If we want to be healthy we need to eat. However, food poverty (the inability to afford or access food to make up a healthy diet) is just one of the consequences of climate change. To feed the world’s growing population, if we maintain eating habits as they are today, we will need 42% more crop land by 2050 (Bhunnoo, 2018) and, because of climate change, production on land is diminishing as soil structures crumble under the constant pressure of intensive farming practices.

For many children in UK schools, food poverty is their everyday experience. The UK’s food poverty rate is suggested to be among the highest in Europe; despite the UK being the sixth richest country in the world, millions are struggling to access the food they need. The UK charity, Sustain (see References), estimates that 8.4 million people in the UK are living in food poverty, either because they do not have enough money to buy sufficient nutritious food or they struggle to get it because of the growing food deserts stretching across the country, or both. The Covid-19 pandemic has seen these inequalities deepen, with huge rises in numbers reliant on food banks during the pandemic.

The food crisis is real, at the local, national and international scale, and it affects the environment as well as people. Agriculture accounts for 26% of our greenhouse gas emissions (second only to electricity and heat production) (Ritchie, 2019). Intensive farming not only sees soil erosion, but increased pesticides and chemicals are polluting waterways, unpredictable and intense weather is damaging harvests and there is greater risk of pest infestations.

It is not just the growing of (or inability to grow) food that is the problem. There is the issue of wasting the food we do have. Each year, 1.6 bn tonnes of food, worth in the region of $1.2 tn, goes to waste – that is about one third of the food produced globally (BCG, 2018) – and 6% of global greenhouse gas emissions come from food waste alone (Ritchie, 2020).
So, what is education’s place in all of this?

Think for a moment about how your education setting talks about, has access to and uses food. You may relate to lessons about food miles, fair trade crops, the preparation and cooking of food, about healthy eating and digestion. You will probably grow seeds. Beyond the classroom there may be a breakfast club and after-school provision with various snacks, break-time fruit shops and, of course, the lunch hall where eating is more often than not fast, furious and incredibly noisy. There are also, quite often, biscuits in the staffroom!

In our project, called EPESS (Jones et al., 2019), we worked with schools that look at food in a different way. We visited schools in England, Denmark and the Czech Republic (Czechia) and shared practice in a two-year exchange programme funded by the EU programme Erasmus+. During this time we undertook qualitative and quantitative research into how these school successfully enable a whole-school approach to integrating food into their pupils’ learning. In this article we try to identify commonalities in what these schools do, which might be replicated elsewhere, while also identifying how these activities link with opportunities in primary science.

These schools have embedded learning about food into their whole-school approach because they have identified it as a crucial part of their pupils’ education for a sustainable future. They have worked towards an integrated and coordinated approach in an attempt to create organisational and behavioural change – even in the face of the policy, capacity and financial limitations that all schools face.

It should be noted that the schools we worked with were not part of a special intervention and did not receive funding to implement any particular food programme. They were schools that recognised the importance of food as a resource, learning theme and pedagogical tool. While these schools were not average in respect of how they approached food, they were very much average in their national settings. Each setting told similar stories of policy-heavy, financial and time pressures. But, even in these contexts, they have begun a journey to develop an Integrated School Food System (ISFS – see Jones et al., 2019). So, how did they do it?

Practical cooking and foraging

Lots of practical cooking was taking place in all the settings, indoors and outdoors, on conventional cookers and on open fires (Figures 1 and 2). Danish and Czechia schools were surprised to see early-years pupils in England cooking on open fires, unrelated to Forest School schemes. A school in Denmark had arranged for a different class to take over the task of preparing, cooking and serving lunch for the whole school every Friday.

What might this look like for primary science?

- Opportunities to investigate changes in materials as foods are cooked and fuels are burned.
- Properties of materials – for example investigating the most appropriate materials for cutlery, an apron or dishcloth.
- Discussion and meal planning for healthy diets.

Schools in Denmark also took advantage of the geographical setting. We saw how children not only cooked their food but also foraged for it. Classes were taken out kayaking on the nearby waters and collected seaweed, which they then prepared as part of a meal (Figure 3). UK schools were inspired by this and were keen to consider how they might include apple and blackberry picking in their suite of activities.

