Scottish education system has been under review. Pre-Covid, ongoing review and change has characterised the curriculum implementation process in Scotland with policy initiatives such as the National Improvement Framework (NIF) (Scottish Government, 2023), the Scottish Attainment Challenge (SAC) (Scottish Government, 2021a) and Scotland's Race Equality Framework (Scottish Government, 2016b). December 2022 saw the completion of the 'National Discussion on Education' led by independent facilitators. Commentators agree there has been increased bureaucratic demand on teachers taking time away from quality teaching and learning, including outdoor provision. In the 'refreshed narrative' of Curriculum for Excellence, Learning for Sustainability is an entitlement, whilst using the outdoors and our built and cultural heritage are positioned as key to supporting learning.

In the period between our surveys of outdoor learning, we have also seen increased emphasis on school-based core curricular areas and in improving outcomes for the less advantaged. The Scottish Attainment Challenge set out to address the poverty related attainment gap in Scottish schools. This policy was introduced in 2015 and is described as: "Prioritising improvements in literacy, numeracy and health and wellbeing of those children adversely affected by socio-economic disadvantage" (Scottish Government, 2021a). In a minority of cases, funding helped with the development of 'outdoor learning, Green Gyms, and community gardens' (Scottish Government, 2021a) as measures contributing to improving health and wellbeing of pupils. The majority of initiatives focused on literacy and numeracy interventions and approaches to improving health and wellbeing.

Since the last survey in 2014, *Curriculum for Excellence through Outdoor Learning* (2010) and *Learning for Sustainability* (Scottish Government, 2012) have been part of the Scottish policy landscape. In early years, the Scottish Care Inspectorate – the regulatory body – have provided guidance in ‘My World Outdoors’ which identifies it as an expectation that children have “daily opportunities to spend time outdoors” and “explore the natural environment” (Care Inspectorate, 2016, pg. 11). Outdoor experiences are also built into curriculum guidance ‘Realising the Ambition’ (Scottish Government, 2020):

“Take me outdoors frequently to help me learn about my wider world. Experiencing fresh-air and being outdoors in different weathers and natural environments develops my understanding of life and benefits my wellbeing.”

Alongside policy, civic organisations and charities have continued to press for outdoor learning and play to be made a priority. In 2018, for example over 50 education, healthcare, governmental and environment groups created *Scotland’s National Outdoor Play and Learning Position Statement* (Inspiring Scotland, 2022). The revised GTCS standards continue to position outdoor learning, sustainable development education, and citizenship education as an ‘entitlement’ for all pupils (GTCS, 2021). In Scotland, there is currently a cross-party Bill in progress aiming to ensure that young people have opportunity to experience residential outdoor education to an approved educational standard, raising a debate about how best to support increased quality and duration of provision across all location types. Our current study sets out to inform on-going discussion about outdoor learning as a core feature of education in the Scottish curriculum, the degree of progress being made towards the entitlement to outdoor learning and Learning for Sustainability, and the degree of readiness of staff to enable this to happen in their local contexts.

## **Research Outputs on Outdoor Learning (Scotland)**

---

In research, there has been considerable growth in activity, with many notable Scotland-based research contributions in the period 2015- 2022. In this introduction, we cannot comprehensively include all of the research outputs and activity. It bodes well that there are many active early career and experienced researchers now inquiring into aspects of outdoor learning, outdoor play, and Learning for Sustainability.

As part of the refresh of the Learning for Sustainability (2030) Action Plan, the Scottish Government commissioned a team based at the University of Dundee to investigate understandings and experiences of Learning for Sustainability from the perspective of practitioners and young people. The report (Scottish Government, 2023a) suggests that:

“young people believe they should have far greater opportunities for outdoor learning and that this will support the synergy of practice and theory allowing them to relate LfS to the outdoors in their school and community settings”

The report identifies a need to:

“enhance opportunities for outdoor learning so they are more frequent and broader in scope”

This important research highlights the opportunities that outdoor provision can offer in helping young people to access their entitlement to Learning for Sustainability. Taking a connected approach to outdoor provision in relation to Learning for Sustainability has the potential to impact on practice across all learning sectors.

In the summary volume, *Scottish Education* there are now chapters on Learning for Sustainability and outdoor learning (see Higgins and Christie, 2018; Higgins and Nicol, 2018) reflecting the now widely accepted mainstream position of these topics for practitioners and academics alike. In 2020, the *Educational outcomes of Learning for Sustainability: literature review* (Christie and Higgins 2020) provided us with valuable summaries of the evidence-informed outcomes of Learning for Sustainability provision. Learning for Sustainability pedagogies which include outdoor elements, are seen, for example, to contribute to learners’ overall development (knowing themselves and the world around them), their understanding of citizenship, their academic learning (through for example reducing stress, improving wellbeing), and their skills for life and work (for example critical thinking). Christie and Higgins (2020) suggest that while there is not currently any academic literature to suggest that Learning for Sustainability has a direct impact on the poverty related attainment gap, they indicate how Learning for Sustainability can raise “awareness of the relationship between a sustainable future and a more equal society” (Christie and Higgins, 2020, pg. vii). There is still scope for a discrete review of the outcomes of outdoor learning akin to this review.

In relation to outdoor learning provisions, a few research outputs are worthy of note. On the topic of staff development, Christie et al.’s (2019) article showed that Learning for Sustainability is misunderstood by many staff in schools in line with evidence from this study. Other research contributions from staff working in the Scottish Higher Education context include Barrable’s (2022) volume on nature-based learning via greenspace use. We note Dunkley and Smith (2019) research contribution on young people’s experiences of national parks visits and Dunkley’s (2022) paper on role of citizen science in education for sustainability. Gray’s (2022) paper highlights the contribution of garden-based learning to wellbeing and sustainability. Gray and Colucci-Gray (2019) attended to the role of outdoor experience in student teachers’ development whilst Mannion (2020) and Lynch and Mannion (2021) identify the features of a more place-responsive research and pedagogy needed for educators in outdoor learning. Scrutton’s many outputs included research that investigates the personal and social benefits of adventure education, residential adventure education, which more especially accrued to learners from deprived areas (Scrutton, 2015). With authorship from Scotland, the international PLaTO (Play Learn and Teach Outdoors) initiative gathered 22 researchers to provide an original ‘harmonised taxonomy’ of terms for outdoor learning and play. In early years, outdoor play and learning have gained attention in both research and in advice for practice (MacQuarrie et al, 2015, Robertson, 2014, 2017).

Reflecting on the position of outdoor provision in the school inspection context, Beames and Polack (2019) looked at Her Majesty's Chief Inspectors' reports (for 2011 – 2018) for mentions of outdoor learning across over 800 schools. They reported that only about one third of secondary school inspection reports mentioned outdoor learning in 'grounds, local green space or local community during school hours' while nearly ¾ of primary schools' reports had such a mention. These data support the view that there is a need to address how inspections are conducted on outdoor and Learning for Sustainability provision. Their evidence suggests substantial numbers of schools may not be providing much in these curricular areas in line with our findings herein.

There are various networks of practitioners, policy actors, school-linked providers, and researchers in outdoor learning in Scotland. These include the National Network for Outdoor Learning, the Scottish Government Outdoor Learning Group, and the Outdoor Learning Research Network. Through doctoral training and research, Scotland also has a valuable and enviable pipeline in the form of expertise amongst early career outdoor learning-focused researchers. Many outdoor learning-related doctorates have been completed or are in-train across HEIs with some in receipt of funding. These include, for example, Masters' (ongoing) study of the eco-social, health-related and population-wide outcomes of the work of environmental organisations (such as the John Muir Trust and Keep Scotland Beautiful), Mackie's current study on the role of natural heritage in supporting learning for sustainability (Magnus Magnusson scholarship funded), Ramjan's (ESRC-funded) study of ecological citizenship and the role of citizen science in schools (2023), Arts' (2022) study of the interactions of people, technology and nature, Fenwick's (2021) study of the intricate relationship of outdoor learning with the curriculum, Baker's (2015) study on policy development of outdoor learning in Scotland, and Mattu's (2016) study of primary school visits to farms. This growing body of research evidence provides a wide range of findings that can be drawn on to inform ongoing policy and practice in Scotland.

## Young People's Research

---

Young people's own research about outdoor provision and Learning for Sustainability are increasing in scope and criticality especially in relation to the climate and nature emergencies. *Teach The Future* – an amalgam of young people's environmental groups with support from the National Union of Students and active academic researchers – reviewed policy in Scotland. They seek fulfilment of the commitments to outdoor learning made in the Vision 2030+ action plan and call on the Scottish Government to ensure education in the outdoors is linked to 'connection to nature' and learning about the 'climate emergency and ecological crisis' (Teach the Future, 2020). In 2022, Scottish Government supported young people themselves in researching Learning for Sustainability via a Children's Parliament inquiry (Children's Parliament, 2022). 132 children aged 2-13 investigated provision and summarized young people's views about the Learning for Sustainability curriculum with a focus on outdoor learning. Adopting a rights-based approach, these young researchers also focus on response-making to climate change, reminding civic bodies that young people have a right to an education

that helps them develop respect for the natural environment and have a right to express a view about and help shape the curriculum they experience. Two of the Children's Parliament's 'Calls to Action' state:

1. All children should have the chance to learn outdoors throughout the school year.
  - Children should be able to regularly learn about climate change and sustainability outside in nature.
  - Being able to learn outdoors should not depend on where your school is based: every school in Scotland should have outdoor spaces to learn and play in.
  - All children should have the opportunity to go to an annual outdoors school camp.
2. Outdoor learning should be part of every school subject.

Teachers should plan outdoor learning into all their subjects at the start of each term.

(Children's Parliament, 2022, pg. 18)

## **Professional Learning for Schools and Practitioners**

---

In Initial Teacher Education (ITE), there are signs that outdoor learning is gaining recognition as part of pre-service provision. We note the appointments of ITE staff in some HEIs with considerable or complete attention being paid to outdoor learning in their role specification. Across ITEs, we see the use of outdoor spaces in, or near the campus of universities – such as greenspaces, woodlands, urban locations, zoological gardens, parks etc. – being used for teacher education experiences. On some campuses, discrete locations are developed or set aside for pre-service ITE outdoors that include greenspaces and bluespaces with specialist staff leading developments. Queen Margaret University exemplify this trend, having worked in partnership with Architecture and Design Scotland (A&DS) and NatureScot to develop dedicated outdoor learning spaces on campus, including the creation and use of a *Wee Forest* (a tennis court sized, densely planted native woodland, part of the 'Tiny Forest Global Family'). Approaches to outdoor woodland education forms part of teacher education in some contexts. We note that pre-service education will feed around 3,000 new staff into the school sectors annually out of a staff of some 50,000 Scotland-wide. Thus, changing the school staff capabilities at scale even in the medium term, will require substantial attention to *in-service* education and professional learning.

## **In-service Supports and Professional Learning**

---

A growing number of bodies support in-service professional learning in Scotland. These include social enterprise organisations, charities and private companies. NatureScot have directly supported over 100 schools in disadvantaged communities to access local greenspace through their 'Learning in Local Greenspace' project (NatureScot, 2022). Other organisations have received funding from NatureScot to enhance or enable outdoor provision, such as Royal Society for the Protection of Birds, Eòlas Outdoor learning,

Under the Trees, and Urban Roots. As one of the main providers, Learning through Landscapes (LtL) continue to provide considerable in-service provision both in-person and online for schools wanting to develop grounds and / or their local outdoor provision. The wide range of training opportunities ensures schools have many go-to organisations for high quality provision and whole-school development. Some, such as LtL, have a strong history of developing programmes based on research evidence. This has led to long term courses, and some are accredited by General Teaching Council for Scotland (GTCS), as well as shorter in-service days focused more tightly on specific areas of curriculum.

Many local authorities, with support from the Scottish Advisory Panel for Outdoor Education (SAPOE), have developed materials and programmes to support staff in provision. This has included online learning, and in-person training. We are aware of a number of authorities with training or support programmes (for example, Fife, East Ayrshire, Dundee, Dumfries and Galloway, Falkirk and Edinburgh). SAPOE's (revised in 2021) 'Going Out There' guide to safe practice for off-site visits continues to provide user-friendly framework for schools in terms of risk assessment and planning.

Many grassroots and independent providers offer support for in-service staff. This is especially noticeable in the early years sector and in woodland learning and forest school type training. There is a thriving 'Outdoor Woodland Learning' (OWL) network with groups across the country providing training and support especially in the area of Forest Kindergarten provision. Of note too is Juliet Robertson's world-renowned provision of support for outdoor learning for all sectors via *Creative Star* whose website is now in receipt of over 1 million visits; thousands of educators have benefited over the years from her workshops and training. The HEI sector offers a number of master's level programmes for in-service staff where outdoor learning can be an optional focus. Many opportunities exist for targeted professional learning for early years practitioners via private and statutory bodies. For example, in some Further Education colleges and in University of the Highlands and Islands (UHI) students may avail of an award in Forest Kindergarten.

