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Falling into LINE: school strategies for overcoming challenges associated with learning in natural environments (LINE)

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Abstract

As the benefits of outdoor learning have become of increasing interest to the education sector, so the importance of understanding and overcoming challenges associated with this pedagogy has gained greater significance. The Natural Connections Demonstration Project recruited primary, secondary and special schools across south-west England with a view to stimulating and supporting 'learning in the natural environment' across the region. This research paper examines qualitative data obtained from case study visits to twelve of these schools. The results from teaching staff interviews and focus groups show that schools face many and varied challenges to embedding outdoor learning, and a raft of strategies are presented for tackling these challenges and integrating learning in the natural environment into much of the current curriculum.

Keywords

outdoor learning; learning in the natural environment; learning outside the classroom; barriers; Natural Connections; curriculum learning; school grounds

Introduction

"...the building blocks of children's development are enhanced by contact with nature - and after they reach 12 years old, it's almost too late." (Bird, 2015, p70)

Outdoor learning has become increasingly popular over recent years, both in practice and as a topic of research within the education literature, largely in response to increasing evidence of disengagement between children's lives and outdoor experiences (Charles and Louv, 2009; Natural England, 2013; White, 2004). A number of causes for such disengagement have been posited, many of which are associated with modernity, such as children now having less freedom to undertake everyday actions unaccompanied, parents' fears of injury and abduction, the addictive nature of technologies, and a greater reliance on cars for getting around even locally (Bilton, 2010) coupled with the pressures of performativity in schools (Waite 2010).

Correspondingly, the benefits of outdoor learning have become more recognised, thereby supporting a rationale for greater connection between children and the natural environment, and physical, social, personal and curricular benefits for children have been widely reported. Cognitive gains include deeper learning (Dillon and Dickie, 2012; Waite, 2011a), and academic achievement (Ofsted, 2008), whilst affective impacts encompass emotional and social wellbeing, greater confidence, renewed pride in community, stronger motivation toward learning, and a greater sense of belonging and responsibility (Waite, 2011a; Charles, 2012; Charles and Senauer, 2012; Gill, 2014; Maller, 2009). Waite (2011a) pointed out the importance of enjoyment of outdoor learning underpinning these outcomes. Physical or

behavioural benefits also arise through improved mobility, fitness, development of physical skills, and motivation to eat healthily (Bilton, 2010; Maller, 2009; Munoz, 2009).

Rickinson et al.'s (2004) comprehensive literature review on outdoor learning demonstrated a connection between many of these benefits and the use of school grounds and local green spaces. Their review also found that schools were developing the use of school grounds as an area in which to deliver most curriculum subjects. Social development, communication and leadership skills, and greater community involvement can also result from engagement in school grounds projects; for example, where children build positive relationships with each other, with teachers and the wider community (Scottish Government, 2012). More recently, Gilchrist et al. (forthcoming) confirm that outdoor school spaces can provide a wide range of opportunities to capitalize on the benefits previously discussed.

Understandably, most research studying the benefits of outdoor learning has centred on impacts on children. However, some studies also demonstrate that pedagogy mediates these effects and may be enhanced through co-constructed outdoor learning activities (Dillon and Dickie, 2012; Pratt, 2011; Rogers, Evans and Waite, forthcoming; Waite, 2011a; Waite, Rogers and Evans, 2013). Alongside the breadth of positive impacts evidenced for outdoor learning, a number of challenges to initiating and/or embedding such practices have been reported. These challenges are commonly situated within the context of adventure activity; for example, identifying links to educational objectives (Lugg, 2004), determining the most effective and potentially conflicting roles of outdoor educators (Thomas, 2010), and responding to risk, health and safety concerns (Ogilvie, 2012). Several studies have, however, considered challenges to outdoor learning practices within school and local green spaces (Dillon and Dickie, 2012; Dymont, 2005); the latter of these studies set within the context of Canadian schools involved in school-ground greening.

Challenges identified comprise *policy related* issues including the dominance of performance-based pedagogy in western cultures (Dillon et al., 2005; Kelly and Cutting, 2011; Waite, 2011a); *people related* challenges, such as lack of coherent vision and working, low staff confidence to take teaching outdoors, risk-adverse attitudes of staff to outdoor learning (Dillon et al., 2005; Williams-Sieghedson, 2007) and *place related* barriers, for example, obstacles to improving school grounds (McKendrick, 2005); insufficient or unsuitable local green spaces (Rickinson et al., 2012); together with *competition for resources*, including money for staff training (SAPOE, 2013), teacher beliefs and lack of preparation and planning time (Rickinson et al., 2004). We use these themes to structure our discussion of emergent issues from our research.