What might this look like for primary science?

- Foraging can provide opportunities to observe changes in outdoor spaces over time and how different plants come and go with the seasons.
- Identifying and classifying edible wild species in local habitats in both urban and rural areas; for example, a patch of nettles that can be harvested to make nettle pesto.

Food production

There was lots of food growing in all the schools. Salads and vegetables were planted in all manner of containers. We saw how raised beds were filled with beans and squash (Figure 4). Unlike many schools, where the harvest comes in the summer holidays and crops are left unwatered and unpicked, in Czechia secondary schools parent groups had been mobilised to share the responsibility. Schools in England also had community gardens closely partnered with them to spread the seasonal load and ensure that the hard
In Czechia, there were nurseries and primary schools looking after their own bees and harvesting the honey (Figure 5). In some cases, getting through all the various school and local authority restrictions had taken over 10 years, but with staff dedicated to the idea of beekeeping, perseverance saw a sweet conclusion.

What might this look like for primary science?

- Growing plants from seeds and observing the lifecycle with an emphasis on pollination.
- Investigating drought-resistant vegetables such as yacon (a South American tuber) or planting the ‘three sisters’ together: the pumpkin to provide shade and keep the soil moist for the nitrogen-fixing peas that grow up the long stalks of the sweetcorn.
- Making a comparative test to investigate whether different seed potatoes yield different weights.

A focus on meal times and reducing waste

All schools in the project had a consistent approach to meal times. In none of the settings visited did we encounter the loud, unruly eating frenzy common in many schools.

Figure 3 Adult helpers sort through the seaweed foraged by pupils in Denmark

Figure 4 Growing food was an important part of the school life

Figure 5 Pupils in Czechia learn how to look after their bees

Figure 6 Importance was placed on pupils serving each other
local farmers’ market, on their menus. Others visited the UK insisted on having as much industry businesses. Some schools in local farming communities and food evidence-based research and resources.

What might this look like for primary science?

- Consulting with experts in the food industry is a great way of engaging pupils in discussion and making learning real.
- Linking learning to industry highlights the importance of science in the world of work and promotes a variety of science-based jobs.

Cooperation

Consultation and co-production of policy was an essential part of the approach in these schools, with head teachers, members of senior leadership teams, teachers, teaching assistants, kitchen staff and trainee teachers all involved. Throughout interviews and observations, the strength of relationships within a school became a consistent theme. Participants talked about the need for ‘shared belief’ in the importance of food knowledge in schools, and being ‘enthusiastic and having fun’, as well as the need for sometimes creative approaches to get activities off the ground. There was lots of talk of the need for a ‘holistic vision’, with leadership that gave practitioners a ‘chance to experiment’ while at the same time being ‘supportive, respectful and unifying teams’.

Summary

This project attempted to identify how some schools, with no extra funding and not being in a particularly affluent area, are integrating learning about food into their school curricula. They do this because they recognise the importance of food and the current crisis our food system faces. In this article we have tried to show how an integrated approach can provide many opportunities for primary science to support and celebrate this journey.

The participating schools all believed that having a whole-school approach to understanding about food was necessary, although not always easy. We hope that some of the ideas and approaches presented here will help others identify how they can take similar steps in their schools to increase learning about food and food production for a more sustainable and healthy future.

Acknowledgement

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References


Sustain (n.d.) What is food poverty? Who is most at risk? www.sustainweb.org/foodpoverty

Linking up with food producers

The schools linked their teaching to local farming communities and food industry businesses. Some schools in the UK insisted on having as much local and organic food as possible on their menus. Others visited the local farmers’ market, FaceTimed a farmer in class time and visited local businesses to find out how their food was produced.

Perhaps unsurprisingly, learning about food was on the curriculum for all of these schools. This was supported by food-in-schools NGOs in each of the countries, with Food for life in the UK, LOMA in Denmark and Skutečně zdravá škola in Czechia offering evidence-based research and resources.

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