‘Doing school food!’: a practical toolkit for adopting a whole school food approach

Abstract

Aims: The dietary intake and reported eating behaviours of adolescents in the UK are a public health concern. Schools are identified as an ideal ‘place’ setting to promote health and improve young peoples’ nutrition outcomes. A gap in the understanding of how healthy secondary school food policy can be implemented, sustainable and effective, may hamper progress to improving school food provision and nutrition education in the UK. Research was conducted to understand the factors which influence healthy school food provision and the adolescent’s food choice to inform and develop a practical framework for schools.

Methods: This research involves the development of a practical toolkit which synthesises evidence generated from a mixed methods study and a systematic review. This was informed by an exploration of the secondary school food environment as a potentially ‘obesogenic’ setting, the effectiveness of school food interventions and policy in Europe and UK, included young people’s (11–18 years of age) eating behaviours and priorities in food choice. A pragmatic approach was taken in the integration of evidence, using ecological and behaviour change theory, and joint display principles.

Result: A six-phase practical toolkit is presented, guided by ‘What Good Looks Like’ and ‘Whole Systems Approach to Obesity’ principles which can be used to translate the evidence from this research into good school food practice.

Conclusion: Improving secondary school food provision across the school day and having a coherent whole school food approach to healthy eating have the potential to significantly improve a young person’s food choice, therefore impacting the nutrient intake of adolescents in the UK. This toolkit helps working towards operationalising this idea.

INTRODUCTION

Adolescence is an important stage for intervention to support future health outcomes.1 The challenge in successfully intervening lies in the multiple factors involved in the development of eating behaviours. Adolescent dietary intake and obesity are an established public health concern in Europe and the UK, arising from the heightened nutritional requirements due to the rapid physical, emotional and brain development experienced by this age group.2 The COVID-19 pandemic highlighted, and potentially exacerbated this issue, with reported disordered eating, eating in the absence of hunger and increased consumption of snacks high in fat, sugar and salt (HFSS).4

The young person’s food choice is influenced by numerous factors, including social acceptance tied into their sense of identity, socioeconomic status (SES), peers, family, community, food access and norms, government policy, marketing and social media.5 The inequity of poor nutrition outcomes and obesity are observed disproportionately for those residing in areas of deprivation or ethnic minority communities.6

* The term young people and adolescent is used in the current study to mean the age group 11-18 years reflecting the secondary school and sixth form population group.
The physical and mental health consequences of childhood obesity are considerable. A young person with obesity is more likely to continue to suffer from obesity and related problems into adulthood, with heightened risks of disability, related illness and premature mortality. Data reporting levels of childhood overweight show an upward trend and a marked increase in the gap of obesity rates in the most deprived to the least deprived children.

The adolescent diet pattern is characterised by a low intake of fruit and vegetables, irregular eating (missing meals and increased snacking) and high intakes of HFSS. Of critical concern is that a dietary intake lacking in essential nutrients and high in ultra-processed foods is associated with poor mental health, poor school performance and increased risk of overweight and metabolic disease.

Why should schools implement a whole school approach to food?
Focusing on the school as a health promoting environment has the potential to engage communities and reduce inequalities caused by food insecurity and poor access to healthy food. It is recognised that each school can shape their approach, according to their local and school context.

Health inequalities are expressed in the widening gap of obesity levels, with children and young people lower on the social gradient of society being more likely to live with obesity. Marmot et al. identified a ‘large gap’ in the academic achievement between young people in the most and least deprived areas in the UK. The review also indicates that pupil funding in schools has decreased by 8% in the past decade, with significantly more reductions in post-16 education. Research shows that young people who may be at risk of being malnourished are less likely to fulfil their potential at school.

To have a sustained impact on young people’s dietary outcomes, evidence suggests that the wider determinants of health should be addressed in all policy and interventions.

