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Evaluation of the European Union School Fruit, Vegetables and Milk Scheme in Ireland: Interim Report

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Executive summary

Background

The Irish National Children's Food Survey (II) (2017/18) reported that children in Ireland aged 5 to 12 years consumed less fruit and vegetables and dairy products than recommended for a healthy diet. Only an average of 3 portions of fruit and vegetables was consumed by this age group per day and 37% of children have inadequate intakes of calcium. The mean population intake of fresh milk has fallen by 24% over the last 14 years (<https://www.iuna.net/surveyreports>). There is an ongoing need to promote the consumption of fruit, vegetables, and milk to meet the nutritional needs of Irish children.

At a European level, the promotion these foods in the school setting have been supported over several decades with aid from the EU School Fruit and Vegetables Scheme (SFVS) and the School Milk Scheme (SMS). In 2017 these two schemes merged to form the EU School Fruit, Vegetables and Milk Scheme (SFVMS). In Ireland, the SFVMS is funded by the Department of Agriculture and Food (DAFM) and its implementation is described in their six-year statement of strategy. The implementation of the scheme involves two programmes:

The EU School Fruit and Vegetables component is delivered in Ireland through the Food Dudes Healthy Eating Programme (FDHEP), managed by Bord Bia, the Irish Food Board, under guidance of the DAFM. The FDHEP aims to increase fruit and vegetable consumption amongst primary school children through the provision and repeated tasting of fruit and vegetables over a 16 day intervention period with the support of accompanying measures in the form of role models (Food Dudes Heroes) and small rewards (followed by a home phase where fruit and vegetables are supplied from home). The Food Dudes Maintenance Programme involves a 'Food Dudes week' which is designed to be delivered in the years following the main intervention to encourage longer term engagement and maintain positive changes in food behaviour.

The EU School Milk Scheme (SMS) component is managed by the National Dairy Council (NDC) in conjunction with participating cooperatives and local authorities under guidance of the DAFM. It aims to promote and encourage the consumption of milk amongst children in school and



throughout their lives. Educational materials have been designed to accompany the SMS to encourage children's engagement. The 'Moo Crew' are teaching materials, to accompany the SMS, and designed to increase children's engagement.

The most recent six-year strategy for the SFVMS was implemented between 2017/18 and 2022/23. On the 1st October 2018 University College Dublin was commissioned to conduct an evaluation of the EU School Fruit, Vegetable and Milk Scheme. The design of the evaluation included assessing the effectiveness of the schemes in promoting consumption in schools where the programme was being implemented (intervention schools) and comparing to schools without the intervention (control schools). A longitudinal component was also built into the original design which would allow for a cohort of intervention and control schools to be evaluated over a 3-year academic cycle (2019/20 to 21/22) to observe whether effects were maintained in the longer term.

The advent of the COVID-19 pandemic resulted in significant disruption to the proposed evaluation, particularly to the longitudinal element. The present report first outlines the necessary adaptations made to the SFVMS that were implemented during the 2020 to 2021 period when significant public health restrictions and school closures were in place. These adaptations (Direct Deliveries and Interim Interventions) were an opportunity to target those school children who were living with disadvantage and to explore different implementation approaches. These adaptations to the SFVMS were evaluated using qualitative methods with key stakeholders and provide critical insights into where these schemes could be more effective.

A resumption of the original evaluation design was commenced in the academic year starting September 2021 as schools reopened. The intervention was conducted in April 2022 which only allowed for the intervention to be fully evaluated at one time point. A subsequent follow-up was completed in December 2022 and the findings for this evaluation are currently being drafted. Therefore, this report describes the main evaluation of the SFVMS.

The following is a summary of the key findings:

During 2020/21 the schemes were implemented through **direct deliveries** of fruit, vegetables and milk to schools designated as disadvantaged for redistribution among school children whose families were deemed particularly vulnerable by school staff. The evaluation methods were 14 qualitative interviews conducted with school staff and parents.

Key Findings

- During the school lockdowns and restrictions, the direct deliveries of Fruit, Vegetables and Milk were well received by the school staff and parents of those children whose families were living with disadvantage.
- Staff members felt that the deliveries encouraged children to consume fruit, vegetables, and milk. Parents agreed, stating that it gave them an opportunity to try new fruits/vegetables at home. Both groups gave very positive comments on the quality of the produce.
- The accompanying measures (recipe cards and online resources) received a mixed response from both staff and parents. Some believed the recipes were beneficial to encourage different recipe ideas and promoting the activity of cooking together. Other staff felt that the recipe cards were not particularly useful.

