

The Initial findings of the Healthy Lifestyles Project: A practical design and technology cooking and nutrition programme for primary schools

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ABSTRACT

Childhood obesity has reached epidemic levels in developed countries, with those who live in lower socio-economic groups twice as likely to be obese (Davies, 2019). This paper will report the findings and analysis of the first 4 years of a six-year longitudinal study into the impact of the Healthy Lifestyles Project (HLSP), which is currently being piloted as part of the D&T curriculum in a school in an area of high deprivation. The HLSP aims to develop children's practical cooking and nutrition skills, knowledge and understanding, enabling them to choose, prepare and cook healthy ingredients to feed themselves and their families, helping to change their attitudes and perceptions towards choosing a healthier lifestyle. By drawing on the experience of head chef at the Adopt a School Trust, the HLSP has been designed to provide a programme for staff, children and parents which aims to make a positive contribution to tackling children's health in the UK and beyond.

There are four key features of the HLSP: 1. Regular termly cooking and nutrition lessons; 2. Termly support for parents; 3. Opportunities for children to plant, grow and eat their own fruit and vegetables in the school grounds; 4. Teaching resources for before, during and after the practical food sessions.

Theory and research suggest that when looking at changing behaviour, interventions that have several aims and approaches are more successful. Therefore, when designing the HLSP, a multi-pronged approach was required to address attitudes and behaviours by tackling some of the physiological, environmental and social issues behind childhood obesity. One theoretical framework that the HLSP aligns to closely is Social-Ecological Model (SEM), based on Bronfenbrenner's (1979) ecological model. Preliminary evaluations on the impact the project have been made across the five aspects of the SEM theoretical framework: individual, inter-personal, organisational, community and policies, laws & other cultures.

Key Words: obesity, cooking, nutrition, healthy, lifestyle

1. INTRODUCTION

Childhood obesity has reached epidemic levels in developed countries, (Davies, 2019; House of Commons Health Committee, 2018), which is more likely to lead to higher adult obesity levels, leading to potentially serious health consequences (World Health Organisation (WHO), 2018; Public Health England (PHE), 2017), such as heart disease and diabetes. Dumbleby and Vincent, (2013) suggest that a lack of knowledge and understanding of healthy eating and how to cook is a possible cause. Currently, in 75% of schools the teaching and learning of practical cooking skills is absent (Ofsted, 2020), despite this being part of the statutory Design and Technology Programmes of Study within the English National Curriculum (DfE, 2014). If we continue to marginalise cooking in schools, we “run the risk of another generation being unable to pass on these essential life skills to their own children” (Dumbleby and Vincent, 2013, p 32).

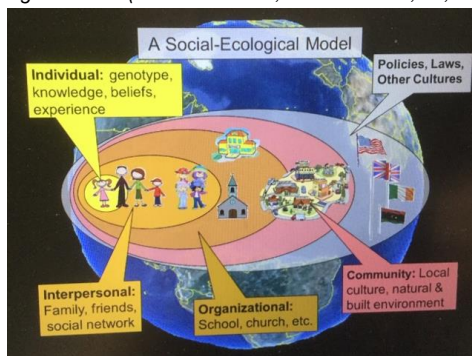
The Healthy Lifestyles Project (HLSP) has been designed to be delivered for the six years that the sample group of 32 children attend primary school (age 5-11). The design of the HLSP is explained in more detail in my recently published chapter (Gomersall, 2023). This longitudinal study, which is the basis of a PhD, will evaluate the impact of the project, to see if providing children termly practical cooking and nutrition sessions, along with support and information for teachers and parents would change their attitudes and behaviours towards healthy eating and ultimately, reduce the number of children who become overweight or obese (Gomersall, 2023). This paper focuses on the initial findings of the HLSP over the first 4 years of the six-year study.

2. METHODOLOGY

Theory and research suggest that when attempting to change behaviour, interventions that have several aims and approaches are more successful (Glanz (nd), Gregson, 2001). Therefore, when designing the HLSP, a multi-pronged approach was required to address attitudes and behaviours. One theoretical framework that the HLSP aligns to closely is the Social-Ecological Model (SEM) (figure1).