The Natural Connections Demonstration Project

Arising from the growing evidence base associated with the benefits of outdoor learning, an initiative in the UK has adopted a practical evaluative delivery approach to understand how schools could be supported and encouraged to increase curriculum-based progressive outdoor learning practices. The Natural Connections Demonstration Project (NCDP) is an outdoor learning project funded by the Department for the Environment, Food and Rural Affairs

(DEFRA), Natural England and Historic England, and delivered by Plymouth University, UK between 2012 and 2016. The project engaged over 125 schools across south-west England in developing 'learning in natural environments' (LINE) (Aronsson, Waite, and Tighe-Clark, 2015) through the stimulation of demand for outdoor learning, support for schools and teachers in building outdoor learning into planning and practices, and stimulation of the supply of outdoor learning services to schools and teachers.

Responding to evidence that barriers to outdoor learning were local and specific, the project had an ecological growth model of local brokerage and peer support whereby participant schools developed their own ways of using their school grounds and local community spaces for outdoor learning so that their pupils gained various benefits from LINE. The project incorporated an evaluation which, using primarily quantitative research methods, produced early evidence on the use of different spaces for outdoor learning, increased investment in school grounds for outdoor learning, and the impact of outdoor, 'real life' experiences for school children. Evidence from the evaluation suggests that negative staff perceptions of outdoor learning generally diminish as teachers become more confident and adept at using the outdoors and as schools adapt and change the management of places (Gilchrist et al., forthcoming). The evaluation also included case study methodology involving visits to 24 schools over the duration of the project. This approach provided a cross-section of staff perspectives of the processes involved and the main benefits and challenges of LINE for their pupils, their school and themselves.

This paper focuses on qualitative data derived from 12 of these case study visits. It will briefly examine a number of benefits of LINE perceived by school staff, categorise the most common challenges to LINE, and reveal strategies used to overcome these challenges. Previous studies have presented useful strategies for teachers contemplating the use of outdoor learning, but many are aimed at off-site adventurous experiences such as canoe trips and residential (Gilbertson et al., 2006) or early years play-based learning (Waite et al., 2013). This paper focuses more on specific challenges that might discourage teachers from using school grounds and local green spaces to teach curriculum subjects.

Methods

Participants

Schools involved in the NCDP were invited to take part in the case-study element of the evaluation and the Head Teacher, staff designated as leading LINE within the school and a general teaching staff group were targeted for interview. However, the demands of school life meant that the combinations of roles and numbers of staff interviewed varied. The invited schools were recognised as developing a strong culture that incorporated outdoor learning throughout their policies and teaching practices. While volunteers, pupils and parents sometimes participated in the case studies, this paper concentrates on staff perceptions of outdoor learning in the schools. Each school set up a programme for the visit and the necessary consent forms were signed by all participants. The ethics protocol was approved by Plymouth University's Education Research Ethics Committee. Twenty-four case study visits

were completed in total. Of these, 19 were primary, two were secondary and three were special schools.

The qualitative study design used a combination of semi-structured interviews and focus groups. During the case study visits, a total of 119 members of staff were interviewed individually, or as part of a focus group. Staff were asked about their thoughts and experiences of the benefits of LINE to pupils, how they used LINE to support teaching and learning, and what challenges they faced in using LINE and attempting to embed it into school practices. Three experienced researchers conducted the interviews and focus groups following the same interview schedule for guidance and consistency. Interviews were digitally recorded and the main points were transcribed into a case-study report template providing detailed summaries at whole-school level.

Data analysis

A pilot analysis was completed by the lead author on four case study reports, and a coding framework validated with co-researchers prior to applying the framework to the remaining case studies. The researchers agreed, following Guest (2006), that saturation was achieved when no new major perspectives were evident after 12 case study reports were analysed. Using the constant comparison method (Neuman, 2003), this paper therefore presents the findings of twelve case study visits. The analysis incorporates data from interviews and focus groups with 68 members of staff (57% of all staff participating in the case studies). Of these, 33% were Heads/Deputy Heads, 45% were teachers, 20% were TA's and 2% were administrators. The gender ratio was 73% female and 27% male. Summary reports of these visits were thematically analysed, with primary and secondary analysis presenting five key themes relevant to overcoming challenges to LINE. These themes are now explored in detail.

Results and discussion

Motivation for LINE

Overall, staff in our study were very positive about the benefits afforded by LINE, and reported a range of positive impacts associated with this pedagogy. Examples highlighted by interviewees included positive changes in pupil behaviour when learning outdoors, higher attainment, strengthened teaching approaches across the curriculum, and greater pupil engagement through experiential learning and learning through more inquiry-based pedagogy. The latter observation refers to the view that teaching staff were able to use the less-defined, less confined, outdoor spaces and accessible resources in order to support learning of specific curriculum areas more creatively; a simple example being the use of natural items such as leaves for counting rather than numbers or images on paper. LINE was viewed as contributing toward the development of pupil skills and attributes, such as resilience, group work, self-confidence and problem-solving. There was also evidence that LINE impacted positively on pupil well-being and community engagement. These findings reflect those of a number of previous studies and accounts (Bentsen et al., 2010; Dillon et al., 2005; Dillon and Dickie, 2012; Norðdahl and Jóhannesson, 2014; Passy et al, 2010; Waite,

2011b). While we recognize that positive motivation may be highly instrumental in overcoming challenges to LINE (Waite, 2011a), we focus here on the challenges themselves and responses to them within the broad areas identified through the literature: policy, people, place and resources.