## **Educational Self-Evaluation and Inspectors' Review,**

---

Through the Scottish 'self-evaluation' framework *How Good Is Our School*, establishments are pressed to internally and transparently demonstrate developments towards outdoor learning and Learning for Sustainability across the life of the school or establishment. In 2022, the inspectorate of schools and early years settings carried out a thematic review of 'Successful Approaches to Outdoor Learning' (HMIE, 2022). Using 35 case studies selected to exemplify effective practice, the HMIE review usefully identified features and approaches that were supportive. The document identified some key inputs and supports including leadership, professional learning and partnership working with practice often focusing on wellbeing. The report encourages outdoor curriculum-making through dialogue with learners and active engagement with pupil views. Further, HMIE suggested that the Covid pandemic had 'accelerated the breadth and depth of outdoor learning' (pg. 4). In our survey of randomly selected establishments, 58% of early year

and 61% of primaries also believed that provision had increased compared to pre-pandemic levels. However, our survey of provision indicates that for our randomly sampled primary schools, provision had very considerably decreased compared to 2014 levels.

## Summary

---

The policy environment has had mixed effects on outdoor provision over time, sometimes with the effect of decreasing its importance. All core educational policy initiatives, such as the Attainment Challenge, need to explicitly encourage outdoor provision enhancement. The growth of an outdoor learning research community in Scotland bodes well, but the ever-present challenge to link research and policy with practice remains. Young people's own research sets out a clear call for more regular outdoor provision that connects with nature and addresses the climate emergency. Evidence in our survey on school and early years pre-service and in-service education shows there is scope for a more comprehensive offer to support staff confidence and expertise. Whilst closer working arrangements between in-service professional learning providers have arisen through the Covid period (especially via online), the challenge of structures, routines and funding for a system-wide approach to teacher professional learning on outdoor provision and Learning for Sustainability remains. Post-Covid, the factors that hinder or support provision include, leadership at school and local authority level, access to usable outdoor spaces, timetabling constraints, and the prioritisation of health and wellbeing, amongst others. Contemporary policy and research suggests that further alignments between Learning for Sustainability and outdoor provision are possible and probable. For these links to be made in practice, at this time of climate crisis and nature emergency will require a range of measures and supports. The evidence from this survey on, *inter alia*, outdoor provision, levels of staff confidence, and staff competence provides some direction for the prioritisation of these measures and supports.

## Methodology

---

### Research design

---

The survey set out to provide an understanding of the changing nature of the scope and range of formal outdoor experiences arranged by schools and pre-school centres. 'One-off' surveys of teacher beliefs or judgement of levels of provision would clearly provide inadequate data sets that would not be reliable or comparable between schools or between subsequent survey waves. Instead, our cross-sectional survey approach, replicated in 2006, 2014 and 2022, on outdoor provision is internationally distinctive in that it requires schools and pre-school centres to provide weekly updated records for each individual outdoor learning event both on and off school or pre-school centre sites with a record of its location, duration, focus, curriculum area, amongst other aspects. The design of the research is based on the view that teachers themselves are well placed to self-report on formal outdoor provisions. With data now available for 2006, 2014, and

2022, we have opportunity to look at changes across a range of measures including, for example, cost, location, and curricular focus. For further information on other elements of the research design, see also Mannion et al. (2015).

For the purposes of the survey, we took outdoor learning provisions to mean formally delivered educational experiences that took place outside the school building, capturing activity in the school grounds, in local areas and further afield, and residentially whether delivered by teachers or other staff. It should be noted that in 2022, residential trips and trips away in buses were rare or non-existent due to Covid restrictions. In early years settings, outdoor provisions captured time spent in the outdoors of the nursery as well as organised trips into the nursery grounds or offsite. The survey approach seeks to capture all outdoor educational activity across all subjects and interdisciplinary themes inclusive of play time in early years but not breaktime or PE in schools.

## Survey instrument

---

The 2022 survey was developed through a sequence of pilots for validity, accuracy, user-friendliness and use in the digital platform. The survey went online for the first time in 2022 to make reporting easier including with the use of mobile devices. The instrument was piloted by research staff, individual teachers and selected settings ahead of time. For schools, the survey was time-limited, as in 2006 and 2014, and was conducted over an eight-week period in May and June ensuring comparability. In early years settings, as in 2014, we took a two-week window for data capture due to the nature of provision where there is often an easy flow of children indoors and outdoors over the period of the pre-school session.

Otherwise, in 2022, we re-used the same core elements of survey instruments used in 2006 and 2014 (see previous survey in 2014 for details [here](#)). This allowed us to make comparisons with past provision on the durations, types and locations of outdoor provisions, their associated purposes and foci, and how areas of deprivation were impacted. We also asked about the leadership of events, how costs were met, distance travelled from school, and the respondents' views on engagement and enhancement of learning. As in past surveys, we did not survey for Physical Education or for activity at break times at school level. Schools were asked not to record track and field games or sports except for adventure sports (such as mountain biking or skiing). We included beach and seaside environments as a new option in the approach to location. We separately surveyed for 'challenge' and enjoyment' where in the past these had been co-joined.

In 2022, we additionally asked respondents a number of new questions, asking them to self-report on the nature and extent of their professional learning and training in outdoor learning and Learning for Sustainability and about their confidence levels in this provision. We also asked about respondents' appraisal of whether provision had changed due to Covid.

## Data collection process

---

After gaining local authority agreement, schools and early years centres were approached and asked to voluntarily participate as in 2014. Head teachers and individually responding teachers and early years practitioners were provided with survey information and gave consent via the online documentation. We assured participating establishments of anonymity in reporting. Uptake was lower for survey participation in 2022 than in 2014. 18 participating local authorities consented for us to approach schools and early learning and childcare settings, of these, returns were provided by settings across 16 local authority areas. 19 pre-schools and 34 primary schools consented to take part in the outdoor provision survey and provided returns. Just over 100 early years practitioners and school staff provided returns on their experience of professional learning. For secondary schools and ASN settings, participation was too low to report. It is worth noting that the sampling approach required voluntary participation. This means that interested establishments taking part possibly offered more outdoor provision than a non-voluntary sample. Indeed, in the evaluation of our survey, see Annex 3, five out of seven establishments suggested that their outdoor provision was likely greater than other similar settings that they were aware of.

Detailed advice on ‘what to survey’ was given to schools at the outset. Schools were provided with supportive live online and recorded workshops and some in-person advice. Schools were reminded regularly about the submission of returns online and were given support in this. Returns were captured directly onto digital databases via the online survey tool. We evaluated the process again in 2022 asking respondents about how confident they felt they had been in reporting. Most (71%) suggesting they were somewhat or extremely confident that all or nearly all outdoor activities had been captured in the survey, and that most (86%) found the digital survey easy to use.

## Summary of Participants

---

Returns on the topic of professional learning were made from 108 teachers, from 58 schools and early years settings. See breakdown in table 1 below:

<b>Settings</b>	<b>Early Years</b>	<b>Primary</b>	<b>Secondary</b>	<b>ASN</b>
Practitioners (n)	24	62	3	19
Schools (n)	19	34	3	2

Table 1: Breakdown of number of participants and settings

Of those who responded, 18.5% were early career practitioners (probationer-5 years), 50% were mid-career (6-17 years), and 31.5% were late-career (18-38 years).

<b>Urban/Rural Classification</b>	<b>Primary - Number of Schools</b>	<b>Primary - Percentage (%)</b>	<b>Early Years - Number of Settings</b>	<b>Early Years - Percentage</b>
<b>Urban</b>	12	35	11	58
<b>Town</b>	5	15	2	10
<b>Rural</b>	17	50	6	32

Table 2: Number and percentage of settings by urban/rural classification

Participating establishments were located in urban and rural areas. Primary schools were located predominantly in rural (50%) and small town (15%) locations, while urban early years settings represented just over half (58%) of our sample. There were no settings found in large urban areas. A geographic spread was also evident, with participants from the central belt, southern and northern Scotland involved.

<b>Returns/Year</b>	<b>2006</b>	<b>2014</b>	<b>2022</b>
<b>Early Years Establishments (n)</b>	<b>13</b>	<b>13</b>	<b>19</b>
on-site	121	243	71
off-site	9	13	15
<b>Primary Schools (n)</b>	<b>8</b>	<b>26</b>	<b>25</b>
Non-residential	111	249	118
Residential	2	9	1
<b>Secondary Schools (n)</b>	<b>9</b>	<b>14</b>	<b>2</b>
Non-residential	102	142	44
Residential	14	36	0
<b>ASN Settings (n)</b>	<b>n/a</b>	<b>n/a</b>	<b>1</b>

Returns/Year	2006	2014	2022
Non-residential	n/a	n/a	17
Residential	n/a	n/a	2

Table 3: Number of outdoor learning events by sector and year, 2006, 2014 and 2022

For early years settings, the number of establishments contributing has increased since 2014. The number of on-site activities recorded has reduced (243 in 2014 to 71 in 2022) and the number of off-site activities recorded has increase marginally. This is likely to be due to the online recording approach taken in 2022. For primary schools, while the number of schools contributing remained similar, the number of both on-site and off-site activities recorded were markedly reduced. The number of secondary schools contributing was reduced to 2, and there was 1 ASN setting contributing. Due to the small number of returns from secondary and ASN settings, only early years and primary school findings will be reported upon hereafter.

Settings in all SIMD quintiles were represented in our sample. For primary schools, in 2022 there were fewer participating schools from the lowest quintiles with 7.69% in the lowest and 19.23% in SIMD 2 compared with 19.23% and 23.08% in 2014. The majority of primary schools were in SIMD 4 (46.15%).

## Findings

### Section 1: Outdoor Learning Provisions

#### Duration of outdoor provision: Early Years

Early years practitioners were asked to record the number of children and the duration outdoors in their settings over two (non-consecutive) weeks during May and June 2022.

OL Provision/Year	2006	2014	2022 <sup>2</sup>
Outdoor learning hours (on-site)	3246	3811	6520.5
Time at pre-school centres	14105	10647	16657
Outdoor learning hours (off-site)	n/a	261.25	408

<b>OL Provision/Year</b>	<b>2006</b>	<b>2014</b>	<b>2022<sup>2</sup></b>
<b>Percentage of day</b>	23%	36%	39%

Table 4: Early years child hours and % of day outdoors

The overall time outdoors has increased for early years children since 2014. 39% of the day was spent outdoors for children in 2022 versus 36% in 2014 and 23% in 2006.

### ***Duration of outdoor provision: Primary School***

Primary school participants were asked to record the number of children and the duration of time outdoors for an eight-week period during May and June 2022.

<b>(-)</b>	<b>2006</b>	<b>2014</b>	<b>2022</b>
<b>Outdoor learning hours</b>	3390	22366	3539
<b>Roll</b>	1343	5615	3559
<b>Average hours per pupil during 8-week period</b>	2.52	3.98	0.99
<b>Minutes/pupil/week (rounded)</b>	19	30	7
<b>Not including residential</b>	n/a	24	7

Table 5: Total outdoor learning child hours and minutes per pupil per week (primary schools non-residential and residential combined)

For primary schools, time spend outdoors was lower in 2022 than in both previous surveys. Our measure across all surveys for duration has been 'per pupil, per week'. This was 7 minutes in 2022 for primary schools down from 30 minutes in 2014. Certainly, some of this reduction will be due to reduced residential visits (rendered impossible due to Covid). However, the non-residential figure for 2014 was 24 minutes. Hence, even after stripping out the time for residential provision, this represents a notable two thirds reduction in outdoor duration for pupils in 2022 compared to 2014. We select other aspects of the analysis below to explain some of this further reduction.

### ***Practitioner confidence and outdoor provision***

Outdoor learning duration is associated with practitioner confidence in our analysis – we report on this link in Section 2 (below).

### ***Range of Duration Per Week and School Size***

---

School roll size is also associated with outdoor learning duration. We noticed, as in previous years that a small number of schools provided a lot of outdoor events and that these high providers were generally smaller schools.

The range of time spent outdoors varied considerably across the settings in this survey. The shortest amount of time was 0.15minutes per pupil per week, with the longest 132 minutes per pupil per week. This is similar to the range found in 2014 (0.83 minutes per pupil per week – 142 minutes per pupil per week).

School Size. The mean roll in 2014 was 216 (rounded) with a median of 201, in 2022 this was a mean of 142 (rounded) with a median of 98. This suggests that the school size in the 2022 sample is notably smaller than that of 2014 sample.

The following scatter graph (figure 1) allows us to show an association between the size of the school and outdoor duration ([average roll as per Scottish Government School Level Summary Statistics, 2021b](#)).