Towards the end of the academic year 2021, schools where re-opening schools were offered, an 'Interim Intervention', which was an adapted version of the Food Dudes Healthy Eating intervention which varied in intensity. Qualitative interviews with 11 parents and school staff following this approach supported the earlier findings on the direct delivery intervention.

Key Findings

- The staff and parents interviewed felt that the Food Dudes programme had a positive impact in their children and schools. Parents felt both the teachers and their peers encouraged their children to eat fruit and vegetables.
- Staff reported that the fruit is always well received; parents reported that the programme has encouraged their child to try new vegetables.
- Some staff preferred the less intensive model of Food Dudes, commenting that it felt less pressurized for both children and staff.
- The school staff commented on the acceptability of the Food Dude rewards as accompanying measures. Parents observed the impact of the rewards as incentives to try something new. Parents were unaware of the online resources. Teachers reported uncertainty as to whether the online resources were used, largely due to competing demands on teachers' time.

- Staff reported on their reasons for participation in the school milk scheme – some highlighting that it had always been implemented in the school; others reported reasons for non-participation may be due to lack of refrigeration storage or personal experience of school milk. Parents reported different reasons for not registering their child in the SMS, including preference for water.
- Overall staff reported that the SMS was important to children, particularly for those living with disadvantage, and those who receive milk enjoy it.
- Staff also reported that the accompanying measures for the SMS were well received by children and particularly useful in showing children the origin of milk.
- Parents had mixed views around their children's' milk consumption – some viewing it as a positive for their child's health and others were not convinced of the health benefits. Some parents attributed the increased variety of beverages and other food items in Ireland, possibly at a lower cost, to the reduction in milk consumption by children.

Main Evaluation of the School Fruit, Vegetable and Milk Scheme Intervention

In September 2021, the ease of public health measures in schools allowed for a full implementation of the School Food Schemes. The evaluation comprised of five sections:

1. Questionnaires before and after the intervention were completed by parents in the intervention and control schools and a cross-sectional comparative analysis was conducted at the two time points comparing the intervention and control groups.
2. A pre-post analysis was conducted on a sample of parents whose questionnaire responses were matched at baseline and following the intervention.
3. In the follow-up questionnaire, parents provided feedback on their attitudes towards intervention.
4. Teachers completed a questionnaire on their attitudes towards the intervention.
5. A sample of intervention schools were visited and an observation checklist completed by researchers to evaluate the implementation process of the schemes in schools.

Key findings

1. Intervention versus control group
 - Comparison of the intervention and control group at baseline showed no statistically significant difference in the proportion of children consuming three or more servings for fruit (21% versus 19.9%) or vegetables (11.9% versus 16.2%) per day.

- A higher proportion of children in the School Milk intervention were consumers of cow's milk compared to control schools (94% versus 86.2%). A higher proportion of children in the SMS consumed 3 or more servings of milk per day (12% versus 8.5%) whereas a higher proportion of children in the control schools consumed 1 to 2 servings per day (37.2% versus 40.8%)
- A high proportion (at least 85%) of children in both intervention and control group reported liking the taste of fruit at baseline but, as expected, this proportion was lower for vegetables (55.3% and 66.4%) respectively.
- The proportion of children who reported liking the taste of milk was 70.8% in the intervention group compared to 68.5% in the control group. A higher proportion of children in the SMS group reported that milk was good for their health (92.4% versus 87.2%). These values were lower for their parents with 86.6% of parents reporting that milk had health benefits for their children and 88.4% in the control group.
- In both control and intervention groups, a high proportion (at least 96%) parents recognize the importance of fruit and vegetables for the health of their children.
- Following the intervention period, a higher proportion of children in the control group reported consuming three or more servings of fruit per day compared to the intervention group, however the differences were not statistically significant. Similarly, the proportion of children consuming three or more vegetables was higher in the control relative to the intervention group but the difference was not statistically significant.
- A higher proportion of children were consumers of cow's milk following the SMS intervention (93.75%) compared to the control (86.8%) but the difference was not statistically significant. The proportion of children consuming one to two or three or more servings per day was similar across both intervention and control schools, however, the proportion of children consuming cows milk as a drink at least twice per day was higher (27.7%) in the SMS group compared to the control (18.9%) and this was close to statistical significance.
- No notable difference was observed between the proportion of children liking fruit or vegetables following the intervention. A significantly higher proportion of children in the SMS reported liking the taste for milk (82.9%) following the intervention compared to controls (55.9%).
- All children in the follow-up samples understood the importance of fruit and vegetables for their health. A higher proportion of children in the intervention group recognized the importance of vegetables for their health relative to the control, again these differences were not statistically significant. A significantly higher proportion of children in the SMS recognized the importance of milk for their health compared to the control group.
- Following the intervention, a significantly higher proportion of parents in the intervention group agreed that fruit was needed as sources of vitamins and minerals in their children's diets although the difference was not observed for vegetables. Similarly in the SMS, a higher proportion of parents in the intervention group reported that it was important for