Figure 1

Image of the Social-Ecological Model (from: Sammons, P. and Bowler, M., 2020)

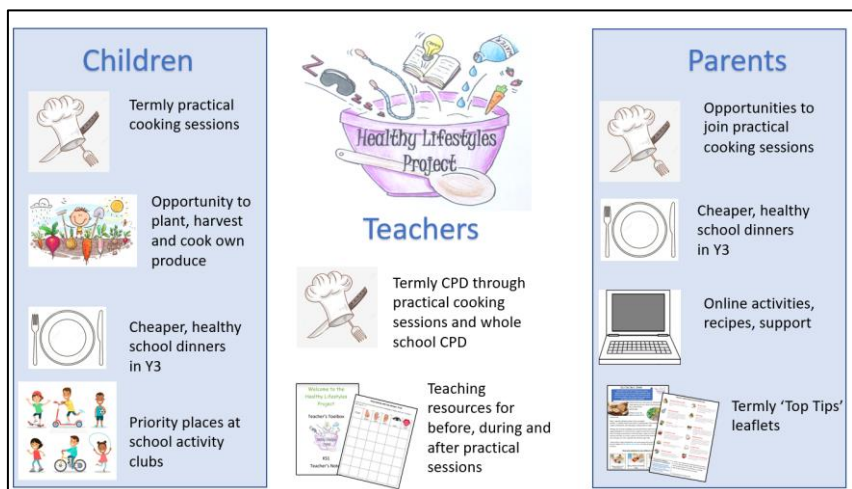


The SEM focuses around behavioural changes by self, interpersonal, organisational, community and public policy (Bronfenbrenner, 1979). Working with the school (organisation), parents (community) and the children (individual/interpersonal) gives the project a strong theoretical framework to influence public policy around cooking and nutrition education in primary schools. The second framework the projects aligns to is Self-Determination Theory (SDT) (Ryan and Deci, 2017) by aiming to meet the basic psychological needs of autonomy, competence and relatedness to lead to an improvement in children’s development, enjoyment and motivation.

To create a multi-pronged approach (figure 2), the HLSP drew on:

- Design and technology (D&T) pedagogy of teaching the knowledge, skills and understanding through DMEAs (Design, Make and Evaluate Assignments), FTs (Focused Tasks) and IEAs (Investigative and Evaluative Activities), and consideration of the six principles (functionality, purpose, user, design decisions, authenticity and innovation);
- Both SEM and SDT theoretical frameworks
- Design theory and practice to enable children to create meaningful healthy dishes for the identified consumers, as well as for society at large.

Figure 2
The multi-pronged approach of the HLSP (from: Gomersall, S., 2023)



As triangulation of data is important to increase the validity of results (Naughton et al, 2010; Gomm, 2008), several methods have been used across all three participant groups. Having triangulated the data from food diaries, questionnaires and interviews, themes linked to changes

in behaviour and attitudes, and development of D&T skills, knowledge and understanding, were identified. Pseudonyms has been used to protect the identification of any of the participants.

3. RESULTS AND DISCUSSION

3.1. Children

By triangulating the data, results suggest that children enjoy cooking (97%), and 79% are preparing and cooking meals at home. Dishes appear to have become more healthy, varied and complex, with around two thirds of children having made salads, pasta dishes and healthy sandwiches. The dishes taught at school are mainly savoury, to align with the D&T programmes of study (PoS) (DfE, GB, 2013). However, results from the children’s questionnaire shows that cakes and biscuits remain the most commonly made food at home (figure 3).

Figure 3.
Comparative data from the children’s surveys

<i>Which of the following have you made before?</i>	Oct 18	July 22
Healthy sandwich	43%	72%
Salad	39%	66%
Bread	15%	55%
Smoothie	35%	41%
Pasta dish	15%	59%
Cakes & biscuits	78%	90%

The HLSP sessions are designed to progressively teach both the content of the D&T PoS and the British Nutrition Foundation core skills (PHE, 2015). Through observations, the children’s confidence has improved across all core competencies, especially following a recipe, using a sharp knife and a heat source, many of which the children feel they can do independently (figure 4).

Figure 4.

Comparative data of children's responses to skills they felt they couldn't do yet. *Only KS1 skills have been captured as data wasn't collected in 2021, 2022 due to Covid

BNF Core Skill KS1	I can't do this independently yet:	
	Oct 2018	Sept 2020*
Spreading	15%	3%
Peeling	28%	6%
Snipping	46%	16%
Weighing ingredients	35%	3%
Following a recipe	50%	16%
Using a sharp knife	76%	34%
Using a saucepan	89%	44%
Using a kettle	89%	50%

Children's increased confidence was also demonstrated in the group interviews, where many requested to learn to cook a 'proper meal like pasta or a roast' next.