In this survey, pupils spent less than 10 minutes outdoors (per pupil, per week) in schools with an average school roll of 202. However, for those who spent more than 10 minutes per week outdoors, the average school roll was 32. All children who spent more than 10 minutes outdoors had a school roll of less than 100. This indicates that, similar to the findings in 2014, smaller schools tend to provide more outdoor learning events.

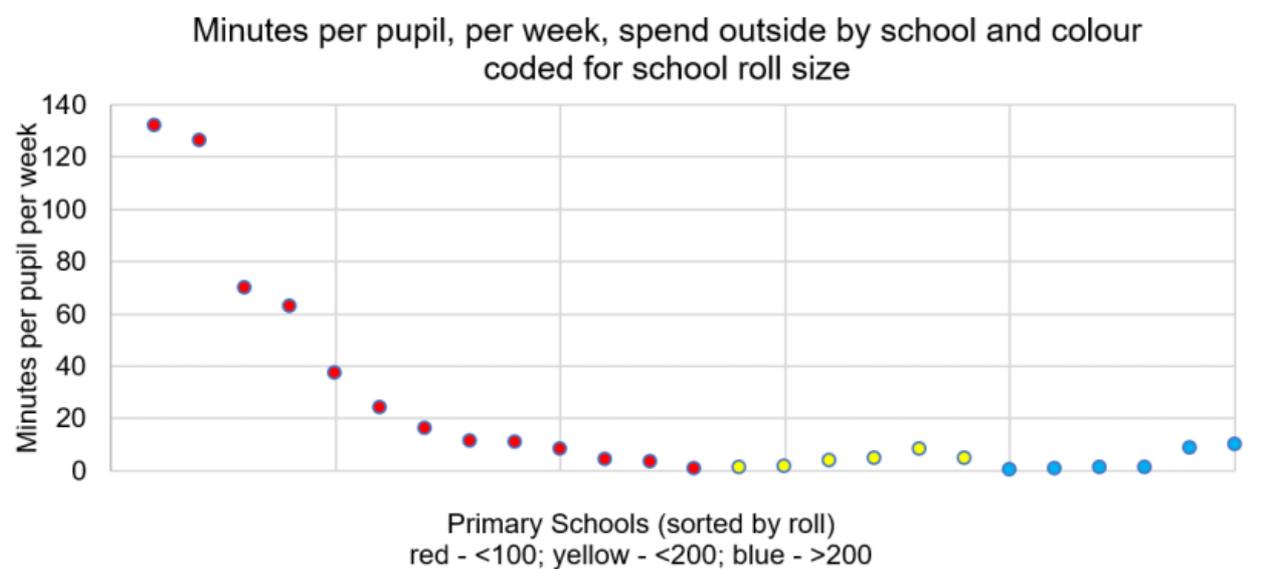


Figure 1: Minutes per pupil per week spent outdoors in each school, sorted by school roll  
[Click for a full description](#)

### ***Areas of Deprivation and Outdoor Learning***

Findings in surveys in 2014 and in 2022 show schools located in more deprived areas offer less outdoor provision. In our analysis here, we take event / trip / lesson duration as a quasi-measure of this phenomenon. We can see that the longest outdoor event duration is found in the highest SIMD quintile. [Quintile 1 represents schools located in the most deprived 20% of catchment areas and quintile 5 being in the least deprived.]

<b>SIMD Quintile</b>	<b>2014</b>	<b>2022</b>
<b>1</b>	1.8	0.7
<b>2</b>	0.8	1.7
<b>3</b>	1.8	1.7
<b>4</b>	1.1	1.2
<b>5</b>	2.7	1.8

Table 6: Total outdoor learning child hours and minutes per pupil per week (primary schools non-residential and residential combined)

### ***Location of Outdoor Learning: Early years***

Early years providers were asked to identify the location of all outdoor provision that the children were engaged in during the survey period.

<b>Location</b>	<b>2006</b>	<b>2014</b>	<b>2022</b>
<b>Within setting grounds</b>	90.80%	94.80%	85.06%
<b>Farm/Farmland</b>	0.60%	0.80%	1.15%
<b>Public park</b>	1.60%	1.80%	0%
<b>Urban/civic area</b>	4.50%	0.80%	1.15%
<b>Woods/forests/wildlife area</b>	2.50%	2.40%	12.64%

Table 7: Location of Early years outdoor activity

Overall, we recall that early years outdoor learning duration has risen. In this sector, provision within the grounds remains the dominant location. Notable in 2022 is an over 5-fold increase in the proportion of outdoor learning taking place in woodland areas. This aligns with our perceived sense of sustained interest and training in the delivery of outdoor learning in woodland type environments by staff in this sector.

## Location of Outdoor Learning: Primary

As in 2014, we surveyed for location of outdoor events. While the overall duration for primary schools per pupil per week has decreased, the table 8 (below) shows that the proportion of the total time for primary within school grounds has remained around the same level as 2014. Only one residential trip was logged, showing severe decline in residential provision, presumably due to Covid which resulted in the residential centres closing.

Location	2006	2014	2022
Within School Grounds	25%	39%	38%
Beyond School Grounds	60%	36%	55%
Residential	15%	25%	7%

Table 8: Percentage of duration for outdoor locations (Primary)

Only one residential trip was recorded in 2022, as such only non-residential figures will be reported hereunder. The single residential trip recorded was from a SIMD 2 (quintile) area, and reported 4 days of activities for 12 pupils, including hiking, mountain biking, high-ropes course and water sports. This resulted in 234 pupil-hours of activity and was from a small school (less than 100 pupils on the school roll).

The overall duration of outdoor provision is down. The increase in the proportion of lessons / events / visits 'beyond the school grounds' compared to 2014 suggests that, in the absence of residential provision, schools appear to have sought to provide outdoor learning events more locally.

Primary school teacher respondents were additionally asked to identify the type of setting utilised. The table below show the proportion of time and the average duration of time spent at each location type. Table 9 shows how proportions of total 'child hours' differed across the two survey years.

Location Type	2014 child-hours	%	2022 child-hours	%
Beach/coastal	n/a	n/a	93	3%
Farmland	228	1%	91	3%

<b>Location Type</b>	<b>2014 child-hours</b>	<b>%</b>	<b>2022 child-hours</b>	<b>%</b>
Public park/garden/green space	2461	15%	402	12%
School grounds	8783	52%	1353	41%
Urban area	2257	13%	48	1%
Wildlife area/Nature reserve/National park	1910	11%	44	1%
Woodland	955	6%	594	18%
Other	194	1%	680	21%
total (rounded)	16787	100%	3305	100%

Table 9: Percentage of overall time spent at different non-residential location types (Primary)

Table 9 (above) shows that for many locations the durations of time spent in various locations went down from 2014, including farms and national parks and nature reserves. It was also reduced for 'School Grounds' activities, though this remained the top location for activities with 41% of events occurring there. The proportion of activities taking place in 'Woodland' areas has increased from 6% in 2014 to 18% in 2022 but time spent there is much reduced. 'Other' activities such as urban visitor attractions were also visited proportionally more often in 2022 (21% in 2022 vs 1% in 2014). These mainly urban locations may have been sought out as a replacement for residential visits in 2022. This analysis provides another window on how time outdoors was both re-shaped and lost in 2022 compared to 2014.

<b>Location Type</b>	<b>2014 minutes per pupil (rounded)</b>	<b>2022 minutes per pupil (rounded)</b>
<b>Beach/coastal location</b>	n/a	2
<b>Farmland</b>	3	2
<b>Public park/garden/greenspace</b>	29	7

<b>Location Type</b>	<b>2014 minutes per pupil (rounded)</b>	<b>2022 minutes per pupil (rounded)</b>
<b>School Grounds</b>	102	23
<b>Urban area</b>	26	1
<b>Wildlife Area/Nature Reserve/National Park</b>	22	1
<b>Woodland</b>	11	10
<b>Other</b>	2	11
<b>Total roll</b>	<b>5154</b>	<b>3559</b>

Table 10: Minutes per Primary pupil spent at each location (during the survey period)

Table 10 shows the minutes outdoors per pupil for all of the survey period (May and June) and compares 2014 with 2022. The data show how overall, the minutes spent outside per pupil has decreased in most settings, except 'other'. Time outdoors in woodland areas are relatively similar, despite the proportion of events spent in these areas increasing. We can surmise that it was local woodland which provided opportunity for sustained visitation here whereas further flung wildlife areas and national parkland became less accessible during Covid since transport would not allow adequate social distancing. School grounds, parks/gardens/greenspace locations exhibit similar average reductions in 2022.

Table 11 shows the duration of events, lessons or trips. Data show that for many locations the durations of events were stable for core categories (such as school grounds) but was reduced for locations beyond the local (such as farms and national parks / nature reserves). This analysis provides another window on how time outdoors was lost in 2022 compared to 2014; outdoor learning time beyond the grounds and beyond the local area was not only less common it was shorter in duration (for example via visits to farms and to national parks).

<b>Location Type</b>	<b>2014</b>	<b>2022</b>
<b>Beach/coastal location</b>	n/a	1.3(78)
<b>Farmland</b>	3.8 (228)	2.6 (156)

Location Type	2014	2022
Public park/garden/greenspace	1.8 (108)	1.7 (102)
School Grounds	1.0 (60)	0.9 (54)
Urban area	2.2 (132)	2.1 (126)
Wildlife Area/Nature Reserve/National Park	4.0 (240)	2.9 (174)
Woodland	3.0 (180)	2.3 (138)
Other	n/a	3.6 (216)

Table 11: Average duration in hours (mins) of non-residential outdoor learning events by location type (Primary: 2014 and 2022)

[Note 1: We recorded ‘beach/coastal’ visits for the first time in 2022 as a new category.]

[Note 2: ‘Other’ locations included a sculpture garden, mixed locations (residential/semi-urban) and visitor ‘pay on entry’ attractions such as the Falkirk Wheel.]

Table 11 helps us understand something about how long outdoor lessons / visits lasted. Data analysis shows that school grounds events are, perhaps expectedly, shorter when compared to all other location types. Our analysis here is that compared to 2014 provision is down considerably, but two further changes are worth noting: firstly, the portfolio of outdoor locations visited in 2022 changed (with wildlife areas and national parks receiving less visits for example). Secondly, there are both fewer trips overall and these are, on average, shorter in duration in 2022.

### ***Distance from school***

Primary participants were asked to tell us how far from the school they travelled for the outdoor activities that they recorded.

Distance	Events	%
On site	66	56%
up to 1km	36	31%
1-5km	6	5%

<b>Distance</b>	<b>Events</b>	<b>%</b>
<b>6-10 km</b>	3	3%
<b>10 km+</b>	7	6%
<b>Total</b>	118	100%

Table 12: Non-residential events, distance from school

Table 12 (above) shows relative use of locations at various distances from school. Here, all non-residential events are considered.

In 2022, for 25 schools, we recorded 66 on site events. The figure for 2014 on site was 182 events for a similar 26 schools. We notice the sustained emphasis on grounds use and near-local areas (less than 6km) in primary schools with less than 10% going 6km or more in 2022. The majority of all non-residential, primary outdoor provision takes place in the school grounds or very close to the school. Compared to 2014, location spread is similar. 92% of events were on site or up to 5km away in 2014 and in 2022 combined.

### ***Costs of Provision Outdoors***

Participants were also asked to tell us how the costs of outdoor provision were met. Table 13 shows the breakdown of activity costs and how these were met.

<b>Cost</b>	<b>Events</b>	<b>%</b>
<b>no cost</b>	97	80%
<b>parent council</b>	6	5%
<b>school funds</b>	11	9%
<b>grant funding</b>	0	0%
<b>Pupils</b>	5	4%
<b>Other</b>	3	2%
<b>Total</b>	122	100%

Table 13: Non-residential events, costs (Primary)

**Note: more than one option could be picked which leads to total discrepancy - true total 118 events**

As in 2014, the vast majority of outdoor activities were delivered at no cost, and those that did have a cost were covered by either the parent council or school funds, only a small proportion were directly paid for by parents or pupils. Further analysis showed that the activities paid for by parents/pupils or pupil council/school funds were mostly those activities that took place beyond the school grounds, such as visits to a sculpture garden or the Falkirk Wheel.

