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Article

## Creating a Learning Environment to Promote Food Sustainability Issues in Primary Schools? Staff Perceptions of Implementing the Food for Life Partnership Programme

Emma Weitkamp <sup>1,\*</sup>, Mat Jones <sup>2</sup>, Debra Salmon <sup>2</sup>, Richard Kimberlee <sup>2</sup> and Judy Orme <sup>2</sup>

<sup>1</sup> Department of Applied Sciences, Faculty of Health and Life Sciences, University of the West of England, Bristol, BS16 1QY, UK

<sup>2</sup> Department of Health and Applied Social Studies, Faculty of Health and Life Sciences, University of the West of England, Bristol, BS16 1DD, UK; E-Mails: [matthew.jones@uwe.ac.uk](mailto:matthew.jones@uwe.ac.uk) (M.J.); [debra.salmon@uwe.ac.uk](mailto:debra.salmon@uwe.ac.uk) (D.S.); [richard.kimberlee@uwe.ac.uk](mailto:richard.kimberlee@uwe.ac.uk) (R.K.); [judy.orme@uwe.ac.uk](mailto:judy.orme@uwe.ac.uk) (J.O.)

\* Author to whom correspondence should be addressed; E-Mail: [emma.weitkamp@uwe.ac.uk](mailto:emma.weitkamp@uwe.ac.uk); Tel.: +44-0117-32-82081; Fax: +44-0117-32-88437.

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**Abstract:** There is increasing interest in the role that schools can play in promoting education for sustainable development (ESD), and evidence is emerging that schools can be influential in the emerging agenda around the ecological, ethical and social aspects of food, diet and nutrition. With regard to such food sustainability issues, this paper analyses the role of the Food for Life Partnership national programme in supporting garden and farm-based learning activities in 55 primary schools in England, UK. Using a mixed methods approach, the study examined the programme's implementation through staff perceptions and a range of school change indicators. The study found that the programme delivery was associated with widespread institutional reforms. According to staff, implementation of the programme provided a range of opportunities for pupils to learn about food production and sustainability, but addressing these issues was challenging for teachers and raised a number of questions concerned with effective, equitable and on-going implementation. At a pedagogical level, teachers also reflected on conceptually challenging aspects of food sustainability as a topic for primary school education. The study identified ways that ESD programmes could support schools to think about and implement learning opportunities as well as identifying significant barriers related to resourcing such programmes.

**Keywords:** education for sustainable development; food; primary schools; programme implementation; mixed methods

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## 1. Introduction

A realisation that societies need to move toward more sustainable lifestyles was first mooted on the international policy stage in the so called “Bruntland Report” [1]. This need to address global environmental and social problems sparked an interest in developing approaches to address a perceived disconnect between young people and the environment and to help young people develop the skills and interest in participating in local and global decision making. Realising the importance of environmental and related social issues, schools have begun to adopt approaches to support pupil learning about environmental and sustainable development. These programmes seek to combine learning that fosters participation in decision making, both at local and global level, with approaches that explore the need to improve quality of life now without damaging the planet for future generations [2]. Many initiatives, both at local and national level, seek to foster ESD in primary schools, for example the Eco-Schools initiatives in the UK and USA and the Australian Sustainable Schools Initiative. Some of these initiatives focus on reconnecting young people with the natural environment and include programmes supporting school-based gardening activities and farm links programmes that bring young people into direct contact with food production systems. However, few initiatives set out to specifically foster a multi-component approach to food education for sustainable development. As such it is interesting to explore the impact and challenges of one such initiative, the Food for Life Partnership programme (see [3]) in England, UK.

### *1.1. Education for Sustainable Development*

Bonnett [4,5] argues that environmental education should seek to develop sustainability as an attitude of mind, something which is considered in the context of everyday actions. To this end, ESD programmes might focus on developing young people’s relationship with nature such that they have a lived relationship with the environment. This reflects wider concerns that the day to day lived experience of many people is increasingly removed from the natural environment. Developing a relationship with nature (both “wild” and “domesticated”) can and should be combined with some understanding of the consequences of everyday choices on the environment and local and global society. As such, environmental education might reasonably encourage young people to discuss sustainability issues which they might realistically encounter, such as whether to consider animal welfare issues (e.g., free range meat and eggs) in purchasing decisions or whether to support local producers. With this in mind, a number of initiatives are emerging that seek to promote what Elliot [6] refers to as a “transformation of the ways in which the school as an organisation in all its manifold aspects interacts with, and impacts upon, the environment” (p.331).