The views of those in and affected by a school setting, including consideration of any external influences, are critical to understanding how to shift norms, create a shared vision, and align values and agendas to enable solutions to be discussed. The foundations of building relationships and informing all stakeholders allow the identification of which parts of the school system can be leveraged to improve nutrition outcomes. A commitment and willingness to change existing practice is lever for sustainable change and require engagement, not just from leadership but all involved. The value in applying ‘Whole systems approaches’ is the adding in of steps to support the location of root causes of less healthy eating, or places in the system that can encourage improved eating habits, for example, developing innovative menus and catering staff training. Effective sustainable whole system approaches include monitoring and evaluation as a continuous process.

The school food system within the wider environment
Having access to nourishing food as the ‘norm’ in the places we live, work, socialise, play and go to school should improve public health, the complexity of the wider determinants to health and in particular, the commercial determinants makes the idea of ‘healthy choice as the easy choice’, a significant challenge. The school setting has been cited as being part of the ‘obesogenic environment’, where food choices are not always healthful, therefore, as a place setting, are an obvious place to intervene. Incorporating ‘Whole systems’ approaches and multilevel interventions in schools to promote healthy eating has been associated with increased healthy food choices.

In the current work, the ‘school food environment’ is defined as the infrastructure and spaces within and surrounding the school setting where food and beverages are consumed and purchased including dining areas, vending machines and outlets where food and drink is served, consumed or purchased. In addition, the nutrient content, marketing, advertising, labelling, promotional offers and cost are encompassed in the ‘school food environment’ context.

Research has described a disconnect between nutrition education in school and the messages in the social and physical school environment to include food served. For example, a pupil learning the importance and being able to plan a healthy balanced meal in food technology lessons, while having a bacon roll or pizza served at school lunch. Poor quality food being served and access to convenient HFSS snacks, limited time to eat and weight concerns have been established as barriers to young people consuming a healthy balanced school meal. In the UK, school food policy is focused on the food-based standards (types of food to be served and restricted). Encompassing a social element of eating together with pupils and teachers, encouraging trying new foods and modelling behaviours, and including nutrition and sustainable lifestyle education can support improved population health and wellbeing outcomes while also developing a young person’s future role as an engaged healthy food citizen.

The current work acknowledges improving school food provision and nutrition education alone is insufficient. School food is only one part of the levels of influence that must be tackled to improve overall dietary intake and support the reduction of obesity and malnutrition in young people.

AIMS AND OBJECTIVES
The aim of this study was to explore and develop the evidence to inform a practical guide to allow effective implementation of a ‘whole school food’ policy.

The following objectives were created to understand the multiple influences of the school food environment and the young person’s food choice:

- Investigate the timeline of the development and implementation of UK school food standards from past to present day;
- Systematically review evidence of the effectiveness of secondary school food interventions and policy;
- Explore the barriers and facilitators to healthy school food provision and the
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Methods
A pragmatic, mixed method study planned to understand the wider picture of school food. This included the historical, social and political context, and understanding the barriers that exist across multiple levels of influence (within and outside of school). This enabled the identification of applicable real-world solutions. The author’s prior experience of implementing whole school food approaches and guiding of local and international school food interventions supported the practical toolkit development.19

Study design
Following a scoping of literature to understand the factors which influence adolescent eating behaviours and school food provision,5 three elements of research were conducted, analysed and integrated to inform the synthesis of the practical toolkit presented in this article. These were (1) Literature review of School Food Policy in England 1940–2019; (2) A Systematic Review of school food policy and interventions in Europe and (3) A mixed methods study on the delivery of healthy school food provision UK.