**Focus of outdoor provision: Early years**

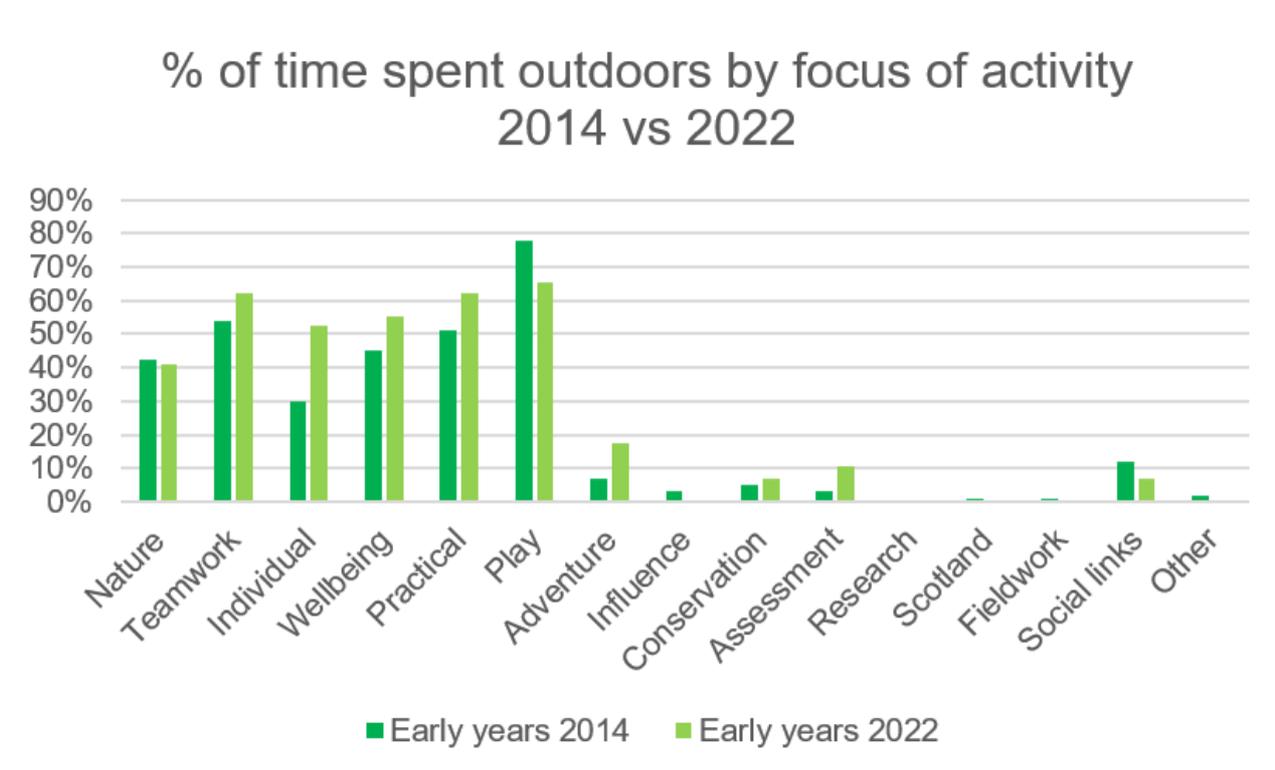


Figure 2: Percentage of time spent outdoors by focus of activity for early years settings (2014 vs 2022)

[Click for a full description](#)

The substantial increase in the time spent focused on ‘individual’ growth and development is apparent in early years provision. This likely reflects sustained and perhaps increasing support for child-centred, child-led, self-directed or forms of free-choice outdoor learning in this sector. Whilst the profile of outdoor foci is mostly similar to that of 2014, proportionally less time was spent focusing on ‘play’ and ‘nature’ in 2022 (though overall time outdoors went up). Increases are found in activities focused on ‘wellbeing’, ‘adventure’, ‘teamwork’, ‘practical activities’, and also ‘assessment’.

## Curriculum focus of early years events 2014 vs 2022

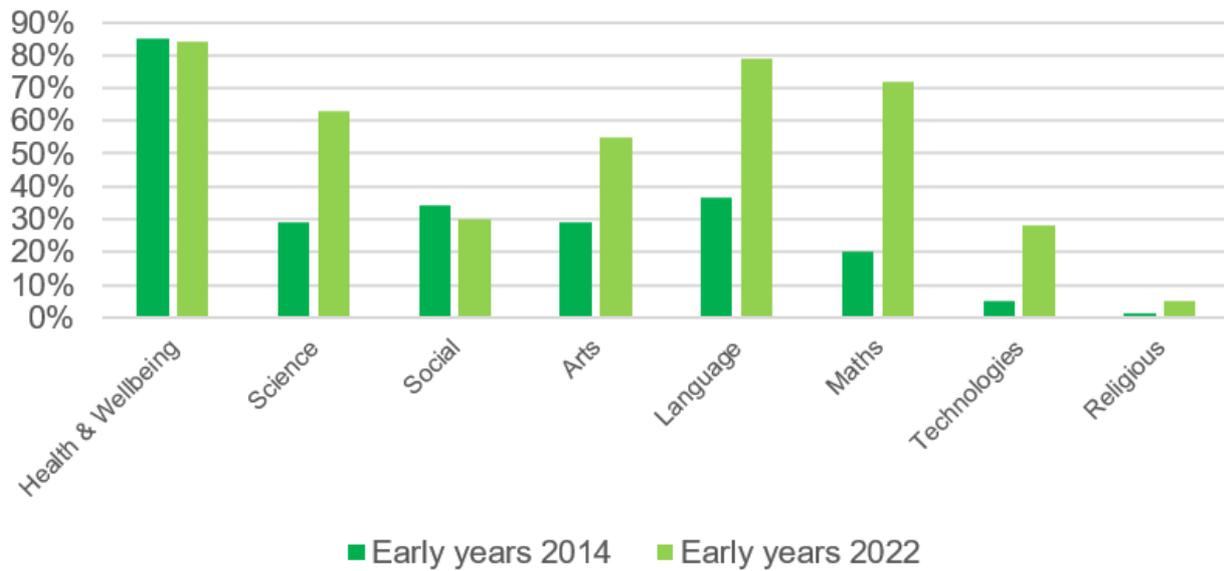


Figure 3: Curriculum focus of early years events (2014 vs 2022)

[Click for a full description](#)

For curricular foci, we see in 2022 practitioners are utilising outdoor contexts for a wider variety of curriculum areas compared to 2014. 'Health and wellbeing' remains the most popular curricular category for outdoor play and learning. However, there are notable increases in selections of 'maths', 'language', 'arts' and 'science', suggesting a substantial broadening of curricular connections made in relation to outdoor provision. This is likely occurring at least at times through play and / or through self-directed learning (given the data in figure 2).

## Learning approach for Early Years events

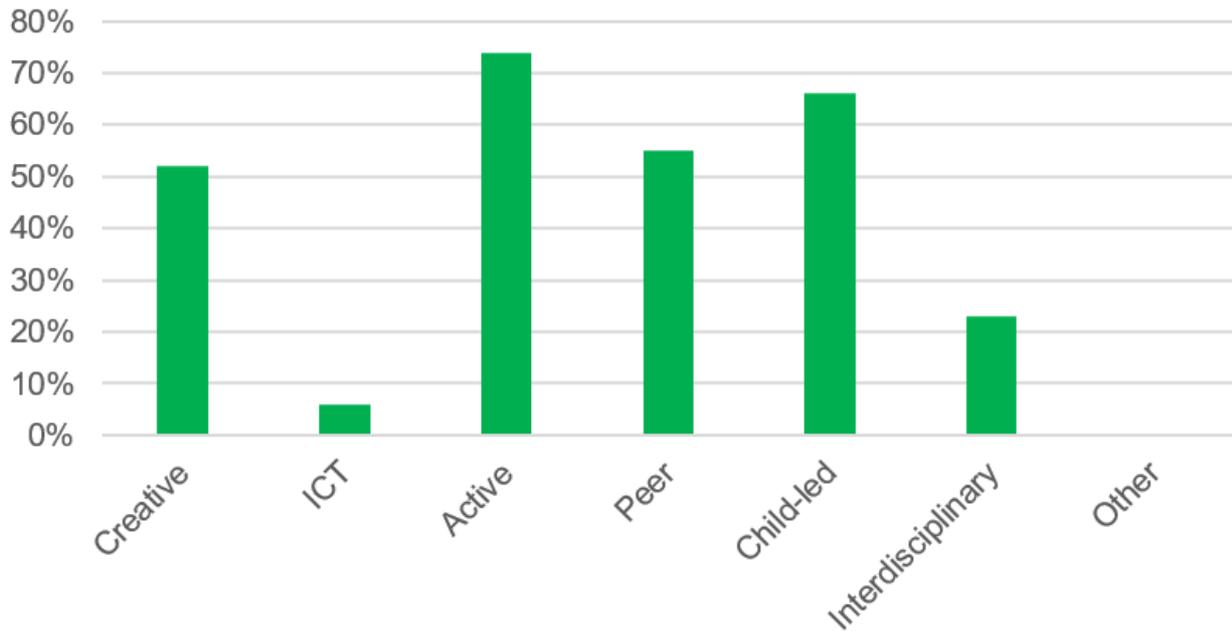


Figure 4: Learning approaches taken in early years events

[Click for a full description](#)

Active, creative, and child-led approaches are the most common, with ICT and interdisciplinary learning the least common approaches taken in early years outdoor events.

## Impact on learning: Early years

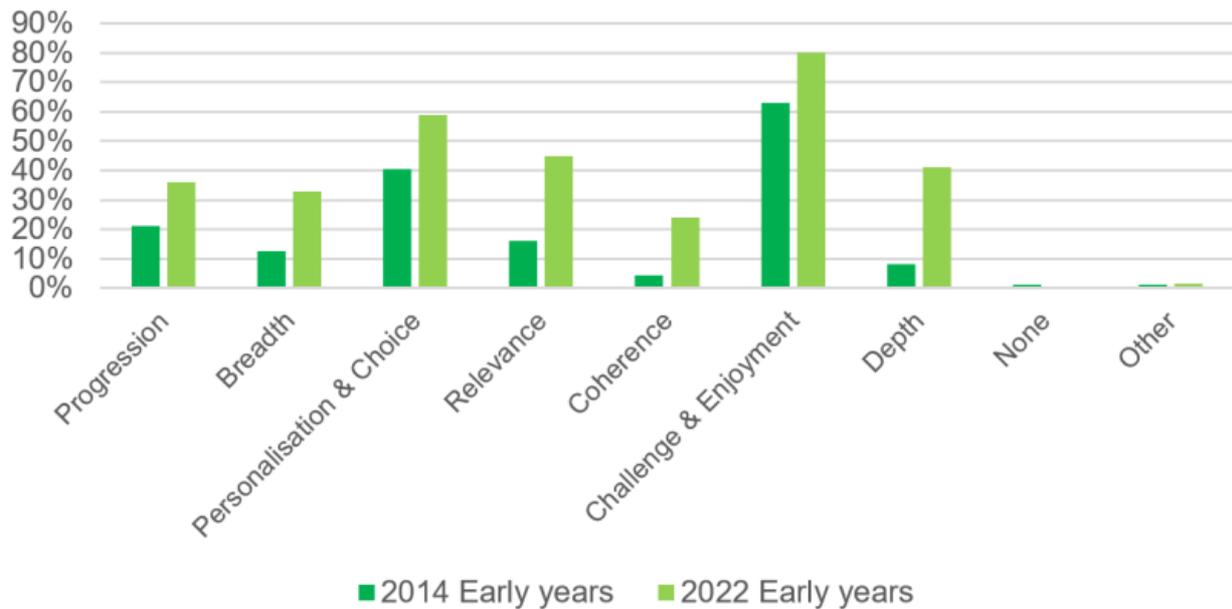


Figure 5: Perceived impact on learning: early years settings (2014 vs 2022)

[Click for a full description](#)

We asked about whether each of the principles of Curriculum for Excellence (figure 5) had been enhanced by going outdoors. ‘Enjoyment’, ‘challenge’, ‘relevance’ and ‘depth’ are the most commonly noted enhancements via outdoor learning, with ‘personalisation/choice’ and ‘coherence’ somewhat receiving fewer mentions.