their children to drink milk and recognized it as a source of vitamins and minerals. The intervention group also reported a significantly higher proportion of their children liking the taste of milk (78.3% versus 52.85%).

2. Pre-post intervention group analysis

- A pre-post analysis of the intervention group showed that a higher proportion of children consumed three or more servings of fruit following the intervention (19% baseline versus 27% follow-up) and a similar finding was observed for vegetables (7.9% versus 15.9%) and the latter was borderline statistically significant ($p=0.059$).
- For the school milk scheme, the proportion of children consuming milk at baseline and follow-up remained at 94.6%. Similarly, the number of servings consumed did not change from baseline to follow-up.
- Following the intervention there was a positive change for both sweet and savoury snack consumption with the proportion of children reporting fewer snack servings being consumed per day, although the differences were not statistically significant.
- Children's perceptions on the taste of fruit did not change following the intervention; their perceptions on the taste of vegetables did change with a lower proportion reporting that vegetables taste good following the intervention (56.3% versus 52.1%) but this change was not statistically significant. The proportion of children reporting liking milk and the importance of milk for health was the same at baseline and follow-up.
- The pre-post analysis of the SFVS intervention found very little change in parents attitudes to the health benefits of fruits and vegetables as parents appear to have a high degree of understanding of the importance of these foods to their children's diets.
- The proportion of parents reporting that their children liked the taste of fruit was consistently high both pre (80%) and post (81.8%) intervention. As expected, the proportion whose children liked the taste of vegetables was lower albeit with a slight increase post intervention (45.5% versus 47.3%), again a non-statistically significant difference was observed in the analysis. There were some increases in the proportions of parents reporting that milk was important for their children's diet and in their liking of milk, although these changes were not statistically significant.

3. Intervention feedback

- A high proportion of children (77.4%) liked receiving fruit in school and, as expected, a lower proportion liked receiving vegetables (59.7%). A high proportion of children (75%) liked receiving milk in school.
- In the main, the children enjoyed the accompanying measures, and in particular a high proportion (93.4%) enjoyed the rewards from the Food Dudes intervention and this was confirmed by their parents reporting of their enjoyment of the accompanying measures.

- At least 30% of parents reported that their child's healthy eating behaviour had changed since the Food Dudes intervention and up to 46% reporting that their healthy eating attitude had changed since participating in the intervention.
 - Fewer parents provided feedback on the SMS and positive changes in behaviour were reported by a smaller percentage of parents.
4. Teacher's feedback
- Teachers perceived that the Food Dudes intervention was successful (77.8%) in increasing fruit consumption and slightly less (61.1%) for vegetable consumption. A high proportion (83.4%) of teachers reported that children enjoyed the Food Dudes intervention.
 - Almost 70% of teachers reported that the SMS was successful in their school with 77% of children enjoying the intervention.
 - The rewards and the lunchbox were the accompanying measures used by all teachers and, in addition to the stickers, these were the measures that the teachers deemed to be most effective in promoting healthy eating. The other measures (letters, videos, stickers, certificates, wall charts) were used by most (94.4%) teachers. The home diary was used by a lower proportion of teachers (77.8%).
 - For the SMS, there was general lack of awareness of the accompanying measures provided as part of the intervention therefore it was difficult to evaluate the perceived effectiveness of these resources.
 - In the main, the teachers found the implementation of the Food Dudes intervention in school to be either easy or manageable (76.5%).
 - A high proportion of teachers reported that there was an improvement in children's healthy eating behaviour (66.7%) and attitude to healthy eating (78%) following the intervention.
 - More than half of teachers reported that more children drank milk following the scheme. The teachers feedback on improvements to children's healthy eating attitudes and behaviours following the SMS were mixed.
 - Teachers provided positive feedback on the deliveries, packaging and quality of fruit and vegetables delivered to the school and they reported that the programme was well organized.
 - For the SMS, teachers were happy with the deliveries and temperature of the milk on delivery.
5. Process evaluation of intervention implementation in schools
- The engagement of teachers in the Food Dudes activities varied in different schools and those who were enthusiastic about certain activities developed better excitement about the programme with the children in their class.