It has been noted at both school and home that children are demonstrating better knowledge and understanding of the principles of a healthy and varied diet, with comments such as: "If you eat stuff that's unhealthy it's not good for your body" and "Too much sugar rots your teeth." One child showed an awareness of the impact it may have on life expectancy:

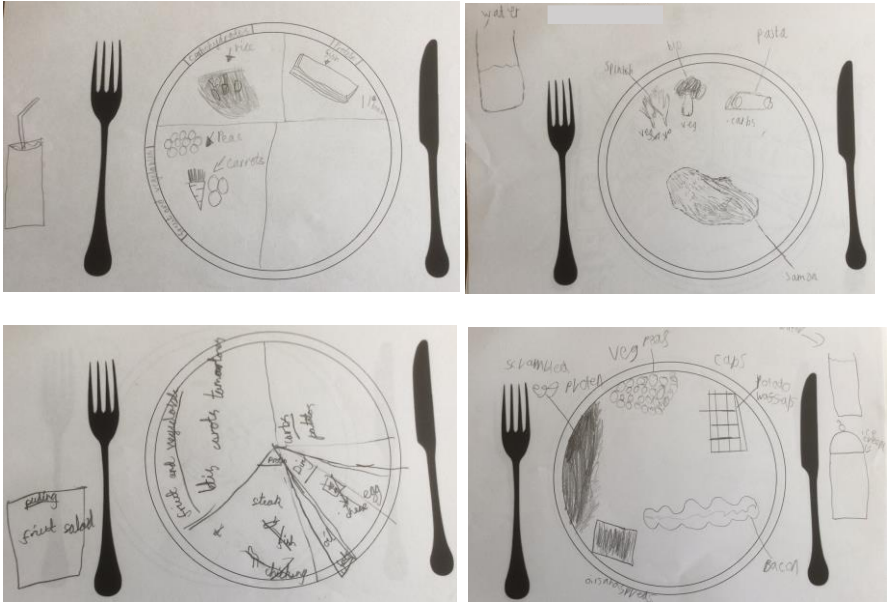
If we eat too much food with lots of sugar and fat in when we get older, we will die a little bit earlier but if you're healthy you will die a little bit later.

Children also referenced both the Eatwell Guide (PHE, 2018) and traffic light packaging in the group interviews, with one child stating:

I've been checking (with my mum) how much stuff are (on the wrappers) and I've been eating more healthy stuff. If it's green it's good, if it's amber it's not as good and if it's red it's not good for you.

All children were able to design a balanced meal, with many considering the food groups and portion sizes from the Eatwell Guide (see fig 5), selecting only water or milk to drink, justifying their choices, by saying: 'to hydrate you' or 'make your bones strong'. 38% of the children split their plate into food groups, with some children considering portion sizes, knowing they needed a lot of some food groups, and less of others.

Figure 5
Examples of children healthy meal designs



3.2. Teachers

The school's D&T lead suggested that through the HLSP's collaborative and multi-pronged approach, children and their families were demonstrating positive attitude and behavioural changes towards leading a healthier lifestyle.

I think the willingness to try healthier options, the confidence to cook healthier options and the enthusiasm to go home and bring that to their families.....it's because it's the whole community involved. It's through school, through the pupils, then going home and it's that whole four-way process, isn't it?

A key aspect of the SEM (Bronfenbrenner, 1979; Sammons and Bowler, 2020) is how behavioural change is linked to the connections across several groups. Only so much can be achieved in isolation by any one of these groups, whether it be school, home or individually. Because most meals are bought, prepared and eaten in the family home, even lunch during the school day (School Food Trust, 2019), the success of this project, therefore, is not just changing the beliefs and attitudes of the children, but the whole family.

Teachers have witnessed the children acting as conduits for this transfer of knowledge, through overheard conversations and information shared via the home-school learning portal, Seesaw:

I know that they've spoken to parents about it and..... we've had photos on Seesaw..... they've always been talking about healthier things that they have cooked.

We saw in the soup session that they're aware they need to make healthy choices. They were talking about seasonality, food miles, nutrition and the Eatwell guide.