**Focus of outdoor provision: Primary School**

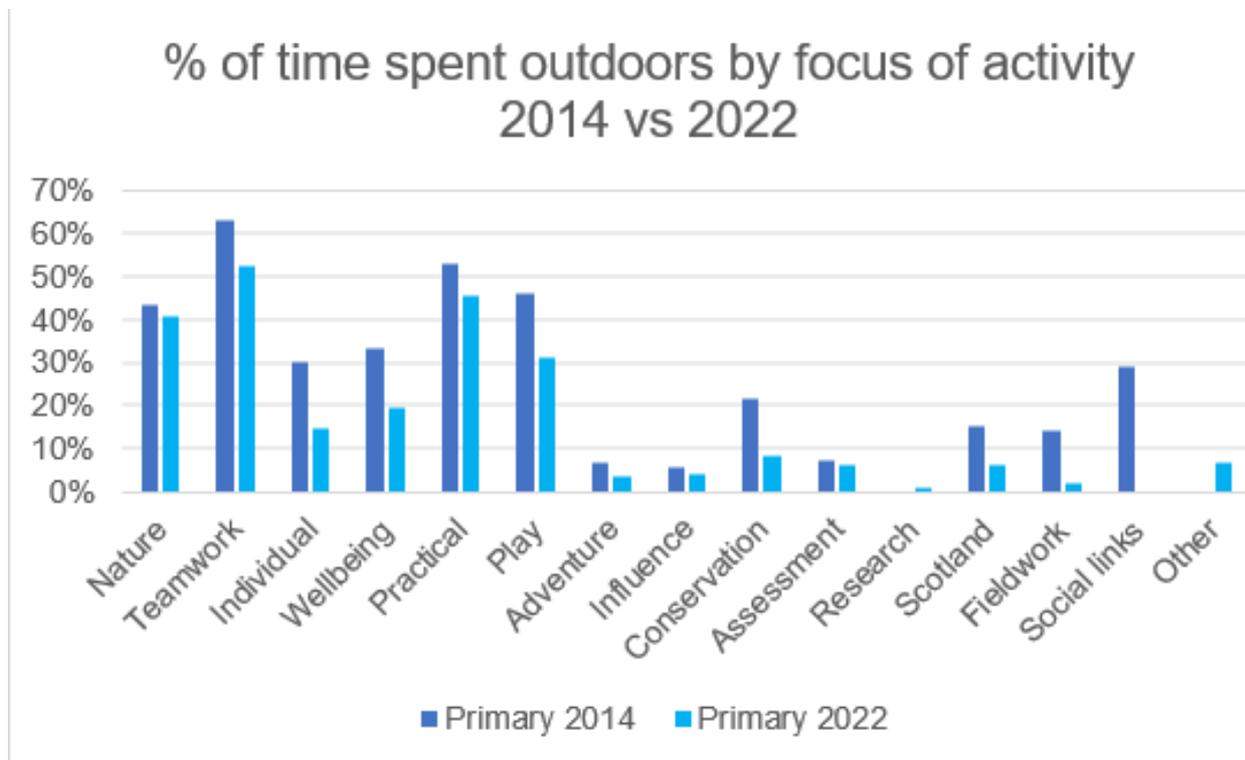


Figure 6: Percentage of time spent outdoors by focus of activity: primary settings (2014 vs 2022)

[Click for a full description](#)

For Primary school events, the most common focus categories were ‘teamwork’ and ‘practical activities’, ‘play’ and ‘nature’. Least important in these cases were research and fieldwork.

## Curriculum focus of outdoor events 2014 vs 2022

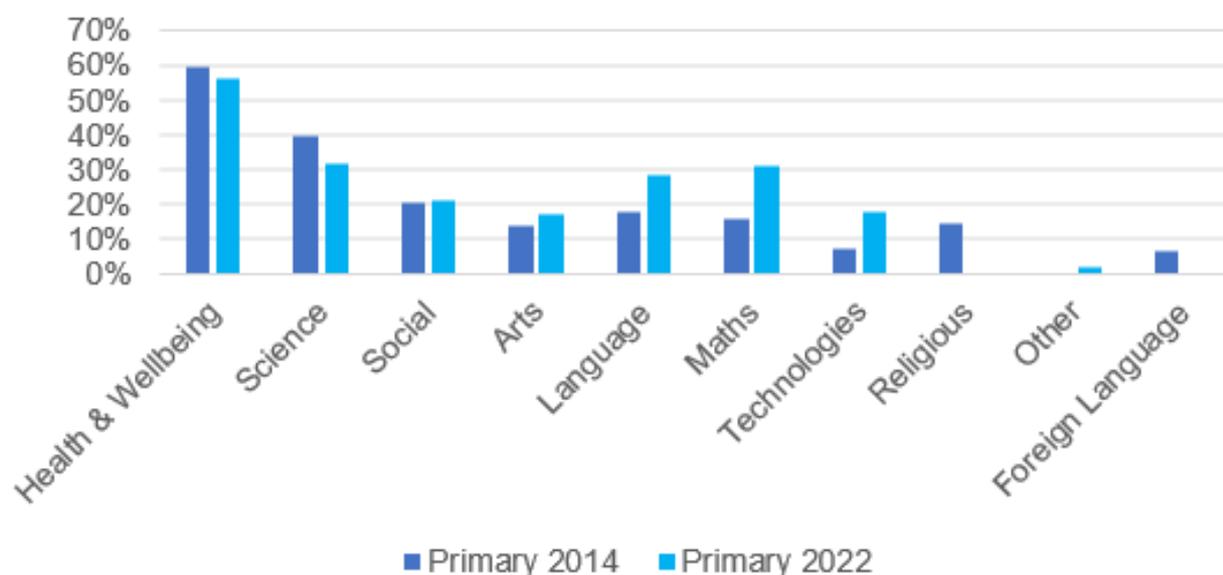


Figure 7: Curriculum focus of events: Primary settings (2014 vs 2022)  
[Click for a full description](#)

'Health and wellbeing' remain the most popular curricular focus for outdoor provision. There are notable increases in reflections on maths, language, technologies and a small reduction in the proportion of events on science. This also goes some way towards suggesting a broadening of curricular connections made in relation to outdoor learning, however, not as broadly as the early years reflections.

### **Themes across Learning: Primary School**

In primary schools, we asked respondents to identify whether the outdoor events connected to any of the CfE 'themes across learning'. In 2014, these were 'Enterprise in Education', 'Education for Citizenship', 'International Education' and 'Sustainable Development'. In 2022, the theme of 'Learning for Sustainability' replaced SD to reflect the changed policy context. In their responses, teachers identified Learning for Sustainability as linked to less than a third of events (28%). This is similar to 2014 figures for 'Sustainable Development'. However, 'Education for Citizenship' as a theme shows a considerable reduction in the number of mentions in 2022 compared to 2014, from 25% in 2014 to only 8% in 2022. Many of the outdoor events described did not connect to these pre-identified themes, with many respondents choosing 'none of these' or 'other' when commenting on the theme of learning for the event.

### **Outdoor Learning Impacts**

Primary staff were invited to connect their outdoor provision to CfE 'approaches to learning'. Whilst outdoor learning was seen as enhancing or affording 'active learning', the collaborative dimension noted in 2014 has seen a reduction in mentions. Interdisciplinary

approaches also saw a slight reduction. These changes in emphasis could be accounted for by new imperatives in the Covid period and the need to physically distance.

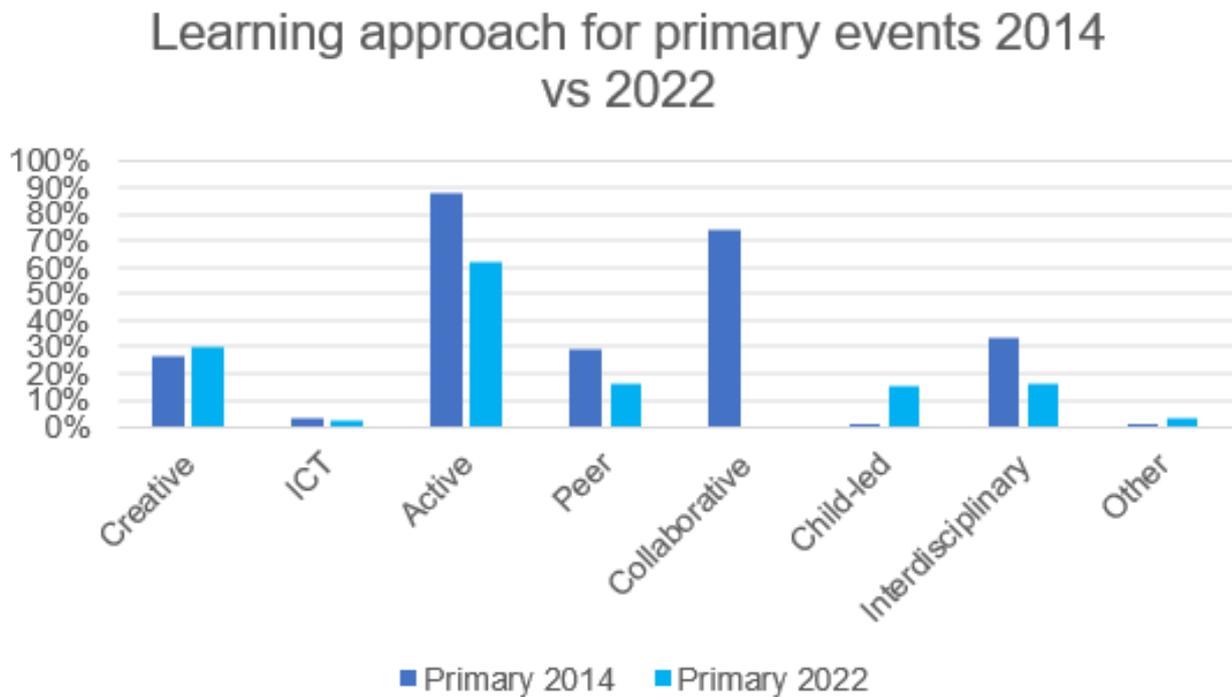


Figure 8: Learning approach taken in primary events (2014 vs 2022)

[Click for a full description](#)

However, going outdoors tends to result in lessons being perceived by staff as generally active, creative and interdisciplinary approaches to learning in 2022.

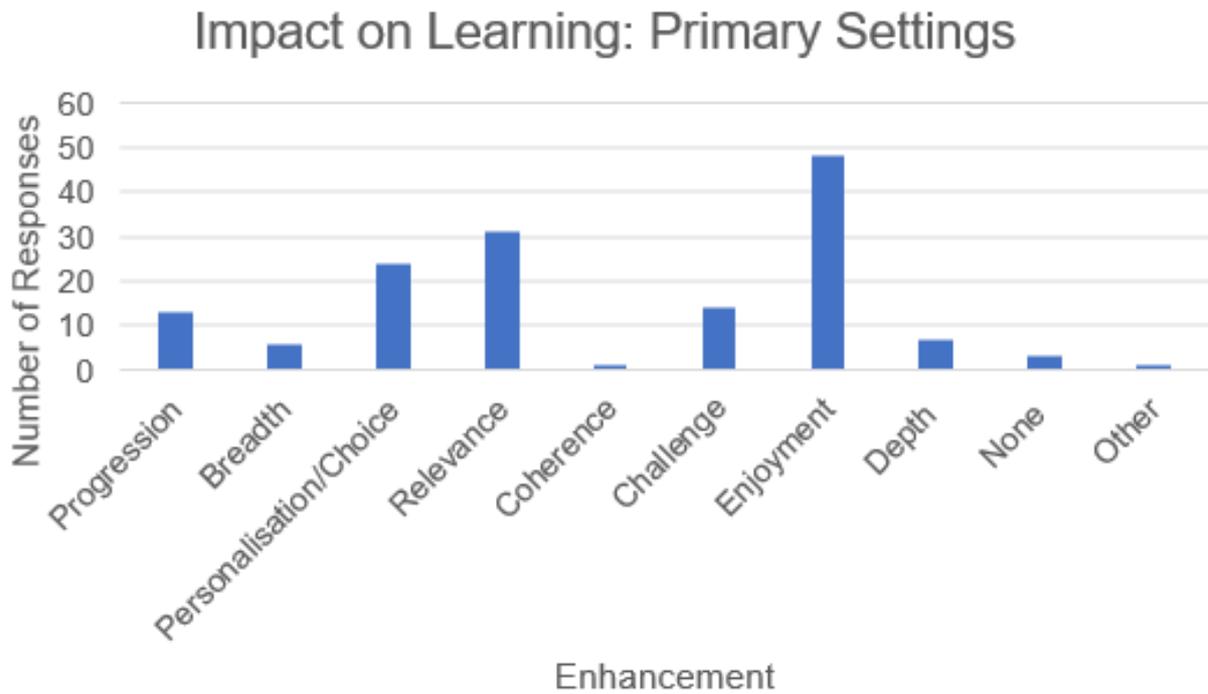


Figure 9: Perceived impact on learning: primary settings (2022)  
[Click for a full description](#)

Going outdoors appears, through the lens of teachers' views, to create an enhancement of features of learning, in particular making learning more enjoyable and relevant. Enjoyment, relevance and personalisation/choice are the three most commonly reported enhancements of learning, with coherence and breadth being the less commonly reported. In 2022, we separated 'challenge and enjoyment' into two separate records and asked participants to select the enhancement that resonated most with them. Doing so means that we can notice that learning outdoors is seen to more commonly enhance 'enjoyment' but was less commonly connected to experiences of 'challenge'. We also note that these enhancements can be understood to co-specify or coalesce. For example, the freedom to roam and choose activities outdoors could be connected to increased enjoyment, and the creation of relevance of tasks.