- The Food Dudes videos were received well by the students, particularly the younger children. Other accompanying measures including the wall charts, home diaries, and stickers were used in different ways in different schools.
- During the tasting sessions, teachers varied in the level of encouragement offered to motivate children to try different fruits or vegetables. During the tasting sessions observed approximately 75% of children tried both fruit and vegetables and 25% tried fruit only.
- For the SMS schools observed, the milk arrived on time for most visits and it was typically distributed during break or lunchtime in schools.
- There were no issues with the quality of the milk delivered during the school visits.
- For most children, the milk consumption was a normal part of their day and those that received the milk, appeared to enjoy it. The accompanying measures were not used at the time of the school visits although teachers had recalled using them in the past. Some teachers made an effort to relate their consumption to health or production, however no teachers were observed drinking milk.

Evaluation following the maintenance phase of the School Fruit and Vegetable Scheme

Intervention

In September 2022, schools that participated in the main fruit and vegetables scheme intervention in the previous academic year, followed by the maintenance intervention, were invited to participate in a smaller more in depth evaluation. This phase was designed to understand younger and older children's perception of the Food Dudes Healthy Eating Intervention and Food Dudes week. In September 2023, another group of schools participated in an evaluation of the policy initiative more broadly i.e. promoting fruit and vegetables in schools. This final piece of research included older children and offered an opportunity for their perceptions and recommendations on the programme to be captured.

Key findings

- Overall, the participating children enjoyed engaging with the Food Dudes programme in their school and they recognised how the programme influenced fruit and vegetable consumption.
- Both younger and older children liked having a variety of fruit and vegetables as part of the tasting opportunity.

- They enjoyed the tasting component and highlighted the importance of the visual appearance and texture of the produce, citing these to be key influences on children engaging with the intervention.
- Their preference was for the fruit and vegetables to be prepared for consumption in the school or classroom rather than pre-prepared, individually packaged produce.
- Younger children really enjoyed and identified with the Food Dudes characters as role models.
- Older children view the Food Dudes characters as being integral to the programme and were effective at influencing younger children. However, despite adults and sports personalities modelling fruit and vegetables in Food Dudes week videos, they did not automatically perceive them to be role models or as being part of the Food Dudes programme.
- Older children would prefer more ‘real life’ role models, possibly communicating via social media. They also believed that older children could be more involved in the intervention as role models for younger children in the school.
- The influence of parents, teachers and other influencers was recognised by younger and older children.
- The participating children fondly recall and enjoy the reward aspect of the intervention. However, they value rewards that are durable and that can be used in every day activities. They also had great ideas about using non-material rewards which would might involve providing time for other positive activities including sports, plays, and shows.

Conclusions

The findings from this evaluation provide important insights into the implementation of the School Fruit, Vegetables and Milk Schemes in Ireland. While the original evaluation design was substantially impacted by the COVID-related school disruptions, it was possible to evaluate the effectiveness of the scheme in close-to-normal school conditions towards the end of the strategy period. However, the response rates at both a school and parent level were challenging and therefore the findings must be interpreted with care.

Overall, the schemes continue to be positively received by children, parents and teachers who participate. Most children like receiving fruit in school and the feedback suggested that increasing the variety of fruit offered would encourage more engagement with children. Vegetable

consumption remains the more difficult behaviour to change, and therefore the intervention may need to consider an alternative or additional strategy for consumption of vegetables to encourage more children, such as a weighted or bonus reward for vegetables.

Children who participate in the school milk scheme like the taste of milk and continue to consume milk. Therefore it is effective in maintaining milk consumption for those children. For children living with disadvantage, access to this programme is particularly important. The development of a taste preference for milk appears to be a rate limiting step in this scheme – if children or their parents don't like the taste of milk, parents are less willing to register their child to the scheme; if fewer parents are registering their children, fewer schools will participate. Therefore, the schemes need to consider strategies that will provide children with opportunities to develop taste preferences for milk.