Completing the annual 7-day food diary has helped bring food choices into the fore, with the D&T lead stating:

I think.... parents having to help us with [the food diaries]....is having a big impact because parents are the ones making the choices on the meals and the children can influence parents, but the parents ultimately are the ones that are going to make those choices.

Alongside an increase in knowledge and understanding, children's greater confidence and competence during practical sessions was also observed, with one year 4 teacher stating:

...it's quite clear, they've developed an awful lot. When I think back to the first time that I saw them.....this time there's a wide variety of skills that were immediately obvious, particularly the cutting, using the claw or bridge method.

This supports the children's judgement in their 2020 survey (see fig 4), where two thirds of them felt confident and safe using a sharp knife independently.

There have also been changes to school policy and practice to align with the HLSP, by including a food unit for every year group in the school's updated D&T long term plan. The role of the school gardener has also changed, from supporting the science curriculum previously, to solely focusing on the food curriculum, by planting, growing and harvesting produce to use in certain dishes with whole classes, rather than groupwork. Another key change has been the introduction of savoury foods, such as bagels, bread sticks and crackers, to replace the biscuits being offered to children in the morning, in case they'd missed breakfast.

However, despite this multi-pronged approach and evidence suggesting that HLSP children are developing their skills, knowledge and understanding, the D&T lead acknowledges that knowing and doing are two different things.

I think there's a difference between being aware and knowing ... what a healthy meal would look like, and ... the practical choosing of that, but I feel they ... do know what a healthier lifestyle is, what is the healthier option ... but just like adults, I'm not sure that all of them are making those choices, but they are aware.

3.3. Parents

Comments on the parent questionnaire show an awareness of the benefits of collaboration between school and home:

Schools and home working as a team is the best way.

It's good initiative for children to learn about healthy eating. School encouragement is more effective than family encouragement and this programme will help this process.

100% of parents hold positive views about the project and the impact they feel it has had at home, both on themselves and their child. They felt sure that behaviour, awareness and choice were being changed and were grateful to be involved.

Healthy lifestyle is definitely important to us however it means giving up lots of things e.g. junk food... it's a challenge but more exciting is receiving guidance from your child of what's better, due to school practice, gives us a better grounds to carry on.

I believe this is an excellent idea. Habits and choices formed in childhood influence choices made as an adult. If children are taught how to cook they will not need to rely on pre-prepared meals...as they will have the skills they need to cook from fresh.

When considering their awareness of the risk of obesity to their child, 70% of parents ticked the highest category (5-very aware) compared to 47% at the start of the project. Research suggests (Coveney, 2004; Rudolph, 2009; Ruiter et al, 2020) that by raising awareness with parents of whether their child's weight sits within a healthy category, action is more likely to follow, such as making healthier food choices, or reducing portion sizes, with parents referring to changes made such as, "As a family we've started eating healthier foods and trying to cut out the sugary foods" and "I consider my child's weight more".

Evidence in both the parent surveys and food diaries suggests that parents are being influenced to make healthier choices through information shared by the children as a result of the taught sessions, and through termly 'Top Tips' leaflets, such as engaging with the Eatwell Guide, which has increased from 26% of parents stating the Eatwell Guide influenced their food choices 'all' or 'a lot' of the time, at the beginning of the project, compared to 44% now. Another example is an understanding and a use of the traffic light system on food packaging. Additionally, 90% of parents now feel they have 'very good' or 'good' awareness of healthy food choices, compared to 75% at the start.

HLSP has had a good impact thinking about healthy foods try new veg.

I like that Peter has learnt about the traffic light system on food packaging. It's something that I look at a lot myself now.

I'm also more aware of healthier choices and the impact it has on family.

This was echoed by parents who said, "It [the food diary] is really helpful and reminding us to eat healthy food, especially to encourage Kinga every time to eat healthily and fill up the charts." Current information shows an improving picture with most children eating a balanced home-made dinner most days.