Proportion of events that enhanced challenge or enjoyment by location (Primary)

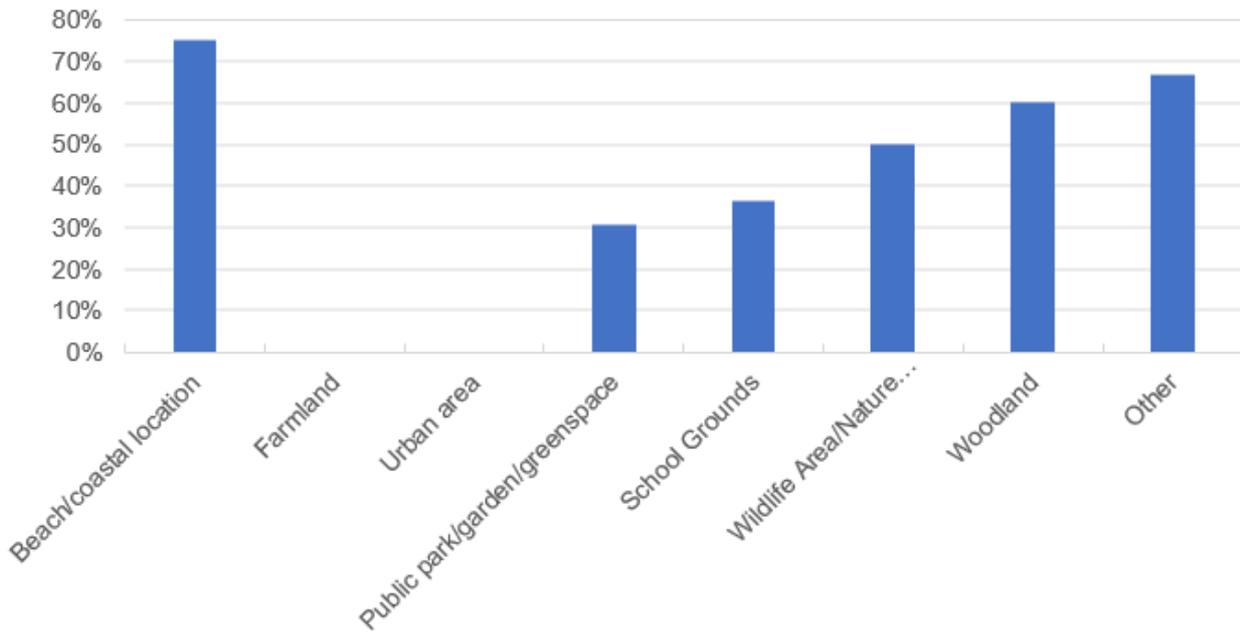


Figure 10: Location of events that enhanced challenge/enjoyment (Primary)  
 Click for a full description

The graph above (figure 10) suggests that many greenspaces were felt to enhance challenge or enjoyment for pupils. Over half of the outdoor events that took place in woodlands (9 out of 15 events) and bluespaces (3 out of 4 events) were felt to enhance challenge or enjoyment for pupils, while less than half of activities held in the school grounds (25 out of 69 events) were felt to offer the same enhancement. The data on engagement (below) relates.

*Early Years Settings*

**Perceived Engagement % logs**

<b>similar</b>	24%
<b>more engaged</b>	50.67%
<b>far more engaged</b>	25.33%

Table 14: Perceived engagement (early years on-site only)

*Primary Schools*

<b>Perceived Engagement</b>	<b>% logs</b>	<b>Average duration in hours (mins)</b>
similar	14.78%	1.5 (90)
more engaged	57.39%	1.6 (96)
far more engaged	27.83%	1.2 (72)

Table 15: Perceived engagement (primary)

Participants reported that events in outdoor settings enhanced engagement more than similar lessons indoors, in line with 2014 results. Learner engagement is reported as enhanced across all location types (tables 14 and 15). When engagement is considered across the locations of outdoor provision (table 16), it is clear that pupils are considered to be 'more' or 'far more' engaged across all outdoor locations.

<b>Location</b>	<b>(Number) and % that said 'more' or 'far more' engaged</b>	<b>Total number of events</b>
Beach/coastal location	(5) 100%	5
Farmland	(2) 100%	2
Other	(6) 100%	6
Urban area	(3) 100%	3
Wildlife Area/Nature Reserves/National Park	(2) 100%	2
Woodland	(14) 88%	16
School Grounds	(59) 84%	70
Public park/garden/greenspace	(10) 71%	14

Table 16: Engagement by location (Primary)

## Section 2: Practitioner Confidence and Professional Learning

## ***Professional confidence in outdoor learning and Learning for Sustainability***

---

Participants were asked how confident they were with taking learning outdoors and with delivery of Learning for Sustainability, as well as training they had received regarding these. Participants across both settings reported feeling confident in outdoor learning. Confidence was somewhat higher for early years practitioners, with 9 out of 10 participants here suggesting they have some confidence taking learning outdoors. Confidence in Learning for Sustainability was reported to be lower in both settings, in primary settings in particular, less than half of our participants reported that they were confident in Learning for Sustainability.

<b>Setting</b>	<b>Confident taking learning outdoors</b>	<b>Confident in Learning for Sustainability</b>
<b>Early years</b>	91.67%	70.83%
<b>Primary</b>	62.90%	40.32%

---

Table 17: Confidence level by setting type

It was found that the proportion of those who were confident with outdoor learning and Learning for Sustainability increased with training provision (figure 11). Respondents reported on the number of 'sessions' which was taken to mean a half day input or similar. When participants received 6-10 'sessions', a high majority were confident with both outdoor learning (89%) and Learning for Sustainability (68%). When participants had received 10+ 'professional learning' sessions, all reported feeling confident with taking learning outdoors, and delivering Learning for Sustainability (n=13).

## Percentage confident with outdoor learning/LfS by number of training sessions

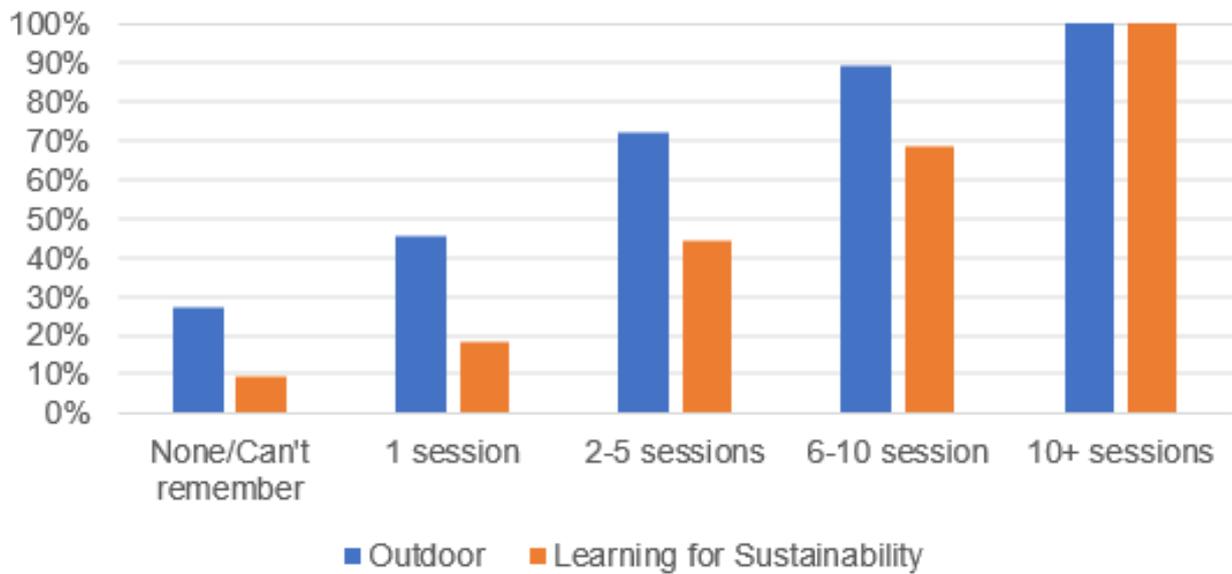


Figure 11: Percentage confident in taking learning outdoors/Learning for Sustainability by number of professional learning sessions completed

[Click for a full description](#)

Confidence also differed by career stage, with mid-career practitioners being the most confident across both settings, see figure 12 below.

## Confidence in Outdoor Learning/LfS by career stage

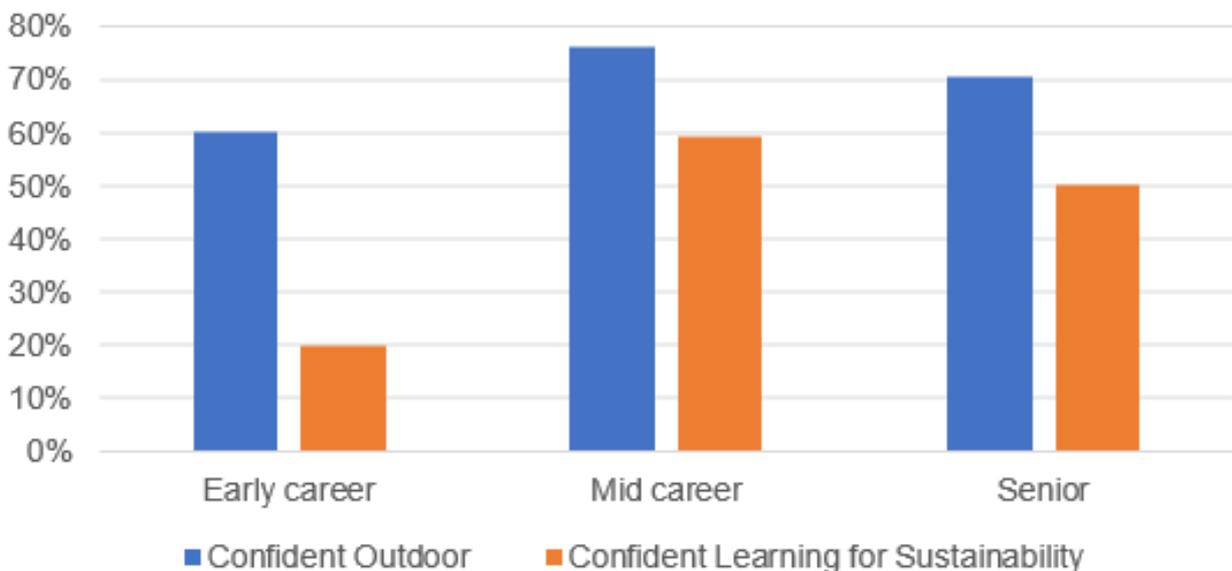


Figure 12: Percentage confident in outdoor learning/Learning for Sustainability by career stage

[Click for a full description](#)

These findings suggest that early career and senior stage practitioners could most benefit from increased professional learning provision relating to both outdoor learning and Learning for Sustainability. However, we can also suggest that all educators would benefit from robust progressive pre- and in-service education and professional learning involving 10 or more linked ‘sessions’.

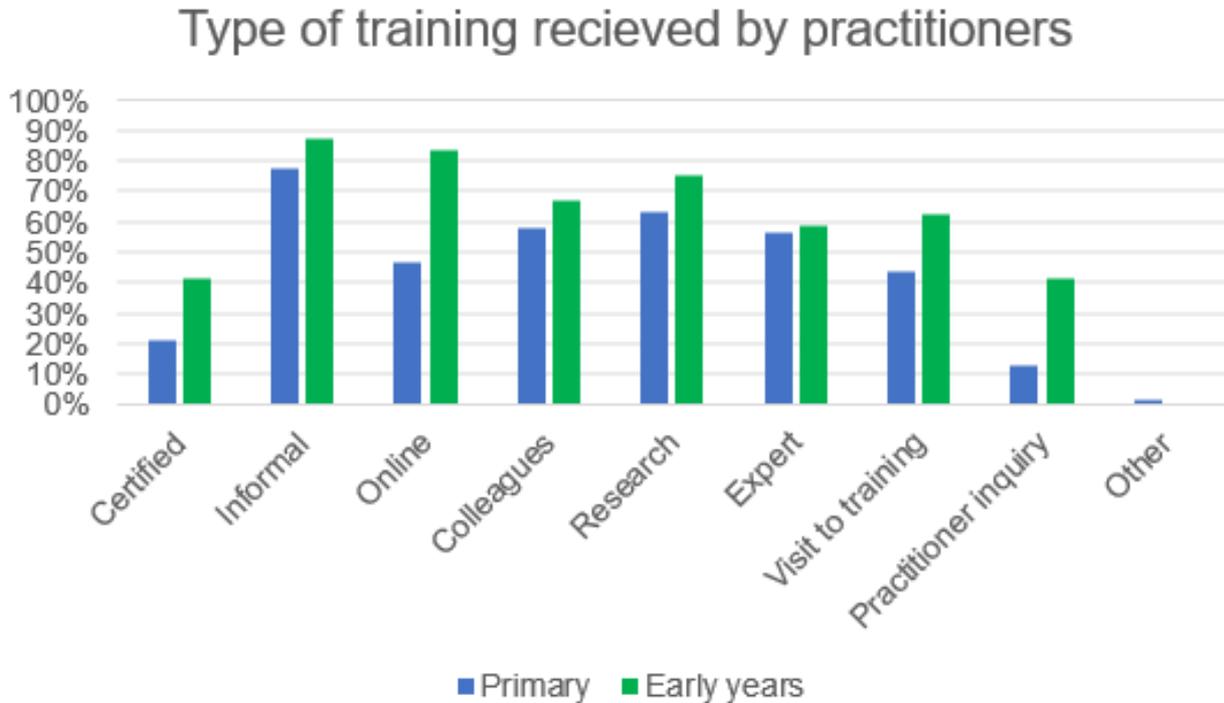


Figure 13: Type of professional learning received by practitioners  
[Click for a full description](#)

Informal professional learning opportunities, such as learning from or observing peers, alongside online provision was the most common professional learning received by participants. Practitioner enquiry and certificated/formal professional learning was least commonly received.