Policy-related challenges

Our findings support the evidence presented by Waite (2011a) that teachers find it difficult to prioritise outdoor learning within their teaching approaches while existing performance measures dominate policy and practice. A number of teachers (n=16)¹ viewed outdoor learning as *constrained* in the focus on ‘core’ areas of numeracy and literacy, rather than *contributing* to these priorities:

The reception staff see that once children move into Year 1/Key Stage (KS)1 and KS2 there are potential further constraints around the curriculum, with a focus on literacy and numeracy, and associated constraints on teacher timetables. So pushing how best to get children more involved with the outdoors, largely because the school has access to fantastic green spaces, becomes a positive challenge (Primary, Teacher).

Teachers are often so focused on numeracy and literacy that links with the natural environment might be lost (Primary, Teacher).

‘Teaching to the tests [within] centralized high-stakes testing regimes [that] continually evaluate the output of teaching by rendering it visible, calculable and comparable’ (Clarke, 2013, p.230) may not ease accommodation of outdoor teaching in the minds or practices of some teachers who are concerned that it might not draw out the tested curricular elements (Dyment, 2005). Where staff see LINE as additional to other priorities, the challenge may be how to fit an extra requirement into an already busy timetable; while others overcome that challenge by embedding LINE within key subjects to raise standards. This validates Waite’s (2011a: 67) prediction and subsequent observation (Waite et al., 2013) that conflict will be greater ‘after the early years foundation stage which is premised on a higher degree of choice for teacher and child in how the curriculum is enacted.’ Dyment (2005) found staff expressed similar views on sport, drama and music initiatives, each of which competed with one another as well as the core subjects. One successful response was to combine subjects; for example, Design Technology and Maths, so freeing up curricular time:

By having a creative approach to curriculum planning, you can create more time, not less. (Primary, Senior Leader)

In order for LINE to become embedded across school policies and processes, prioritisation alongside other subjects and pedagogies, and throughout the curriculum appeared essential. Once LINE becomes established as the norm, it becomes harder for it to be regarded as a

¹ Where categories within these themes are illustrated quantitatively, the numbers relate to the references made to these issues during the case study interviews, rather than to the number of interviewees, hence some figures are higher than the total number of people.

passing fad and displaced by new competing directives and externally driven initiatives, and therefore more likely to become a sustainable feature of school culture:

Staff are keen to ensure the effort and enthusiasm is not just a cyclical issue. There was great excitement about four years ago with forest skills, where much training and effort was put in, but then other priorities came along (Primary, Deputy Head).

Recognition by pro-LINE senior leaders of the vulnerabilities of such trends appears to be an important element in ensuring that LINE remains relevant. For example, one staff focus group reported few recent LINE-related training events, attributing this to a major focus on Maths, and stressed the need for senior leaders to continue to invest in subject-specific LINE-related continuous professional development (CPD). Interestingly, the majority of staff interviewed felt that the introduction of the new national curriculum in England, phased in between 2014 to 2016, afforded greater flexibility in the design of education programmes and encouraged creative use of pedagogies, including LINE, thereby potentially allaying some sustainability issues.

For senior leaders that are keen to ensure LINE retains priority alongside other pedagogies and subjects, the use of internal and external research data can help decide where to direct resources and instruction. For example, one head teacher used statistical data provided by NCDP to identify specific subjects where LINE needed to be developed. Where little use of outdoor learning in music was identified, the school brought in an experienced drummer to make the most of external acoustics and hold frequent outdoor sessions.

A number of staff interviewed explained how they felt pressure to demonstrate value of their chosen pedagogies by evidencing the work undertaken with children, something that Maynard, Waters and Clement (2011) also identified in their study of teachers undertaking Reggio-inspired projects, where teachers ‘emphasised their difficulties with documenting children’s learning and with ‘letting go’ – relinquishing control to the children – particularly given the perceived need to meet statutory curriculum requirements’ (p295). Recording LINE sessions that lacked a material output was particularly problematic; for example, teachers in one school in which pupils participated in a dead wood survey explained that there was no written element to the exercise. Challenges of assessment in outdoor contexts have previously been discussed in detail in this journal by Waite, Rutter, Fowle and Edwards-Jones (2015) and methods discussed in our case study schools often featured assessment as learning approach. For example, as evidence and for assessment, the teacher in the dead wood survey lesson took photos of the various stages of the learning process, including measuring, collecting specimens, and creating a pictogram. They put selected pictures in each child’s book as a visual record of achievement. The children were encouraged to annotate the pictures to demonstrate which parts of the curriculum had been covered by this cross-curricular activity. Other evidencing examples included scrapbook compilations:

There is a lot of focus in schools on producing evidence for learning. As a result I took the idea of a scrapbook with a lot of photos to produce this evidence from another school (Primary, Teacher).