School food provision in England: a historical journey
A literature review of school food policy in England from 1940 to 2019 examined the influences of the political structure and the impact of decisions made by each respective government from the first school food standards being introduced in England in 1941. This part of the research informed understanding and further study by outlining the importance of strong macrolevel policy, and the role local government must play in supporting schools.20

The impact of, and views on, school food intervention and policy in young people aged 11–18 years in Europe: a mixed methods systematic review
The systematic review published in Obesity Reviews in 2021 provided insights into the effectiveness of school food policy and interventions in Europe, including the UK. Following the Joanna Briggs Institute Reviewers Manual with objectives, methods and analysis set ‘a priori’ and published in PROSPERO CRD42019119921, and reported according to PRISMA guidelines.15,21 Searches run in January 2020 included primary studies reporting the effect and experiences of interventions or policy focused on nutrition for young people (11–18 years of age), published from 2008 (prior to this date, similar systematic reviews were discussed and cited in the research).22 The integration method of configurative analysis allowed the comparison of quantitative and qualitative evidence to link findings.21 This part of the research confirmed school food policy and interventions can improve the dietary quality of young people and the important role schools can have in reducing the gap of health inequalities when a whole school approach is taken.15

The barriers and facilitators to delivering effective school food provision; a mixed method study
An exploratory sequential study design proposed first to qualitatively explore leadership and catering staff views with four schools of varied demographics and locations in the North East of England.5 The aim was to explore school’s perceived barriers and facilitators to providing school food and attitudes with regard to a whole school food policy and ethos, and observe any differences dependent on SES or location of the school community. Thematic analysis allowed the process of ‘deep and immersive analysis’ guided by research questions.23 Second, data from the first phase of study were used to produce a national survey to elicit a wider sample of responses, to include parents, school staff and young people. A peer-reviewed publication provides the national survey data and recommendations.24 The adapted model for this research based on socio-ecological framework allowed the interpretation and visual display of the data as shown in Figure 1: (1) Macro level, the wider national influences influencing the secondary school food system and adolescent food choices, (2) Meso level, the local community factors, (3) Secondary school level, the

Figure 1
Factors which may be considered in taking a whole school food approach (developed by the Rose et al.5)

School food policy and guidance
National food strategy - easy access to fruit and vegetables
Restrictions on advertising of high fat, sugar/cake (HFSS)

Meso
Role modelling, availability and accessibility of fruit and vegetables, reduced access to HFSS

School
Whole school food policy approach
Nutrition education
Role modelling
Healthy school food provision

Young person
Habits
Self efficacy
organisational and cultural factors present, (4) Student level, the biological, social and behavioural factors.5

Finally, the integration of mixed method findings enabled convergence, divergence and expansion of the data, shown as six themes within a joint display table (Supplemental Appendix G: Table 5).25

All methods are described in detail in the thesis by Rose et al.5 The study was conducted in line with ethical guidance and approval of Teesside University ethics committee.24

Findings
The current research, conducted over 4 years (2018–2022), identified the importance of national policy, the effective communication and support in implementing such a policy, the recognition of differing school contexts and the multiple levels which influence a young person’s food choice. The findings demonstrated a need and potential for ‘whole school food’ policies to be adopted by all schools. Consistent and varied approaches to incorporating educational strategies and behavioural interventions can support young people in making healthy choices within the secondary school environment.15,26

Figure 2 gives the many factors identified as potential influencers of a young person’s food choice within a socioecological model. Adolescents are often health aware, equipped with knowledge that healthy eating is protective to their physical health. Health is often lower on a young person’s priorities, with other factors playing a role in a young person’s motivation or ability to make a health promoting choice. Social acceptance is an integral part of a young person’s food choice, with social identity being tied to one’s eating habits among peer groups.27

The differences in young people’s lived experiences, the society norms of eating habits, the biology of impulsivity and psychological elements of emotional reactions are considerations when planning interventions.