Research is emerging that suggests that whole school approaches to ESD may be able to transcend the targets culture (where schools are driven to meet government targets at the expense of deeper learning) that has emerged in schools in recent years [7–9]. Rauch [8] terms this “ecologisation” of

schools, whereby schools seek to engage with the wider community and look to the “outside” world as they develop new forms of teaching and learning. Such an approach seeks to empower pupils to contribute to sustainable development. Within this context, sustainability moves beyond “do your bit” to confronting young people with often complex problems and choices—is organic always better (if for example it means greater food miles or heated greenhouses)? However, these complexities are often side-stepped. Reviewers such as Stables [10] and Scott [11] have noted how conflicting assumptions—ultimately philosophical in character—are often closed down or unexamined in the ESD field. It is within this context that our research explored the potential of garden-based education, school-farm links and practical food education to promote ESD within UK primary schools.

### 1.2. Garden Enhanced Education and Farm Visits

Growing evidence suggests that school-based gardening activities can encourage children to eat more fruit and vegetables and there is evidence that garden enhanced education can promote environmental awareness (see for example [12,13]). Lautenschlager and Smith [13] suggest that participating in gardening activities may be an effective approach to increase young people’s awareness of food related environmental issues, including sustainable production of food and Blair [14] reports that school gardens can act as a focus for environmental education. In this context, garden “enhanced” education has been shown to strengthen young people’s appreciation of other cultures [13,15], increase interest in cooking [15], encourage fruit and vegetable consumption and willingness to try new fruits and vegetables [12,16]. However, Ozer [17] identified a number of barriers that can limit the effectiveness of school garden programmes, including unequal access to gardening activities, divergent experiences (within and outside school) and limited support from within school or from the wider community.

Embedding gardening in the wider context of food production and food preparation education may further enhance its potential as a powerful learning opportunity. Jones *et al.* [18] report that providing a wider context to efforts to promote healthier eating, such as connecting food production and preparation with healthy eating messages, can be effective. Similarly, research suggests that integrating programmes into the curriculum and involving the wider school community (e.g., cooks and parents both at home and in school) is important for successful implementation of programmes designed to promote healthier eating [19,20].

There has been little exploration of the potential role of farm visits and farm links as learning experiences that could support ESD. Joshi *et al.* [21] argue that farm visits can facilitate learning about sustainable and ethical food production and it seems pertinent to explore the potential of farm visits and farm links programmes in the context of a multicomponent school approach to embedding education for sustainable development. Furthermore, farm and garden based learning may help to overcome the sense of independence experienced by some urban children, giving them concrete experiences of how modern divisions of labour in fact increase dependence on others. Clearly, farm and other food production settings offer “learning space” that is potentially more innovative and experiential compared with conventional classroom settings [22]. However, there is limited exploration of how schools might implement a wide ranging school programme designed to facilitate education about sustainable food production and animal welfare issues. Critically, little evidence exists to identify factors that are essential for the success of a programme designed to help primary schools

deliver education about sustainable food production and explore how teachers integrate education about sustainable food production into the wider curriculum. As the Food for Life Partnership programme sought to encourage change throughout the school, seeking to embed education about sustainability within the wider school learning environment, it provided an opportunity to explore these issues.

### *1.3. The Food for Life Partnership*

The Food for Life Partnership consists of a group of charities that share a concern to promote food-based environmental learning in schools. The initiative evolved out of a concern that obesity and the climate change impact of food cannot be addressed unless “individuals and communities are reconnected to how their food is produced, and regain the skills and knowledge needed to take active control over what they eat” [23]. FFLP organises its work with schools around four strands:

1. Food leadership: promoting food reform through an action group with student, teacher, catering staff and parent representatives.
2. Food quality and provenance: working with school meal caterers to procure more local, seasonal, organic, Marine Stewardship Council and higher welfare foods.
3. Food education: reforming practical food education, particularly with regard to raising issues of environmental and social sustainability through gardening, cooking, visits to farms and local food producers, and classroom projects.
4. Food culture and community involvement: engaging with parents and the wider community on the use of healthier and more sustainably sourced food in school and at home.