In a different primary school, each year group updates a Maths outdoors scrapbook termly, which is shared amongst staff for moderation. The Maths coordinator in this case has aspirations for the scrapbooks to be updated more frequently to increase engagement and provide a greater ‘body of proof’ of the methods that underpin the activities, which children have done what, and to show some of the skills being developed. Senior Leaders have a key role in alleviating concerns that staff have for producing written evidence of pupil progress, and encouraging creative ways of demonstrating achievement (Waite et al., 2015).

People-related challenges

Developing staff confidence in using LINE

Whereas other studies have recognised time pressures on individual teachers as presenting a barrier to outdoor learning (Rickinson et al., 2004), the findings from this study, as Dillon and Dickie (2012) suggested, emphasise the necessity for staff to develop skills, confidence and reflective practice (n=12). For this to happen in practice, time needs to be freed up by senior leaders to allow more staff to engage in CPD and gain greater understanding and confidence about how to use LINE effectively to enhance the curriculum:

The main challenge is partly down to training. Many teachers are keen to reflect on ‘what else can we be doing outside?’, and they are keen to avoid a tokenistic approach by really understanding what is best done indoors and what added benefits are gained from going outdoors (Primary, Deputy Head).

Effective relevant training equips staff with the skills and confidence to take classes outside, and can also provide inspiration for integrating LINE into lesson planning:

I felt that before some of the training such as Teach on the Beach and teaching in woodland, I was a little apprehensive...but since then we’ve been on some real good quality trainingNow, I am thinking in a very different way about our beach trip (Primary, Teacher).

In this case, the teacher held a personal appreciation of nature from childhood experiences and was keen to pass this on to the children at school, but needed guidance to convert the will into action. Her newly gained confidence was attributed to the creativity unlocked through the training experience.

Staff from one case study school reported on the positive impact a training event involving a local educational charity had on their attitude to LINE:

One of the reasons for the lessening of this barrier [that is, lack of confidence] was the visit for a whole school training day from the Eden Project on using school grounds in the curriculum (Primary, Teacher).

It was felt that this event encouraged staff creativity in linking LINE to the curriculum as well as being better able to justify outdoor teaching. One Primary senior leader stated that once teachers acquire greater confidence, they are more likely to ‘go out and **teach as opposed to go out and do activities**’ (our emphasis).

As well as external training provision, CPD can also be effectively enabled through internal expertise. NCDP advocated LINE leadership teams so that people with expertise that might have been on a school's management margins prior to the project intervention could influence and support peers' LINE skills development:

I have been trying to enable links across the curriculum. This has included a twilight meeting with subject leaders to get that commitment across the school...I need a groundswell of support to convince the head teacher, who will support staff if they are keen but does not drive the project himself (Primary, Teacher, and LINE lead)

LINE leaders work at several levels with classroom teachers, from planning individual sessions to a wider remit, agreeing what part of the curriculum is to be taught, style of delivery, and preparing equipment, access arrangements or other practicalities to ensure the lesson can proceed smoothly. In turn, LINE leaders have a role in ensuring senior managers' commitment to the benefits of using training sessions for LINE. In many cases, however, the will and commitment for exploring LINE in greater detail are in place but the resources are not. Where time is released for individuals in these positions, the transformation is evident:

Thinking back to when I started here I think there is a bit of apprehension about taking lessons outside because there are perhaps other things that are not necessarily in your control... that make it a bit more of an issue for you... but I feel I have had so much support here and enthusiasm and encouragement...from like-minded people to encourage the use of the outdoor space. (Primary, Teacher)

Another time-related challenge that emerged from the interviews (n=10) was one of frustration that staff often struggled to find time to plan how to integrate outdoor learning activities into their lessons:

Sometimes the issue with time is just around practicalities...but it's also about the time needed for staff to think through an activity particularly when there is a full timetable that needs consideration (Primary, Teacher, and Forest School lead)

This finding contrasts with those of Dymont (2005) who reported that shortage of time, as well as resources generally, was a challenge specific to outdoor learning within non-school based locations, such as outdoor education centres. Within schools, then, senior leaders need to allocate staff time for reflecting on past practices, and plan future curricular enhancements using LINE more creatively within lesson plans. By doing so, collaboration and cultural shift gradually broaden the use of LINE across the curriculum and year groups. When LINE-based lessons are trialled, they need time for evidence of working well to be collated so that other staff can use this knowledge base. Teachers leading such lessons should '*demonstrate clearly what had been done, why and what had been learnt. After this, things drive themselves*' (Primary, Senior Leader).

Positive Leadership

The schools involved in the case study analysis are amongst the more progressive in the NCDP area of coverage, with respect to LINE, and much of this stems from motivated leadership teams. Some attitudes to expected challenges to creating a positive whole-school

LINE culture were relatively direct and risky. For example, one primary Senior Leader asserted that she *'doesn't allow challenges'*; in fact, she thought that perhaps the biggest challenge was that she tended to be so positive in that she *'said yes to everything'* put forward by eager staff or pupils, that the problem was then finding solutions to implementing all the agreed ideas. A further insight was that all staff should think differently about commonly held fears about outdoor learning, such as those of health and safety, and not permit such concerns to prevent ideas from being explored, at the very least.