A practical toolkit for schools: ‘what good looks like’; a whole school food approach
In the research carried out for this current work, there is evidence that a structured approach in the implementation of whole school food intervention may be helpful for leadership.19

In responding to the research question ‘What is required to support all UK secondary schools in achieving the national school food standards and consistent serving of nutritious foods?’ a toolkit was developed. The authors’ prior experience in co-producing and implementing a whole school food policy and development plan, and the 4-year study findings were used to produce the
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### Table 1

#### Facilitators from the overall study findings

<table>
<thead>
<tr>
<th>Identified theme</th>
<th>Facilitators</th>
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| Autonomy         | • Comprehensive adherence to school food standards as part of a whole school food approach  
                   • Training for school leadership and all staff on the importance of nutrition for immunity and development, including the school food standards  
                   • Involve young people in developing healthy eating policy and food provision  
                   • Use of and embedding behaviour change techniques and coherent education strategies as part of a whole school approach to food and nutrition  
                   • Incorporate innovative practice; for example, wholewheat wraps, pasta with choice of fillings or toppings  
| Social           | • Local government implementing healthy place interventions ‘out of home’ food focus  
                   • Community growing and food hubs  
                   • National and local advertising bans, increasing healthy food advertising  
                   • Peer-led ‘social marketing’ interventions  
                   • Student nutrition action groups or school council  
                   • Education: nutrition knowledge and empowering with skills at school level and local community  
| Appealing        | • Catering staff training, innovative practice: choice and aesthetics  
                   • Free or low-cost fruit and vegetables  
                   • Pleasant eating environment and colourful displays of healthy options  
                   • Involve young people in menu planning (informed involvement) and incorporate education on short-term benefits of nutrition  
| Cost             | • National Food Strategy  
                   • Competitive pricing from school suppliers  
                   • Catering staff training in the delivery of low cost appealing healthy options  
                   • Free fruit and vegetable programmes/universal-free school meal offer  
| Healthiness      | • School leadership and staff training on the importance of a healthy school food culture  
                   • Health and wellbeing lead role in schools  
                   • Catering staff training on delivering low-cost healthy convenient school food  
                   • Implementation of collaboratively developed ‘Whole School Food’ policy  
| Time             | • National financial support and guidance for school dining spaces  
                   • Reviewing menus (school guidance): Innovative, appealing food choices meeting school food standards  
                   • Review dining structure to reduce waiting in line and increase time to eat, that is, staggered lunchtimes or multiple food stations  
                   • Provide time to choose food prior to lunchtime – traffic light labelling, digital interventions, regular planning balanced lunch sessions  

Public Health England.29
healthy weight”29 and (2) ‘What Good Children and Young People’s Public Health Looks Like’.11

Six-phase process
The UK ‘Whole Systems Approach to Obesity’ six-phase process29 was purposefully adapted to enable a structured framework for schools to follow (Table 2). This provides practical guidance of what a ‘good’ school food culture looks like in the context of a secondary school community.

The basis of a successful whole systems approach is for all stakeholders to be joined in their mission and, in the school food context, for all to be engaged in the narrative to improve young people’s health, and the prioritising and embedding of nutrition education and healthy eating within the school culture.5

This guide focused on the application of the evidence in the context of the secondary school food environment with the consideration of a focus on the individual and community context when applying the evidence. This process is intended to be used by schools as a guide, to be updated and reviewed with emerging evidence including best practice case studies (Supplemental Appendix A).

Six-principle self-assessment matrix
Once full stakeholder engagement is established, the third phase of the process (Table 2) recommends the completion of a full audit to understand the current school food approach and where change is needed. Six principles are given in the self-assessment tool shown with detail of use in Supplemental Appendix B. These principles have been informed and adapted from evidence5,21,22,24 and ‘What Good Children and Young People’s Health Looks Like’.11 The self-assessment matrix (Supplemental Appendix B: Table 3) is a tool that schools can use to map what they are doing well and where they can take action to achieve a ‘Whole school food approach’.

Developing a shared action plan
In Phase 4 (Table 2), the development plan supports focused forward actions including the creation of a whole school food policy. Supplemental Appendices C–E provide example policy (including rationale), resource links and an example development plan which were co-produced in a secondary academy school setting in the North East of England.