Schools are encouraged to work towards Bronze, Silver and Gold FFLP Mark awards based upon criteria in each strand. In the period 2007–2011, over 3,600 primary, secondary and special schools signed up to take part in the programme. All received printed and online resources and tailored support in the form of, for example, brokering links with local farms that could host educational visits. This paper concentrates on a sub-group of FFLP “flagship” primary schools that received enhanced levels of support from visiting programme officers and approximately £1,500 to help fund trips, equipment and events. Further details on the programme can be obtained at the Food for Life Partnership website [3].

## **2. Methods**

### *2.1. Methodology*

With a focus on staff perceptions, we sought to examine the implementation of the programme in terms of its fidelity, or the extent to which the programme was delivered as planned; the student exposure and reach of the programme; and context, in terms of aspects of the environment that may have influenced the programme [24]. Mixed methods were used to collect and analyse data, integrate findings and draw inferences [25]. Given the complex and diverse character of the programme initiatives, we collected multiple types of data to capture programme related changes from a number of different perspectives [26].

## 2.2. School Sample

The first 55 out of 75 primary schools enrolled as FFLP flagship schools in 2007/2008 were sampled to take part in the study. These schools had all applied to participate in the FFLP flagship programme. The programme application process involved expressing commitment to the overall aim of the initiative, although schools did not need a track record of related activity. For the research, school head teachers were asked to give written consent based upon written and verbal information provided by the researchers. The research protocol was approved by the University of the West of England Research Ethics Committee.

The schools were located across all nine regions of England. The average number of students enrolled in these schools was 287 (min. 48, max. 671; SD 137.5). This is somewhat higher than the England average of 228. Compared with the national average, the schools in the sample were more likely at the beginning of the programme to be involved in initiatives related to ESD: 62% of schools had achieved Eco-School flag status and 74% had achieved national Healthy School status.

## 2.3. Data Collection

Fifty five teaching staff completed semi-structured questionnaires at the point of enrolling with the programme (“baseline”). Sixty nine per cent (38/55) were head teachers and 31% (17/55) were teachers with a lead role for programme liaison. At the 18–24 month review point in the programme, 55 staff, either, completed “follow up” questionnaires or responded to interview questions. Of the follow up respondents 78% (43/55) were the same individual as the baseline respondent and 22% (12/55) were different individuals who had taken up the lead role in the period post baseline. The school lead was responsible for collecting relevant details from other staff who delivered specific aspects of the programme. For activities that took place over a limited duration—such as a series of farm visits—we asked 30 of the 55 schools to provide additional data specifically on these activities.

## 2.4. Measures and Interview Topics

The baseline and follow-up questionnaires covered a range of school activities related to garden, farm and other closely linked aspects of sustainable food-based learning. The baseline questionnaire was piloted with 6 schools, and then revised to provide greater salience and simplicity. Drawing upon the programme’s own achievement criteria, we developed indicators that reflected on key areas for change. Fifty-five staff were asked to provide ratings on their perception of the role of the programme in effecting these changes. We checked the school and programme delivery records to assess the reliability and validity of the responses. The interviews provided an opportunity to clarify any discrepancies, to pursue key topics in greater depth and to give staff an opportunity to reflect on their experiences.

## 2.5. Data Analysis

Descriptive statistical analyses of quantitative data were conducted using SPSSv.17. All written and audio recorded qualitative data were transcribed and analysed thematically, using a grounded theory approach. Follow up interviews provided the researchers with the opportunity to check the emergent themes arising from the baseline stage with respondents [27].

### 3. Results

#### 3.1. Section 1: School ESD Related Outputs and Outcomes

Table 1 provides a set of indicators of ESD-related activities in the study schools. Overall they suggest an increase in the number of schools actively engaging in garden-based and farm-linked educational activities. These baseline data suggest that in the absence of a specific stimulus, experiential opportunities for sustainable food education were largely marginal activities, not closely integrated into school development planning or schemes of work. Follow up data show, for all indicators, the majority of schools had acted to enhance their capacity to deliver ESD-related activities. The indicators also show how educational activities are connected as part of a whole school initiative, for example the garden or farm produce was used in cookery projects or school meals. Some of the indicators also show how a wider range of stakeholders—such as parents and community volunteers—became involved in the initiative.

**Table 1.** Indicators of ESD-related activities in schools. Measures cover the 12 month period before each data collection point. N = 55 Schools.