In order to support a gradual cultural shift toward whole-school positive LINE attitudes, recruitment and selection processes have been explicitly devised in some case study schools to include, for example, expecting inclusion of LINE-related topics within interview presentations, and facilitating pupil-led questions about outdoor teaching. Staff attitudes can be heavily influenced through the development of comprehensive programmes that incorporate LINE. One primary school in this study introduced a programme of outdoor learning activities that were specifically used to help deliver Maths curriculum topics. Following its success, similar programmes were then introduced into the other subject areas. LINE had become integrated into the curriculum, within and across subjects:

We've done it to support a gradual cultural shift toward whole-school positive LINE attitudes (Primary, Headteacher).

In most schools, however, LINE requires promotion through allocated, dedicated slots such as Welly Wednesdays in the school calendar to ensure widespread application. Many schools participated in one-off events to showcase their outdoor learning achievements, engage parents and the wider community in outdoor activities, and further encourage and inspire staff to utilise LINE within their own practices. Examples included 'Big Dig Day', which attracted over 40 parent helpers to one school, 'Big Maths' session, and 'Empty Classroom Day'. A member of staff reporting on one such event felt that:

you could see a couple of the teachers were very much...just getting used to working outdoors and in the afternoon...you could just see everybody relaxing and it was almost as if, OK, we can do this and we are allowed to give the children that freedom...It's just a way of changing the way we work (Primary, Teacher)

One primary Senior Leader reported that their school had held two outdoor learning days that year, with a third in the planning *to give people a taste of being outside*. The first of these days concentrated on working with existing areas in the grounds; for example, *Year 3 were in our environmental area working with existing areas in the grounds and made some bug hotels...they loved it (Primary, Senior Leader)*.

While schools at earlier stages of their journeys to embed LINE were reliant on such events to exemplify their progression towards whole-school commitment to outdoor learning, others saw them as additional outward-facing opportunities for pupil engagement, volunteer recruitment and school grounds development.

Encouraging staff to involve themselves in collaborative small to medium sized project work is a method used by some senior leaders to broaden engagement of staff and pupils with LINE, and which can circumvent concerns around use of teaching time. Projects in case-study schools included collaborations between secondary and primary schools; for example, in specifically developing joint outdoor learning elements within PE and Art projects, as well as partnering external specialists to add outdoor learning materials to school grounds. Staff members in one school developed techniques learnt from working with wicker that were subsequently applied in curriculum delivery. Experienced teachers were re-enthused and motivated by practical CPD, such as working with wicker, in new, fun skills that emphasised the importance of enjoyment in learning. For some teachers (n=6), there was a perception that taking classes of children outside to learn increases the risk of poor pupil behaviour, thereby placing a greater strain on group supervision:

...there are some teachers who initially find it quite hard...to sit back and let the children do whatever they want to do...with some of them there is a natural inclination to keep it ordered (Primary, Teacher).

Equipping staff with confidence through experiencing teaching in outdoor learning situations might encourage them to take more risks in lesson planning, and be more willing to use unexpected opportunities; for example, a spell of good weather, or the knowledge of a guest visitor.

Even where LINE is widely used throughout a school, there are often one or two teachers that, within specific subjects, find it challenging to use LINE to connect the outdoor environment to a range of topics. While they might be excellent at delivering a largely linear curriculum, some individuals feel uncomfortable conceptualising a topic in practical terms for an outdoor learning context:

...at times staff are still not quite understanding the possibilities of LINE and they see it [for example] as easier to do their PSHE indoors on a whiteboard with a PowerPoint and a bit of a chat about bullying (Primary, Senior Leader)

Staff that might be comfortable and skilled with an open Forest School-type outdoor learning environment might still benefit from guidance on how best to integrate outdoor learning activities into lesson plans for core subjects. One primary school staff member confirmed she was:

happy to take children out on a Forest School lesson where there is not necessarily an academic input whereas for other structured subjects we have 'battled' to re-plan lessons to enable links with the outdoors (Primary, Teacher).

It appears, then, that developing confidence within individual members of staff is not simply to go outside with a class, but to teach the class outside, and a particularly important requirement for training, resources and peer support is enabling creative links with the curriculum. Scholarly development, where staff undertake their own research into good practice, and support colleagues with resultant knowledge, can increase awareness and

experience of matching curriculum areas to the outdoor environment. In one case study, LINE leaders undertook small-scale action research projects in order to tackle specific problems; the results of which were fed back to the wider staff group so that they were informed of findings, and what interventions would be implemented as a result. The evaluation team tried to encourage this type of action research (Waite et al., 2014) but few schools participated in this approach. LINE leads did, however, report providing useful regular ‘how-to’ prompts and resources to their peers in an effort to maintain a gentle but constant support mechanism to encourage new thoughts about linking upcoming curriculum areas to outdoor learning. One Maths teacher explained how he was making considerable efforts to use such new ideas to embed outdoor learning into his curriculum teaching; for example, through a specific ‘Maths Outdoors’ theme, and Maths treasure hunt trails.