### ***Practitioner confidence and outdoor provision***

Duration outdoors for the establishment is associated with individual practitioner confidence in our analysis. The average pupil-hours (see Section 1) were higher in schools where staff stated they were confident compared to those who were not (198 rounded hours versus 50 rounded hours). Thus, higher confidence is associated with a considerable increase in provision. A similar association is found for Learning for Sustainability. Interestingly, individual practitioners who reported they were confident in delivering Learning for Sustainability reported higher average outdoor pupil-hours for their whole school than those who did not (222 rounded hours vs 78 rounded hours) suggesting individual practitioner confidence possible support mechanisms at work between whole-school contexts, individual practice, and levels of training.

## **Section 3: Perception of Provision Post-Covid**

### Perceived changes in provision

Participants were asked to comment on any perceived impact of the pandemic on outdoor provision in their settings.

Setting	reduced	same	increased
<b>Early Years</b>	3	7	14
%	12.50%	29.17%	58.33%
<b>Primary</b>	5	19	37
%	8.20%	31.15%	60.66%

Table 18: Perceived outdoor provision compared with pre-pandemic levels

Just over half of participants believed that their outdoor provision increased in comparison with pre-pandemic levels.

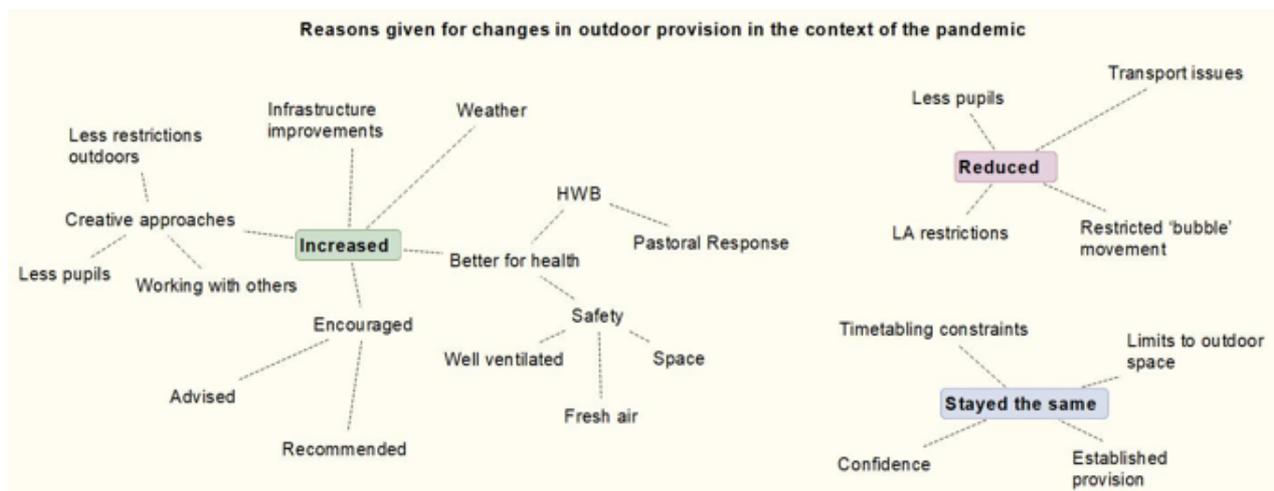


Figure 14: Diagram showing the main reasons given for changes in outdoor provision in the context of the pandemic

[Click for a full description](#)

### Reasons for perceived increased provision post-Covid

Respondents noted how outdoor spaces were seen as better for the health of pupils. These comments referred to the benefits of fresh air, space and adequate ventilation in limiting the spread of Covid. There were also references to pastoral care and health and wellbeing more broadly.

Staff often referred to how they had been encouraged to go outdoors more by other staff from school and at local authority level. This suggests that the nudge-like impetus to go outdoors had a supportive effect on provision. One participant suggested that while provision had increased early in the pandemic, it had fallen back to normal as a result of staff confidence levels.

Creative approaches to learning were associated with taking pupils outdoors, which enabled small groups and classes to work together in ways that were not possible indoors. Also, having fewer pupils in school during periods of the pandemic enabled outdoor provision to be easier. Good weather and improved infrastructure also increased provision according to reports here.

### ***Reasons given for reduced provision***

---

Various forms of restrictions were found to reduce provision. For example, limitations were placed on group size. Restrictions on pupil movement meant that outdoor provision became more challenging for some settings.

At times, pupils were obliged to spend time learning at home which of course reduced scheduled outdoor learning via school. Some schools provided outdoor learning tasks which were offered to pupils learning at home and these were found to be somewhat successful given the situation.

### ***Reasons given for provision staying the same***

---

For some, existing provision was felt to be of a high-quality and this did not change due to Covid. For others, the desire to increase outdoor learning was prevented or limited by inadequate infrastructure (e.g. physical spaces) or through timetabling.

## **Conclusion and Recommendations**

---

This third survey of outdoor provision in Scotland allows for some comparisons across the two sectors for which data were forthcoming: early years and primary schools and between surveys (in 2006, 2014, 2022). We can also reflect on the analysis of professional learning experience of the 100+ practitioner/teacher respondents.

### **Early Years**

---

In early years, the increase in duration is noticeable across the three survey dates (2006, 2014, 2022). Many factors are in play here. This increase can partly be understood as connected to practitioners' reported confidence levels and professional learning opportunities which were higher than in primary. In addition, early years experts report that outdoor woodland professional learning for early years practitioners has become quite commonplace. Relatedly, we note increased early years provision in woodland in our survey.

In tandem, we see that outdoor learning and play is now more culturally expected as a norm than in 2014 by most staff and parents. In the early years sector, there are now cultural expectations, policy imperatives around outdoor learning and play. There is also considerable sectoral growth, funding, and professional learning opportunities (pre- and in-service) all of which align to support practitioners in outdoor provision.

## **Primary Schools**

---

By comparison, in the school sector, teachers reported lower confidence levels and reported fewer professional learning opportunities for outdoor learning and Learning for Sustainability than early years staff. Overall, the survey shows a decline in school-based duration: there are reduced numbers of events, and a decline in individual outdoor event length in primary schools. SIMD effects persist in 2022 with lower socioeconomic area schools also providing less overall time outside for learning than in schools in less deprived areas.

In this survey, we captured evidence that the absence of residential provision only accounted for about half the reduction in duration of outdoor provision for primary schools. Schools reduced outdoor provision through visiting all location types less including day trips.

During Covid only some schools continued to provide on campus and local area outdoor events. These tended to be smaller schools which we know are commonly located more in sub-urban and rural areas. Hence, schools with larger rolls (which are often urban) and schools with more deprived area catchments will need additional support for staff development and a place-sensitive approach taking account of the range of factors identified.

Lower provision in 2022 cannot be entirely explained away by Covid's effect (which meant bus trips and residentials became impossible for most). However, the findings lead us to a possible conclusion that outdoor learning in primary schools has been in a slow decline over the eight-year period since 2014.

## **Professional Confidence and Professional Learning**

---

Evidence indicates there is a need for an expanded and robust approach to pre- and in-service professional learning for all sectors.

Pre-service teacher education is essential to the longer-term change of a system. However, teacher education programmes feed only a small number of new staff into the system annually. These early career staff are also less likely to be influential in shaping the education system due to their novice status. Hence, there need for greater in-service professional learning if system-wide change is sought.

The reported confidence of school staff, especially those in the early career stage, remains low. This is particularly evident for Learning for Sustainability. In teacher education in higher education, we are seeing outdoor learning and Learning for

Sustainability gaining attention in programmes; much of this work is innovative and bodes well. However, the early career finding suggests even newly trained staff require on-going support so that all in-service teachers are better prepared in these areas on entry to the profession.

Whilst there are some differences between career stages, the survey indicates that across primary and early years, there is a need for on-going, in-service professional learning in outdoor learning and Learning for Sustainability for all staff. Given our previous survey findings, we suggest this pattern of need would likely be replicated in secondary schools but further research is needed to identify the particular challenges with respect to subject areas, and career stages of secondary staff.

In-service professional learning opportunities will include informal provision and programmatic, formal approaches, including programmes at master's level. Evidence suggests that linking Learning for Sustainability to outdoor learning in teacher education and in professional learning is likely to bear rewards for teachers at any career stage. However, for system-wide enhanced outdoor provision meeting the needs of educators across all sectors, funded and high-quality professional learning needs to be offered and coordinated over time and across all providers (local authorities, government agencies, universities, private bodies, charities). In line with the OECD report (2021) and the Muir report (2022), there is a need for a more structured and strategic approach to outdoor curricular implementation. This research suggests that will involve addressing outdoor learning in professional learning, as well as in assessment, qualification and inspection.

## **Covid and Post-Covid**

---

In 2022, the education system was in a form of recovery and was impacted by sustained forms of regulation and restriction. As staff returned to near-normal teaching, some losses and gains were noticeable. Pupil wellbeing, staff health, and other Covid factors will have impinged on the recovery of routines including the routine of outdoor provision. Where leaders identified the outdoors as an important context for recovery, we saw provision improve or being sustained. Post-Covid, we can expect that teachers themselves will be as keen as ever to utilise the outdoors but the range of contributing factors identified here will mean that in given context, this is not always possible. This survey indicates a serious gap exists in professional confidence levels as a key factor. Understanding benefits, knowing the curricular justification for outdoor use, and being keen professionally will in many cases not be sufficient for educators to get across the threshold if other factors are not in support.

This survey draws attention to the need for greater expertise and confidence engendered through adequate training and professional learning. The experience of Covid also reflects the need for the presence of leadership which needs to be encouraging of provision. The role of culture and norms in a setting, such as timetables which can be restrictive, and the role of on-campus grounds provisions which can be inadequate are

also important in limiting outdoor provision. More widely, the policy context needs to be re-set to un-burden staff from bureaucratic pressures to enable them to attend to higher quality teaching and learning – of which outdoor learning is one element.

Post-Covid, over half participants held the predominant perception that provision outdoors has increased compared to pre-pandemic levels. Given the closure of schools, and the initial depletion of provision that occurred during Covid, this perception is possibly accurate for that time period for some settings, but this does not hold true on average when we compare to 2014 levels. In 2014, schools' grounds-based provision was 12 minutes per pupil per week, whilst provision overall was 7 minutes for primaries in 2022. There is every chance that provision was in slow decline since 2014 as schools were charged with addressing attainment and faced other pressures on time and funding over that period. Our view is also that 'beacon schools' providing a lot of outdoor learning can give a false sense that system-wide provision is on the increase. Our surveys in 2014 and in 2022 show that a small proportion of schools (mostly with rolls less than 100) continue to provide outdoor learning in an enhanced way. Lastly, a further concern is that any survey, by design may mean the non-responders are not interested in the topic or have nothing to report, we would be concerned that our reported average provision is in practice potentially lower across the system.

## **Locations of Outdoor Learning and Play**

---

As we have seen day-long trips, and residential excursions to contexts such as national parks and residential centres became difficult or impossible during Covid for schools. In the recovery period post-Covid, we expect these elements of provision to increase again. This will happen better with support but recovering these fractional elements will not be solely key to recovery of outdoor provision for primary schools. In 2014, when provision was some 4 times greater in duration (per pupil per week), we suggested provisions could be doubled to achieve a target of about 1 hour per pupil per week outdoors (not including PE). For the same goal of one hour a week outdoors to be achieved now will require an eight-fold increase in outdoor provision from 2022 levels involving schools in enhancing all kinds of provision. Provision can be increased across all location types and this will be key to recovery post-covid.