Programme indicator	Baseline	Follow up
<b>Garden-based education</b>		
Facilities for growing—growing area over 10 m <sup>2</sup>	16	53
Staff training covering organic horticultural skills	13	51
Food plant bio-diversity—growing over 5 out of 15 crop types	24	52
Community participation—parents and volunteers assist in school garden	12	37
Over 25% of students participated in school-based growing activity	16	41
<b>Farm-linked education</b>		
School has an educational link with a working farm	31	55
A class of students keep in touch with a local farm throughout the year, through farm visits/online links.	2	32
Community participation—parents and volunteers assist with farm visits	10	41
Parents/carers can buy or collect organic local farm produce at the school	0	11
Over 25% of students participated in farm visits	8	18
<b>Whole school aspects of ESD</b>		
Parent consultation process on food and sustainability education in school	20	55
Home projects: growing and cooking with sustainable food ingredients	4	53
School food policy and food action plan covering sustainability issues	9	55
School-wide curriculum references sustainable food education	18	53
Use of sustainably sourced ingredients in cookery classes	7	55
School menus are seasonal and highlight in-season produce	7	47
Over 25% of students participated in cooking at school with sustainably sourced ingredients	30	45

Table 2 summarises quantitative elements of the teacher feedback questionnaires on ESD-related aspects of the programme delivery. These data highlight not only support in setting up physical infrastructure, such as the introduction of gardening equipment and the development of features to attract wildlife, but also the role of the programme in supporting learning, both of teachers (e.g., training in horticulture) and pupils (e.g., ensuring the educational value of farm visits). The data also point to the potential of this type of ESD programme to facilitate the involvement in school life of

parents and the wider community. Overall, they suggest that respondents believed the programme had a clear role in creating the changes.

**Table 2.** Teacher ratings of the role of FFLP in supporting food related ESD in their school. “With regard to the following areas how effective has FFLP been in assisting your school?” (percentage given for “effective/very effective”). N = 55 schools.

A whole school vision for transforming food culture	92%
Provision of more local, seasonal and sustainably sourced food in school	86%
Setting up farm visits with clear educational value	96%
Setting up farm visits with a good standard of facilities	76%
Setting up farm visits where health and safety issues have been addressed	87%
Design and development of suitable sites for growing activities	80%
Training and advice on organic horticulture and farming	98%
Health, safety and practical advice on management of growing areas	73%
Development of areas to attract wildlife	65%
Provision of garden tools and equipment	83%
Linking growing projects to the curriculum and wider educational goals	71%
Actively involving students in decisions on food & sustainability in school	75%
Actively involving parents or wider community	67%

### 3.2. Section 2: Staff Perspectives on Implementing Farm and Garden-Based ESD

#### 3.2.1. Making Links to the Curriculum

A recurrent theme in staff reports was the importance of good planning as a basis for successful use of garden and farm-based activities. Support from FFLP staff from outside schools had a central role with respect to, for example, identifying suitable farms, advising on garden plans and designing lesson plans. Whilst such preparation is necessary for any practical education, teachers felt that this was particularly the case where they lacked the training, skills or resources to develop a new sphere of activities in their school.

Confidence in finding clear links to the curriculum was also an important prerequisite for implementation. Teachers demonstrated a broad range of ways pupils could integrate their learning into existing aspects of the school curriculum.

[The farm visit was] a fantastic experience that has had a brilliant knock on learning effect. The children in their food lessons can now describe organic farming, egg production, chicken meat production and discuss the advantages and disadvantages of various methods of production. This learning is invaluable as they learn from experience rather than the teacher saying so. (17:3)  
We have dedicated curriculum time every week as part of our planning. Each class has a garden plot and classes do [horticultural] research for the garden in terms of conditions needed for growth, plant families and so on. This feeds into theme weeks around the topic of food. (5:2)

Projects based in farm or garden settings provided an extended sphere of learning beyond the classroom, as one teacher explained:

Having a link with a farm means that we have more resources to work with and it makes our classroom curricula teaching come to life because they can see how food is produced in its natural setting. (42:1)

### 3.2.2. Underpinning the School Ethos

Staff reported that the garden and farm-based elements of the programme helped draw together diffuse ideas and underpin a school ethos on sustainability. As some interviewees explained:

[FFLP's gardening and farm link based activities have] focused and united the staff and pupils in shared vision in the development of a creative curriculum with a green ethos for our school. (29:1)

The general approach of the whole food process; growing is embraced and celebrated, this then feeds in to the school dinners where a positive approach to food and eating is developed. (7:2)

As a consequence some staff felt that the activities had quickly become embedded into school life.