Place-related challenges

A major feature of the case study interviews with senior leaders was how frequently school ground improvement works were emphasised as a key part of school improvement plans, particularly in the early stages. A substantial proportion of funding obtained or released for supporting LINE related work had been spent on physical enhancements within school premises. This is clearly a popular strategy for boosting interest, excitement and enthusiasm in outdoor learning, for both staff and pupils. It also presented alternative opportunities to more expensive external site visits:

I also recognise that visits don't have to be off the school site for children to engage in nature and the school has large grounds which we are developing to become part of everyday practice (Primary, Senior Leader).

Improvements to outdoor spaces are seen as potentially providing staff with an ‘extra dimension’ to their teaching and learning. Furthering this notion, there is also evidence of collaborative approaches to land development of green spaces which are in close proximity to school premises. Such partnerships can unlock additional funding:

As the field is owned by [another organisation] I have been able to access funds that would not otherwise be available to a school. This has enabled the school to develop the area for their own and partner schools' use (Primary, Senior Leader).

Where a single school does not have any suitable natural areas within walking distance, one solution is to collaborate with other neighbouring schools to develop an area that they can all easily access. This has been investigated by a group of schools at one Wiltshire town which are working with a land charity to secure access to a mutually convenient site suitable for LINE.

Resource challenges

Maintaining LINE

Procuring the necessary resources to fund and maintain LINE activities and materials was seen as another challenge (n=10). This issue focuses mostly around securing short and long-

term financial support from internal and external sources, not only to fund LINE-related resources and new facilities, but also to cover the costs of routine maintenance and replacement once new outdoor equipment has been obtained:

...the school needs to resource [outdoor learning] a bit better so there are waterproofs available for all children. The school has them for Reception but not Year 6 (Primary, Teacher).

Teachers felt that if the intention is to cultivate LINE on a whole-school basis, then resources should be in place *throughout* the school. Ensuring equitable access to outdoor learning funds and materials by all year groups would transmit positive messages of a school leadership's commitment to ensuring LINE opportunities for all, and provide staff with the confidence of knowing they have the necessary resources to make LINE reasonably straightforward to utilise. Returning again to the matter of time:

There is also a resourcing issue. If planned well, extra resources are invariably needed, which takes time to arrange. This can be a barrier particularly with an already crammed timetable (Primary, Teacher).

The time required by individual members of staff to coordinate and secure resources has also been identified as a barrier to LINE, and, indeed, if not recognised, may stifle enthusiasm to take classes outside at an early stage. Senior Leaders interviewed recognised that project work can be used as a time-effective method to draw in LINE funding:

The Public Arts project will provide a really big injection [of cash]. Outside facilities, such as the farm building have been enabled because of sponsorship from the district building, in addition to internal funding. Curriculum funding can be used toward use of the grounds (Primary, Senior Leader).

By pulling in a range of individuals to encourage collaborative sharing of ideas and planning, project work can expand collective creativity and develop solutions for senior leaders to incorporate into school improvement plans. Relationships with external providers of LINE services were identified by staff in the case study schools as being particularly valuable in enabling progress of specific projects. Often going beyond straightforward client-contractor roles, LINE providers, usually individuals, were reported as working directly on specific school issues and solutions on a free, or part-cost, part-free basis. These services were clearly appreciated by schools. There was an understanding that experts should, wherever possible, be used to build skills amongst school staff, creating a more sustainable framework of LINE knowledge and experience:

...our approach is that our LINE lead and me know people and bring them in but we try to build internal capacity because we can't keep bringing people in [for cost reasons] (Primary, Senior Leader).

We have talked about having a Forest Schools type training day in October. At the moment this is led by other people and the school wants the teachers to lead more and to

enable them to do that they need training. The plan is to have a day as a staff team and from that, one person from each year group to go and do the Level 1 training and for one of the school staff to do Level 3 training (Primary, Headteacher).

This approach would cascade knowledge and skills down through subject areas and year groups and promote joint delivery. LINE providers were notably more often brought in to help schools with very specific one-off tasks. An example in Cornwall involved one school working with a restored formal garden to ‘paint the town yellow’ where pupils helped to plant numerous bulbs. Across the project, several schools planted trees provided by The Woodland Trust, and one Devon school enlisted expert help to build a roundhouse on their Forest School site and clay oven in their grounds. However, longer lasting relationships were particularly valued where repeated activities were built into curricula. Examples included regular use of a watersports centre on a local beach in Devon, recurrent work with an art gallery in Cornwall, and Year 4 Geology field trips with a conservation charity.

Volunteering

As well as experts in LINE services and activities, there is also a role for volunteers in schools, with some schools reporting frequent use, seeing them as a vital resource for keeping costs down and increasing capacity to supervise outdoor activities:

We have a lot of volunteers who support Forest Schools and come and help Forest School leaders. Parent volunteers always help with offsite visits and with [trips to] other schools (Primary, Teacher).