## **Woodland, Nearby Nature, Green and Blue Spaces Post-Covid**

---

In this survey, we saw an uplift both in absolute hours (early years) and proportionally (Primary) in use of woodland as a context for outdoor learning. Taken alongside the findings on engagement (tables 14 - 16) in such spaces, and the known wider benefits of greenspace for learning and wellbeing, we can say that continuing to harness greener natural spaces into outdoor provision will bring rewards for teachers and learners. In the on-going post-Covid recovery phase, schools may be encouraged to focus on literacy and numeracy as key target areas. Yet, evidence here, and from other studies, suggests schools can be more confident in the use of local, especially natural contexts for learning in both core and wider curricular areas. The data suggest that wooded places and other forms of 'nearby nature' (parks, lochs, allotments, nature reserves, greenspaces) have

the potential for greater use. Our survey shows greenspace use for outdoor learning meets the need to provide for a wide variety of subject areas and for Learning for Sustainability and that there is also improved engagement compared to indoor lessons. From other studies, we also know greenspaces impact on activity levels, mental health and overall wellbeing.

The renewed calls from the young for greater attention to the link between outdoor provision and the climate and nature emergency is suggestive of greater linking between Learning for Sustainability and outdoor learning policy and practice. The Scottish policy context for Learning for Sustainability is internationally recognised as progressive and fit for purpose. However, this research suggests that there is a need now to address policy enactment through a range of measures including professional learning in and for the outdoors and on Learning for Sustainability. In educational establishments, with the right supports, curriculum policy enactment can be achieved through a variety of on-campus, local provisions and off-site residential and non-residential experiences.

## **Future Surveys and Future Research**

---

We did not collect sufficient data for secondary schools and for ASN settings in 2022. Our earlier surveys indicated that secondary schools may face even more challenges compared to primary schools in outdoor provision. A further extension of this survey for secondary schools (perhaps at a different time of year) and ASN establishments (who have not had much attention to date) is recommended in order to complete the picture anew. This could be actioned perhaps in a new survey of the entire system in time or in a discrete survey for secondary schools.

Surveys of educational establishments involving practitioners are challenging to conduct due to an increasing administrative load and many forms of monitoring. Care must be taken in not over-burdening staff with research commitments. In addition, in a post-Covid world, schools are still 'in recovery' so increased care is needed. In this study, over half the Local Authorities of Scotland agreed for their primary and secondary schools to be approached but we can see that only small numbers of schools took part from primary despite this very wide sampling invitation strategy. Across the three surveys (2006, 2014, 2022) we have seen a decline in response rates. Some further support from local authorities via the Regional Improvement Collaboratives may be required in any replication of the research, in the inclusion of secondary schools, ASN establishments, and in the enrolment of greater numbers of respondent establishments to improve random sampling in future.

We know from this survey and from existing research that that outdoor learning will enhance engagement, time in nature, physical and mental health, as well as fun and enjoyment for pupils and teachers. Outdoor learning pedagogies can play a very important role in connecting young people with their local natural places and can provide a context for response making to environmental issues. Internationally, 'place' and nature now appear more commonly as key features of revised curricula: for example, 'place' is one of the 'big ideas' in the revised British Columbia curriculum, whilst in Wales

responding to the 'climate and nature emergencies' appears repeatedly across disciplines. Post-Covid, as the system faces into a period of revision and reform, enhanced outdoor educational provision can help all educational sectors in Scotland deliver this entitlement whilst also addressing wider policy agendas, such as the UNCRC (United Nations Convention for the Rights of the Child), STEM engagement, and the move to Net Zero.

## Recommendations

---

**Recommendation – Early Years:** Support for on-site and off-site provision of outdoor learning and play in early years needs to be sustained and expanded. This can in part be achieved through enhanced pre- and in-service professional learning in this sector. Greater support for off-site visits and use of local areas will further enrich provision.

**Recommendation – Primary Schools:** Support for outdoor provisions, within and across all subjects, in the school grounds, off-site, and residentially needs to be sustained and expanded especially for settings located in less advantaged areas. This can in part be achieved through enhanced pre- and in-service professional learning. Different kinds of support for school grounds provisions, off-site, local, day-long trips, and residential trips are all needed in the recovery of outdoor provision post-Covid.

**Recommendation – Professional Confidence and Professional Learning:** There is need for an expansion of in-service professional learning for outdoor educational provision and for Learning for Sustainability. There is a need for an expanded and robust approach to pre- and in-service professional learning for all sectors.

**Recommendation – Areas of Deprivation:** Schools with larger rolls and schools with more deprived area catchments will need additional support in the form of professional learning, and supports that take into account their unique challenges and local contexts.

**Recommendation – Outdoor Learning Locations:** All schools will benefit from a greater utilisation of all kinds of settings for outdoor learning and play. Increases in duration of outdoor learning will more securely be achieved through accessing all kinds of places. Of particular importance is the need for more regular use of off-site local areas, wooded places and other forms of 'nearby nature' (parks, lochs, allotments, nature reserves, greenspaces, bluespaces).

**Recommendation – Goals for Duration:** Evidence on duration suggests that an eight-fold increase in outdoor provision in schools is possible and desirable. Provision can be increased across all location types and this will be key to achieving this goal.

**Recommendation – Outdoor Learning and Learning for Sustainability:** Evidence from the survey and the contextualised review indicates that enhancing provision of outdoor learning and play has scope for deeper connectivity with Learning for Sustainability. The connections between outdoor learning and play with Learning for Sustainability in policy, practice, and in pre- and in-service professional learning need to be enhanced.

**Recommendation – Further Surveys and Research:** A further extension of this survey for secondary schools and ASN establishments is recommended in order to complete the picture provided.

**Recommendation – Research:** In research, a review of literature on outdoor learning and play would inform professional learning provision, the on-going changes in curricular reform, and support our understanding of its process and outcomes.

## References

---

Arts, I. (2022) *Interactions between people, technology and nature*. Unpublished PhD thesis, The James Hutton Institute.

Baker, M. (2016) *Policy Development of Outdoor Education in Scotland*. Unpublished PhD thesis, University of Edinburgh.

Barrable, A. (2022) *Independent Thinking on Nature-Based Learning: Improving learning and well-being by teaching with nature in mind*. Crown House Publishing Ltd.

Beames, S., Mackie, C and Scrutton, R. (2020) Alumni perspectives on a boarding school outdoor education programme. *Journal of Adventure Education and Outdoor Learning*, 20(2), pp. 123-137.

Beames, S. and Polack, N. (2019) *School inspection reports and the status of outdoor learning, residential experiences and adventurous activities in Scottish schools*, University of Edinburgh [online]

Care Inspectorate (2016) *My world outdoors* [online]

Children's Parliament (2022) *Children's Parliament Investigates Learning for Sustainability*. Edinburgh [online]

Christie, B. and Higgins, P. (2020) *The educational outcomes of learning for sustainability: A brief review of literature*. [online]

Christie, B., Higgins, P., King, B., Collacott, M., Kirk, K., and Smith, H. (2019) From Rhetoric to Reality: Examining the Policy Vision and the Professional Process of Enacting Learning for Sustainability in Scottish Schools. *Scottish Educational Review*, 51(1), pp. 44-56.

Christie, B., Higgins, P., and McLaughlin, P. (2014) 'Did you enjoy your holiday?' can residential outdoor learning benefit mainstream schooling? *Journal of Adventure Education and Outdoor Learning*, 14(1), pp. 1-23.

Dunkley, R. (2022) *Looking closely for environmental learning: citizen science and environmental sustainability education*. In: Hammond, L., Biddulph, M., Catling, S. and McKendrick, J. H. (eds.) *Children, Education and Geography: Rethinking Intersections*. Routledge: Abingdon, Oxon.; New York, NY, pp. 198-214.

Dunkley, R.A. and Smith, T.A. (2019) By-standing memories of curious observations: Children's storied landscapes of ecological encounter. *Cultural Geographies*, 26(1), pp. 89-107.

Education Scotland (2020) *Realising the Ambition: Being Me* [online]

Fenwick, A. (2021) *A practice focussed study of outdoor learning in five Scottish secondary Schools 2011 – 2019*, Unpublished PhD thesis, University of Strathclyde.

General Teaching Council for Scotland, (2021) *The Standard for Full Registration Mandatory Requirements for Registration with the General Teaching Council for Scotland*. [online]

Gray, D.S. (2022) The extinction of experience and (re-) cultivating wellbeing and sustainability through garden-based learning. *Education in the North*. 29(2), pp. 120-132.

Gray, D.S. and Colucci-Gray, L. (2019) Laying down a path in walking: student teachers' emerging ecological identities. *Environmental Education Research*, 25(3), pp. 341-364.

Higgins, P. and Nicol, R. (2018) Outdoor Learning. In T. Bryce, W. Humes, D. Gillies and A. Kennedy (Eds), *Scottish Education* (pp. 538-544). Edinburgh: Edinburgh University Press.

Higgins, P. and Christie, B. (2018) Learning for Sustainability. In T. Bryce, W. Humes, D. Gillies and A. Kennedy (Eds), *Scottish Education* (pp. 554-564). Edinburgh: Edinburgh University Press.

Inspiring Scotland (2020) *Scotland's National Outdoor Play and Learning Position Statement*. [online]

Learning and Teaching Scotland (2010) *Curriculum for excellence through outdoor learning*. [online]

Lee, Eun-Young; de Lannoy, Louise; Li, Lucy; de Barros, Maria Isabel Amando; Bentsen, Peter; Brussoni, Mariana; Fiskum, Tove Anita; Guerrero, Michelle; Hallås, Bjørg Oddrun; Ho, Susanna; Jordan, Catherine; Leather, Mark; Mannion, Greg; Moore, Sarah A; Sandseter, Ellen Beate Hansen; Spencer, Nancy L I; Waite, Susan; Wang, Po-Yu; Tremblay, Mark S. (2022) Play, Learn, and Teach Outdoors-Network (PLaTO-Net): terminology, taxonomy, and ontology. *International Journal of Behavioral Nutrition and Physical Activity*, 19(1), [online]

Lynch, J. and Mannion, G. (2021) Place-responsive Pedagogies in the Anthropocene: attuning with the more-than-human. *Environmental Education Research*, 27(6), pp. 864-878.

Mackie, C. (ongoing) *The role of natural heritage in supporting learning and development in Scotland*, Unpublished PhD thesis, University of Edinburgh.

MacQuarrie, S., Nugent, C. and Warden, C. (2015) Learning with nature and learning from others: Nature as setting and resource for early childhood education. *Journal of Adventure Education and Outdoor Learning*, 15(1), pp. 1-23.

Mann, J., Gray, T., Truong, S., Brymer, E., Passy, R., Ho, S., Sahlberg, P., Ward, K., Bentsen, P., Curry, C. and Cowper, R. (2022) Getting out of the classroom and into nature: a systematic review of nature-specific outdoor learning on school children's learning and development. *Frontiers in Public Health*, pp. 1270-1282.

Mannion, G. and McIver, L. and Wilson, M. (2015) Teaching, Learning and Play in the Outdoors: a survey of school and pre-school provision in Scotland.

Mannion, G. (2020) Re-Assembling Environmental and Sustainability Education: Orientations from New Materialism. *Environmental Education Research*, 26(9-10), pp. 1353-1372.

Mattu, L. (2016) *Farm visits: interdisciplinary outdoor learning for primary school pupils and Scotland's Curriculum for Excellence*, Unpublished PhD thesis, University of Glasgow.

Muir, K. (2022) *Putting Learners at the Centre: Towards a Future Vision for Scottish Education*. [online]

Munro, S. A. (2022) *Learning in Local Greenspace – an evaluation report*. NatureScot Research Report No. 1296. [online]

Organisation for Economic Cooperation and Development (OECD) (2021) *Scotland's Curriculum for Excellence: Into the Future* [online]

Ramjan, C. (2023) *Citizen Science in Schools: The development of eco-citizenship capabilities*, Unpublished PhD thesis, University of Stirling.

Scottish Executive (2004) *Curriculum for Excellence* [online]

Scottish Government (2012) *Learning for sustainability report*. [online]

Scottish Government (2016a) *Vision 2030+ Concluding report of the Learning for Sustainability National Implementation Group*. [online]

Scottish Government (2016b) *Race equality framework for Scotland 2016 to 2030* [online]

Scottish Government (2017) *Space to Grow: design guidance for early learning and childcare*, Edinburgh: Scottish Government.

Scottish Government (2021a) *Closing the poverty-related attainment gap: progress report 2016 to 2021* [online]

Scottish Government (2021b) *School level summary statistics* [online]

Scottish Government (2023a) *Learning for Sustainability: young people and practitioner perspectives* [online]

Scottish Government (2023b) *Achieving Excellence and Equity: National Improvement Framework and improvement plan 2023* [online]

Scrutton, R. A. (2015) Outdoor adventure education for children in Scotland: Quantifying the benefits. *Journal of Adventure Education and Outdoor Learning*, 15(2), pp. 123-137.

Teach the Future (2020) *Introducing Teach the Future Scotland – policy asks*. [Online]

**Note: annexes are available on request.**

- **Annex 1: Early years survey**
- **Annex 2: School survey**
- **Annex 3: Evaluation of survey**