### 3.2.3. Involving Parents and Community Engagement

It was also clear that schools came to act as community champions for growing activities, as these teachers reported about their garden-based work:

Children and parents are now involved in growing fruit and vegetables, and flowers. They grow things at school and take some home. We now have a few parents with chickens at home, following our lead. (43:1)

Greater involvement of parents in school life was also seen as a benefit of farm visits. One Head teacher reported very positive feedback from parents:

Parents tell us that invariably they remake the meal as soon as they get home because their child is so keen to demonstrate what they have just learnt. Testament to this is the fact that the local supermarket ran out of filo pastry after children made home grown potato and pea samosas one week. (27:1)

Practical food events proved particularly popular with parents who would not have normally attended formal meetings, as one teacher explained:

We never used to be able to attract parents into the school: I don't know why. But with the events like the Growing Day the response from parents has been absolutely amazing. We seem to have attracted a lot more parents in just lately. (14:2)

### 3.2.4. Extending the Educational Sphere

Respondents reported that the programme strengthened links between the food and environmental learning and other aspects of school life—such as the school dinner times. For example, in one school the head cook felt the programme gave her licence to create a new garden immediately outside the kitchen. The cook went on to routinely make use of produce for the salad bar and side dishes:



I take the children out into the garden to pick the veg and show them how it's prepared in the kitchen. I find that because they've actually been helping grow the stuff they'll actually eat it. I notice that when we have one of the other lettuces bought in they won't eat it, but they want to eat the one that they've grown. We gave them mizuna [an oriental salad] to taste...they loved it (laughs)...the next day they asked whether they could have it again at lunch. (29:4)

### 3.2.5. Challenges: Funding, Capacity and Risks

Staff reported a range of challenges that could be anticipated with an initiative that went beyond established school practices. Respondents identified problems freeing up staff time, lack of equipment and facilities for growing projects and difficulty covering additional costs of farm visits. The upkeep of school gardens sometimes depended upon the voluntary time of parents, volunteers or staff. Teachers identified various health and safety difficulties. For example, for some schools active student involvement in recycling and composting proved challenging:

Composting is a challenge because of the health and safety implications and staffing challenges for the children to manage our waste daily. As a result we are reliant upon the caretaker moving compost waste with the exception of reception children who manage their own fruit and veg waste. (49:2)

Teachers also raised problems about the prescriptive and challenging character of the programme-based targets.

### 3.2.6. Challenge of Sustainability Messages

Teachers reported on the challenges of communicating food sustainability messages with primary school children. Interviewees questioned whether to stress the merits of locally sourced non-organic produce as opposed to organic produce from further afield; whether industrial farming practices necessarily led to poorer animal welfare standards; whether low income families could reasonably be expected to pay for higher priced sustainably-produced foods; whether to emphasise the merits of amateur—and sometimes poorly grown—school produced vegetables over shop bought produce. Food sustainability was therefore a complex subject.

Some teachers felt that a good educational outcome in itself was to simply raise student awareness of these debates. A further approach was to bracket out the bigger debates and focus on small, tangible actions where there might be consensus. This is illustrated in one case:

We used the assembly to raise the idea of making small changes. We're very aware that all families are on a budget. So we proposed that if one family buys one fair trade item a week, then that would be over 400 items in our school. If another school does the same that figure becomes 800. So small changes can make a big effect. (38:2)

Similarly, one teacher felt her message was about encouraging small changes of attitude:

I took [into class] sunflowers, tomatoes...and some of the other things we were growing. We talked [about where the produce came from]. I said it would be cooked at lunchtime and most

of them wanted to try it. [Later] most of them were saying “it’s lovely.” Even if they hated the veg they said they’d give it a go. (51:2)

### 3.2.7. Opportunities for Participation in Programme Activities

It was difficult for many schools to give all students in a year group the opportunity to take part in farm and school garden education. Many activities lent themselves to small group work and lower staff-student ratios. In order to address this issue, schools often selected students as a study reward or as part of a programme of differentiated learning for children with special educational needs (SEN). Alternatively schools adopted rotational approaches to maximise participation, as one teacher explained:

[With] so many children in the school it has presented a real challenge. We have allocated dedicated slots in which we take groups of children into the garden during the week. At the moment we have a potato competition. Every class has sacks, potato seeds and compost and we are going to see who can grow the heaviest yield. So we’ve tried to include every child in the school. (27:1)

## 4. Discussion and Conclusion

It is clear from the implementation analysis that schools participating in the FFLP programme had built on the learning opportunities provided by school garden, farm visits and linked activities to explore food sustainability issues. These provided opportunities for young people to explore the food production system, though in many cases addressing wider issues of food sustainability proved challenging for teachers and pupils alike. Questions such as how to choose between conventionally produced, but locally sourced food *versus* organically produced food from further afield are not simple and were often difficult for teachers to address. Teachers also raised concerns about promoting food choices that might be considerably more expensive, particularly where families might be on tight budgets. Schools identified inequality of access issues, particularly in relation to the school garden. These issues are similar to those identified by Ozer [17] and can create tensions for teachers and school managers. Conflicts such as these are likely to arise in many programmes seeking to promote education for sustainable development, and helping teachers to think through these issues and how they could be developed as learning opportunities should be addressed at the programme conceptualisation stage.

Although teachers report that farm visits help them communicate complex age appropriate issues to children about food production, sustainability and ethical issues, there was only limited evidence that this extended beyond post-visit discussion and curriculum linked activities. Schools did make an effort to embed food sustainability within the school as a whole, through changes to food procurement, lunch room environments and school management processes (reported in Jones *et al.* [18]). This may, to a limited extent address Bonnett’s argument that environmental education should encourage young people to consider sustainability in their everyday actions [4,5] and there were examples of schools helping young people to discuss sustainability issues which they might realistically encounter (e.g., animal welfare issues raised through discussion of free range eggs) and giving clear, simple and specific messages about some aspects of food sustainability.

Teachers involved in the evaluation were positive about its benefits of the FFLP programme throughout the school. However we should recognize that the study respondents had self-selected to participate in the programme and might, therefore, be inclined to give an optimistic view. They identified a number of strategies that programmes such as the FFLP programme could undertake to support the move to what Elliot [6] terms a transformation in the way schools interact with the environment. Key amongst these are:

- involvement of external experts and resources, possibly provided by specialist support agencies or as part of national schemes, such as the Eco-Schools initiative
- highlight the importance of planning and support schools to identify ways to integrate these into the curriculum or other school activities
- help schools to identify ways to facilitate the involvement of the wider community in the programme
- facilitate sharing of good practice between schools, through partnership links and development of progressive skills based learning approaches.

As suggested by Ozer [17], wide support is needed for the successful implementation of such a programme and teachers recognised a need for commitment from a broad range of school constituents. This included working through a school council or food action group to help garner pupil buy-in.

Whilst there is much to be learnt from school experiences on how to best implement an ESD programme, there remain deeper problems related to the pedagogy for food sustainability in primary school settings. The issues related to food sustainability are complex and not always easily connected; there remains the problem (for teachers) that many sustainable development issues are contested and subject to much debate. How should these be approached? Furthermore, some aspects are seen to be value driven and these values may conflict with deeply held values within the school's wider community, creating a point of conflict with, amongst others, parents, governors and teaching staff. Discussion of such conflicts are a valuable part of education, but perhaps more suited to older primary school and secondary school children, where a greater depth of discussion can be developed. For young people and teachers, acknowledging the complexity of food sustainability is an important outcome in itself, which should increase learners' ability to navigate these problems in the future. This study identified a number of other barriers that schools may face in implementing a multicomponent ESD programme:

- Freeing up staff time for programme implementation and to take full advantage of opportunities for greater depth of educational engagement
- lack of funds, facilities and equipment to support an integration of ESD across school life
- difficulties communicating complex concepts and issues related to food sustainability
- reliance on under-supported community volunteers, which can place aspects of the programme at risk or lead to dilution of ESD messages
- equality of access for all students in cases where some activities are restricted to certain groups of children

This study of the FFLP project focused on staff experiences and staff reports, supported by a more limited investigation into pupils' experiences. As such, it is not possible to say with certainty what

messages and learning pupils gained, whether these were internalised and to what extent the programme was able to change the lived relationship and everyday actions of young people with the environment. Further research on the impact of such a programme on young learners is clearly warranted. To what extent are sustainability messages received? Are they valued and acted on or do they become crowded out by other, often conflicting, messages?

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### Conflict of Interest

The authors declare no conflict of interest.

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