A number of NCDP schools keep domestic animals such as chickens and rabbits in their grounds and use them to engage children and develop positive caring attitudes and responsibilities. Where schools need animal husbandry, they rely heavily on volunteers at weekends and during school holidays. Volunteers often provided valuable assistance with vegetable growing and gardening, especially through extra-curricular clubs. Where events are held off-site, parent volunteers supported paid staff boosting the adult to child ratio and encouraging integration of LINE activities into lesson plans. Community organisations and land owners also provided further opportunities for staff and pupils to engage in LINE activities with minimal costs. Supermarket chains such as Waitrose and Tesco work with several schools in the south-west on growing / food projects, local farmers provide access to their land and buildings, and community groups provide mutual support to their nearby schools.

Commitment of resources and fund raising

The case studies revealed examples of senior leaders identifying and committing funding for LINE, to meet the costs of materials, resources and experts. For example, the PE & Sport premium was used to fund outdoor education by broadening the definition of what constitutes PE & Sport; an additional benefit to schools is that there is a higher rate of participation because the activities are not limited to competitive ones, and are therefore more inclusive. An indicator of whether outdoor learning has become embedded within school priorities is where regular or dedicated core funding has been allocated to LINE-related expenditure.

Evidence from the NCDP schools showed that finances have been accessed for such work from the main school budgets, school improvement budgets, curriculum development funds and the pupil premium. One Senior Leader reported that, for her school, *LINE has a healthy budget due to its recognition as a successful contributor to the school's progress*. The school has a dedicated budget of £10,000 for LINE, which is used to fund all the ongoing projects and purchase of new equipment and resources. Another case study school holds an educational enhancement budget that can be used for funding LINE-related learning activities, for example, by covering associated transport and food costs.

Funding for LINE-related initiatives often needs to be matched from other sources to be secured. Indeed, some schools in the NCDP used the small green grants provided to them as an incentive for joining the project to match-fund bids from partner schools, so widening the resultant benefits. Typical outcomes from LINE spending across the case study schools included the purchase of outdoor equipment such as trim trail items, protective footwear, a roundhouse, chicken coops, insect hotels, polytunnels, and other school ground improvements and adaptations. Staff from one Devon school felt that such funding would also:

have a major impact on playtimes, providing greater options for children with different preferences and needs, and allow for more positive playtime experiences (Primary, Teacher).

Senior Leaders encouraged staff to attend NCDP outdoor learning funding workshops, where useful ideas could subsequently be shared. Of particular interest were new ways to secure further funding, such as through crowdfunding. Much effort and ingenuity is expended by staff on raising small pockets of money from various sources:

When KSI lead, a forest school day resulted in a number of items being made and sold to parents. This funded all our current tools used for outdoor learning. We also raised funds through the summer fair, which itself involved many outdoor learning activities. These funds were used to pay for resources (Primary, LINE lead).

The Parents Teachers and Friends Associations (PTFA) were frequently approached by staff looking for funding for LINE resources and these bodies appeared important in enabling small initiatives or repairing outdoor materials. Senior Leaders maximised funds by external match-funding:

LINE has given the school a fantastic fundraising focus and they have been quite lucky, for example, a commercial company donation of £1k has been matched internally...through fundraising purely through the LINE cake bakes (Primary, Teacher).

Passy (2014) demonstrated how creative schools can be in raising funds for LINE by using outputs of LINE-related activities; for example, by selling surplus plants and herb gardens grown in school gardens to parents on regular market days. These relatively modest amounts are likely to become even more crucial as more schools have more external groundworks and equipment installed. Where project costs might be secured from more substantial funding

sources, management and maintenance costs are often overlooked and local fundraising is subsequently necessary to keep these functional. For example, many schools have installed well used wooden trim trails that will require upgrading to enable continued safe use, for which they are turning to PTFAs for funding.

In Bentsen et al.'s (2010) study on the use of *udeskole* (regulated curriculum based outdoor learning in Scandinavian schools for 7-16 year olds) across Denmark, the costs associated with this pedagogy were also identified as the main challenge by school managers, particularly for training, additional staff, and transport. In common with the current study, the use of local green spaces for educational purposes (rather than visiting outdoor learning centres, public forests, nature reserves etc.) was identified by Bentsen et al. (2010) as a key strategy to address this challenge. Similarly, Cosgriff (2015) reported that use of a Council-owned reserve situated adjacent to a New Zealand primary school meant that 'students required no money, specialist clothing, or extra footwear; nor were transport or additional staffing resources involved' (p.10), meaning that outdoor learning was more able to be established as everyday practice rather than one-off events.

As the references to fundraising efforts demonstrate, schools with a forward-thinking approach to the use of LINE tend to adopt a very proactive, problem-solving attitude to tackling emergent and recurrent challenges. One example of this involves securing parental permission each time a teacher wishes to take a class to an outdoor environment. The effort required to obtain permissions has often been enough to put individuals off, and was an area which required innovation:

Logistically it has made a difference to having parents sign a blanket consent form at the beginning of the term. Activities are still planned so it is not ad hoc but consent is no longer a challenge (Primary, Senior Leader).