Taking actions forward
Using the action plan as a foundation, it is useful to seek expert knowledge in monitoring and evaluating the collective actions set at this stage. Guidance encourages full stakeholder feedback and approval with regular task group meetings scheduled for the year ahead and at set critical time points for further assessment and reflection on progress. In addition, full consultation should be set into motion for the “whole school food policy” to include parents, young people, staff leadership and relevant school partners.

Progress and reflection
By phase six, the plan for regular monitoring of progress and reflection has been established. The guidance sets out accountability recommendations and encourages the working group to revisit, review and refresh the self-assessment matrix and development plan (Supplemental Appendices B and E) to strengthen the whole school food approach.

DISCUSSION
This research showed multiple levels of influence guide a young person’s ultimate food choice and therefore solutions in improving healthy food choices require changes at each level (Figures 1 and 2), see Supplemental Appendix F. The full data set of findings and a prior co-production of a school food policy and development plan informed the development of a toolkit which is a practical guide to implementing a coherent whole school food approach.

Fully appraising young people and having a coherent nutrition education to complement food provision are essential in changing a school culture of healthy eating being acceptable to pupils.

The current work presented many challenges in embedding a whole school food approach, and some of the identified barriers and recommendations for best practice and further research are outlined below.

Macrolevel
At national (macrolevel), the literature review conducted as the first element of the study (see method section) identified political party changes and government structure had an adverse effect on consistent national school food policy.20 A lack of evaluation of the current school food standards has also hampered the ability to understand how effective they are, where they are placed in the whole school priorities and how they can be improved. The 4-sphere approach from a systems map revealed in the development of the Nutrient-Based Standards (in place prior to the current standards)31 provides evidence of what should be in place to ensure success of a macrolevel school food policy, that is, local authority support. Compliance to UK school food standards is considered variable and warrants further research.15,24

A review of the cost of healthy school food provision would be beneficial in understanding this critical element of delivering school food, and the provision of pleasant social dining space for pupils. In this data sample, catering staff viewed the expansion of a supplier list and competitive pricing as a facilitator in improving healthy choices in their schools.

School level
The data gathered in this mixed method study demonstrated when ‘whole school food interventions educate via the curriculum and are combined with behaviour change strategies, significant improvements in nutrition knowledge, dietary quality and behaviours are observed. As digital, play-based and peer-led approaches have shown promise, further research on using these within such a whole school food policy approach may be useful.5

Making healthy choices more convenient and unhealthy choices less
so is suggested to encourage the consumption of more healthy foods, that is, placing healthier food/drinks at eye level, making innovative choices which appeal to young people, such as berry oats with milk or yoghurt pots, wholegrain wraps, pitta pocket or pasta offered with a choice of fillings/toppings.

Every school could benefit from having a health and wellbeing lead with a focus on healthy eating/nourishing as a key part of the role. Having a strong co-produced healthy food policy and regular staff briefings and training in the importance of a whole school healthy eating culture, the rationale of role modelling, non-food rewards and the development of a healthy relationship to food can support positive changes in the whole school food ethos. In addition, increasing the awareness of the potential impact of nutrition on young people’s academic performance, wellbeing and longer-term health can support in ensuring staff, governors, parents, pupils and school leaders are motivated to implement and sustain whole school food policies.