As part of the HLSP, children are taught about the benefits of consuming local and seasonal produce (see fig.2) as well as design vegetable gardens, then plant, grow, harvest, prepare, cook and consume their own produce. Connecting children with the food on their plate is extremely powerful as children are more likely to eat fruit and vegetables if they have grown them themselves (Green and Duhn, 2015). To encourage the 'grow your own' habit at home, tomato plants grown from seed at school were sent home. According to the parent survey, the number doing this has increased by 50%, from 10 families to 15. This aligns with both theoretical frameworks as it considers interpersonal, school and community (SEM) and also competence and relatedness (SDT): "Yes, we grow green beans, tomatoes, potatoes, pumpkin, courgette. Adrian helps plant them and water them," with some utilising their wider families, "no, as we don't have the space but we would like to but Paul helps grow tomatoes & strawberries in his grandad's garden," and "Grandparents grow tomatoes and potatoes which Sonia usually goes and helps with".

Encouraging children to cook at home is paramount to achieving autonomy, competence and relatedness around cooking and nutrition (Ryan and Deci, 2017), which could lead to an improvement in the children's understanding and pleasure of preparing and enjoying healthy food. Therefore, an increase in the children either asking or being asked to help in food preparation at home, would demonstrate another positive impact.

Parents reported a rise in the number of children asking to help in the kitchen; "It has helped as he wants and enjoys preparing foods now," with 62% helping at least once a week now, compared to 50% at the start. When asked, the majority of children (79%) indicated that they cook at home either with a family member or increasingly on their own. Parents asking their children to help more had risen, from 15% at the start, to 24% asking their children to help prepare meals at least 3 times a week, even in busy households:

Due to work/busy family life we don't always have the time to cook tea together but when we do my son will help to prepare.

The nature of the cooking has got more complex, with children mentioning helping with various tasks, from chopping vegetables for a spaghetti Bolognese, preparing their own food, to cooking hot food with parental supervision. During lockdown, several children posted pictures of themselves cooking family meals on the school's online platform (See-saw, 2020).

Jade really enjoyed learning about healthy eating, new food and started to become interested in helping to cook,

One of the biggest changes parents noticed was their children's willingness to try different foods.

My child used to be a very fussy eater. This year he's tried a lot of new foods at school and continues to eat them at home. This has made his diet far healthier and less repetitive.

It's made Iqbal much more likely to try new foods. He's more interested in preparing food and thinks at times about his choices.

However, for some children, change is not easy, with some parents noting:

We still have struggles trying to get him to try new foods but since starting the project there's a massive improvement.

Although Lucy doesn't like the healthy options she's now started to eat/try more foods such as chicken.

It made my child think more about what he's eating but he still makes poor choices.

When comparing food diary data, children appear to be consuming less sugary snacks and for many children, fruit is regularly being chosen/given as a snack. This may be down to parents' purchasing choices, e.g., "I am trying to improve snacks the children are eating," but also children's change in behaviour, with one comment on the parent survey stating: "Tom asks if some foods are healthy & likes to tell us when he's chosen a healthy snack".

As part of government policy, children between the ages of 3-7 are provided with a daily free piece of fruit during the school day (DfE, 2023). The aim of this policy is for snacking on fruit to become a positive habit, as well as contributing to the consumption of the recommended 5 portions of fruit and vegetables a day. This has been supported by multiple comments from the parents' surveys, such as: "Lily is more open to trying new fruit and veg and will often choose fruit/veg for a snack".

However, just like the D&T lead, parents remain tentative that acquiring the skills, knowledge and understanding around healthier lifestyles, is not enough to guarantee healthy choices;

Every time they do or prepare something at school Ishma liked it and is excited and motivated. But four or five days a week he wants to eat McDonald's and sweets every day.

It made my child think more about what he is eating but he still makes poor choices.

4. CONCLUSION

By utilising the two theoretical frameworks and drawing on best D&T practice and design theory, these results suggest that by engaging with regular practical cooking and nutrition sessions at school through the HLSP, the children have developed their interest, confidence and competence across many aspects of food and nutrition. Through successful collaboration between the school, the children and their families, it appears that the HLSP has had a positive effect on changing behaviour and attitudes towards making healthier food choices, enjoying preparing, cooking and consuming healthy meals, not just for the children, but their families too.

In July 2024, the final data will be gathered, and the children's BMI will be compared to the local and national data collated as part of the National Child's Measurement Programme, to see if there has been any impact on obesity rates. Together with the qualitative data collected, this helps

increase the validity of the research, meaning, if successful, achieving the same results with the HLSP should be reproducible. The aim is to roll out the HLSP across all primary schools, enabling it to be meaningful to society at large, not just the families of the pilot school.

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