Other challenges

The majority of the schools that participated in the NCDP were located in areas of deprivation, and inevitably there were community-based issues that could have impinged on school developments. Where schools attempted to open up a little to the community through environmental initiatives, these could sometimes backfire, at least initially. For example, vandalism was identified as a problem for some schools, with damage caused to live animals, as well as to outdoor equipment and construction items. One solution was to use as many natural materials as possible throughout a school, which act as both a deterrent to vandalism due to having a less obvious presence and being less attractive as a target, and as a more cost-effective way of dealing with replacements.

Another recurrent barrier is how to cope with the unpredictable weather in the UK. Although this issue will often generate reluctance from teachers, the barrier to LINE is actually likely to be a lack of appropriate wet weather gear. It can be problematic for staff to ensure that all the children in a class bring the necessary clothing for outdoor use, particularly footwear; an issue sometimes linked to cost. Most of the case study schools managed to get around this problem by obtaining sufficient quantities of donated pairs of wellington boots from local

suppliers, typically garden centres or supermarkets. This simple, but effective, solution provides teaching staff with the confidence of knowing that they can continue with planned outdoor activities regardless of weather.

Some of these challenges may seem to represent minor issues within the overall context of senior leaders' responsibilities, but, as Hollyhock (2015) put it:

Often, when working with schools early in their LINE journey, it is not the big learning outcomes related barriers that are so much of an issue. It is the smaller ones that can get in the way (para. 8).

Whereas initial discussions between Hollyhock and teachers from one secondary school drew out issues of competing priorities, with suggestions that outdoor learning distracted staff from the focus on curriculum and attainment, in much the same vein as some of this study's feedback, further questioning revealed it was often specific, practical concerns that impacted most on delivery of LINE activities. Hollyhock concludes by advising that strategies are required to 'help solve the less obvious barriers' (Hollyhock, 2015). This article attempts to address that, as well as to offer a range of suggestions as to how staff confidence and competence can be enhanced in order to increase the likelihood of 'learning in natural environments' being used, and embedded, within school practices.

Methodological considerations and limitations

The strength of this study comes from its representation of the voices of practicing school staff in varying roles in primary and secondary schools which have developed, or are developing, a strong culture of LINE. Although motivation to volunteer as case study schools may have introduced selection bias, we argue that, in order to understand strategies to address barriers to LINE, it was beneficial to focus on schools that had experienced challenges and overcome them. The qualitative supplement to the wider NCDP evaluation offers valuable insight to meanings within the extensive quantitative data, allowing broader patterns to be explored in finer detail. However, this study is located in one region in the UK and caution is needed in transfer of implications to other contexts (Bentsen et al. 2010; Waite et al. 2015).

Conclusion

This paper has explored challenges perceived by a number of staff from primary, secondary and special schools in relation to LINE within the Natural Connections Demonstration Project. Many established benefits of outdoor learning were confirmed, but this paper focused on challenges to integrating outdoor learning into school practices and strategies used to overcome them.

Major challenges that emerged from the findings of this qualitative study included policy, people, place and resource-related issues. Policy-related issues included difficulties in balancing outdoor learning with other dominant performance measures, fitting in what some teachers saw as an 'addition' to the curriculum, and pressure placed on teachers to prove the value of their pedagogic practice, largely through a dependence on written records. With

people-related challenges, the most significant were around the need to develop staff confidence to teach outdoors, and specifically with Senior Leaders needing to encourage time spent on relevant continuing professional development. Some teachers also found it problematic to find time to plan LINE into lessons across the curriculum, and were often challenged by the requirement to connect LINE to some curricular areas. Perceptions persisted among some staff that LINE increased the potential for poor pupil behaviour. Place-related issues focused on identifying mechanisms for enhancing and maintaining school grounds for LINE activities, while resource challenges mostly involved funding sources for equipment and activities, and embedding resources (including volunteer support) throughout the curriculum subjects and year groups. The following strategies have been adopted by teachers in our case study schools to tackle these challenges. Staff confidence has been increased through access to effective training, support from internal expert LINE-leaders, encouragement to reflect on teaching practice and to adapt curriculum delivery to incorporate more LINE, and from positive leadership that has driven whole-school cultural change in relation to attitudes to LINE. School ground improvement works have been factored into school improvement plans, and collaborative approaches to land development explored. The creative and persistent securing, and use, of resources to support LINE delivery included partnership working with external LINE providers, partner schools, volunteers, and parent bodies. These examples of how schools overcame identified challenges should be useful to the wider teaching community to inform staff CPD, help direct and maximise limited school resources, and present school leadership with ideas for encouraging positive staff attitudes to outdoor learning. We hope this will support increasing opportunities for pupils to access the wide-ranging benefits associated with this mode of teaching.

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