**School impact on meso and student level**

Young people are stakeholders in the shared mission of improving school food,

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**Table 2**

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<tr>
<th>Phase</th>
<th>Aim</th>
<th>Steps</th>
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| 1. Set up                 | Secures leadership support and establishes a team to coordinate the approach. | 1. Engage with senior leaders to gain initial support and approval  
                              |                                                                                                   | 2. Engage and set up a working task group to set and take actions  
                              |                                                                                                   | 3. Establish advice and support group, include senior staff, governors, young people and local authority partners |
| 2. School in context      | Build a picture of the school assets and why nutrition matters to pupil’s health. Create a shared understanding. | 1. Collate any available local/school data, for example, National Child measurement, local healthy behaviour survey data  
                              |                                                                                                   | 2. Identify the areas on the school currently engaged in supporting healthy eating/positive dietary outcomes  
                              |                                                                                                   | 3. Establish the assets of the school and current actions |
| 3. Assess and vision      | Complete the self-assessment matrix.  
                              | Agree a shared vision                                                                          | 1. Bring working group together (encourage a widening group of partners across the school community, including local authority involvement), discuss and work through the self-assessment matrix (Supplemental Appendix B).  
                              |                                                                                                   | 2. Agree a shared vision statement – share across the school |
| 4. Action                 | Prioritise areas to intervene in the current school system, refine vision and set actions         | 1. Create a comprehensive presentation to include all actions required to facilitate a ‘whole school approach’ – refine the shared vision  
                              |                                                                                                   | 2. Bring together all partners to develop a whole school action plan to include timeline, resources required and accountability |
| 5. Managing the system    | Maintain momentum, agree and approve action plan with senior staff and governors                  | 1. Refine the action plan and develop structure of the whole school system, monitoring, evaluation and a system of regular meetings  
                              |                                                                                                   | 2. Present the finalised shared vision; action plan (3–5 years) to all partners, senior staff and governors  
                              |                                                                                                   | 3. Agree and approve action plan and shared vision |
| 6. Monitor Reflect Refresh | Critically reflect on the undertaking of the Whole School Approach process and identify opportunities to strengthen | 1. Monitor and evaluate actions  
                              |                                                                                                   | 2. Maintain momentum through regular partner meetings  
                              |                                                                                                   | 3. Revisit self-assessment matrix to reflect on progress and identify areas for strengthening  
                              |                                                                                                   | 4. Keep monitoring the school system changes over time and adapt to strengthen  
                              |                                                                                                   | Note: aim to gather feedback from pupils, parents and staff to assess and reflect on what works and gather data on barriers and facilitators |
and pupils can be prepared to be good food citizens, learning about the wider picture of their food choices, that is, linking wider climate change and global impacts on the food system. Where school food interventions are implemented, alongside the young person’s biological and cognitive factors, the wider food environment should be considered.

Evidence shows the social benefits of having time at break and lunch to engage with peers and eat together are significant in the positive development of a young person’s wellbeing and social skills. Investing time and resources in reducing queuing times and implementing ways to make dining areas more pleasant and social learning environments are recommended. Some schools may benefit from introducing respectful school rules produced by the pupils themselves. Including adolescents in policy planning may improve the success and sustainability.

CONCLUSION

The research presented in this work has identified the importance of consistent and well-communicated national policy, local support for schools, a collaborative approach at the school level with young person’s voices and priorities recognised and incorporated into school food interventions and policy. The research also supports the adoption of whole school food policies, using a variety of approaches to improve adolescent dietary intake, including educational strategies and interventions which make the healthy choice easier in the school setting. Taking a whole school food approach has the potential to significantly improve a young person’s food choice, therefore impacting on the nutrient intake of adolescents in the UK. The testing of the toolkit as presented is recommended as a practical starting point and may be useful in establishing a wider evidence base of what works and how, for secondary schools in England.

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SUPPLEMENTAL MATERIAL

Supplemental material for this article is available online.

NOTE

1. This research focuses on secondary schools and secondary school age young people, including post-16 education establishments. The challenge in interpreting and aligning school food research is the differences in the individual context of schools and the varied policies and approaches which exist across Europe and the UK. While the evidence gathered to inform the practical toolkit includes studies from across Europe and the UK, the data sample from the mixed methods part of the research is for the most part representative of schools in the Northeast of England.

References

17. Warwick J, Mooney A, Oliver C. National...
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Healthy Schools Programme: Developing the Evidence Base, 2009. Available online at: https://core.ac.uk/download/pdf/83254.pdf