The core components of the Food Dudes intervention are generally well received and remembered by children. They enjoy trying fruit and vegetables, particularly ones they may not have tried before. They enjoy receiving rewards and value items that they can use all the time. They also recognise how role models can influence their behaviour but the role models must be appropriate and relatable to their age group. The development of taste preferences is critical to the effectiveness of the SFVMS. Children's negative attitudes towards the sensory properties of vegetables and milk in particular can be difficult to overcome and therefore, consideration should be given to broadening the remit of the scheme to include preschool children in order to reach the critical development period between 2 and 6 years of age.

The present evaluation study builds on the findings from previous evaluations highlighting the critical role of teachers in effective implementation of the schemes. This evaluation study found that teachers use the accompanying measures in different ways for different reasons; lack of awareness and lack of time were the main barriers for their implementation. Future strategies should consider how to support teachers more effectively in implementing the interventions in their schools and in particular in their potential impact as role models for healthy food behaviours.



The sample of parents and children who participated appear to have a good understanding of the health benefits of fruit, vegetables and to a lesser extent, milk. Going forward there may be a greater need to ensure that health messages are aligned with sustainable healthy eating messages to ensure better engagement with children, parents and teachers.

A key learning from the evaluation was the value of the schemes to those children living with disadvantage. Further investment should be considered to use inclusive co-design approaches with key stakeholders to develop strategies that will address their needs more effectively and ultimately foster positive behavioural changes in these hard to reach groups.



Introduction

The European commission regulation 2017/40 relates to the Union aid for the supply of fruit and vegetables, bananas, and milks in educational establishments. Article 9 (2) of the Commission Regulation requires the Member State to evaluate the implementation of the school scheme in order to assess its effectiveness against its objectives of increasing the consumption of fruit, vegetables, milk and milk products by children and educating them about healthy eating habits. The purpose of this paper is to provide an evaluation of the schemes implemented, to determine whether the schemes have been “successful in achieving or progressing towards its objectives and to what extent” as set out in the European Commission’s (EC’s) EU school fruit, vegetables, and milk scheme: guidelines for the Member States’ evaluation (1). Another purpose of this evaluation under the commission, Annex guideline is to make recommendations identifying areas for improvement. The aim is to provide EU policy makers with evidence for any potential reformation of the school scheme.

The EU regulation guidelines outlines three main outcomes of this evaluation. Firstly, to evaluate the distribution of school fruit, vegetables, and milk. Secondly, this evaluation aims to analyse the effectiveness of accompanying educational measures, with regards to their responsibility relating food to agriculture for the children, and for increasing consumption of fruit, vegetables and milk, and hence the formation of healthy eating habits. The third aim of this evaluation is to evaluate the information and communication activities and evaluation methods with regards to their influence on the uptake of the school scheme and their contribution to the good functioning of the scheme. The present report addresses the second and third evaluation activity which focuses on the extent to which the scheme increased children’s overall consumption of fruit, vegetables and milk.

The EU School Food Scheme in Ireland

Fruit and Vegetables



The EU School Fruit and Vegetables component is implemented in national schools in Ireland through the Food Dudes Healthy Eating Programme (FDHEP), managed by Bord Bia, the Irish Food Board, and delivered by Real Nation (educational consultants), under guidance of the DAFM. The FDHEP is an evidence-based incentivised behaviour changing programme which was developed by the Food and Activity Research Unit, Bangor University, Wales.

For the purpose of this report, the components of the intervention itself will not be described in detail, as a more comprehensive description of the intervention can be found elsewhere¹. In summary, the FDHEP aims to increase fruit and vegetable consumption among primary school children through the provision and repeated tasting of fruit and vegetables over a 16-day intervention. Each day of the intervention, pupils have the opportunity of eating a portion of fruit and a portion of vegetables. Accompanying measures in the form of role models (Food Dude character letters and video episodes) and small rewards are used to encourage tasting. The school-based intervention (phase 1) is followed by a home element (phase 2) where parents encourage their children to bring fruit and vegetables, supplied from home into school in Food Dude lunchboxes. The original FDHEP was completed in 2014, reaching 3,100 schools (95% of all primary schools in Ireland).

The Food Dudes Boost Programme was introduced at the beginning of 2015 with the aim of retaining all the benefits of the original programme but with a stronger focus on the Junior Cycle (junior infants to second class). However, in 2019, the boost programme was replaced with a maintenance programme, which aims to foster long-term programme engagement after completion of the FDHEP, and continued increase in consumption through the school through 'food dudes week' accompanied by educational materials. The Food Dudes Week consists of additional 5 days of fruit and vegetable deliveries with extra resources including a 'passport to healthy eating', short video clips relating to key themes of the passport as well as additional support activities which are linked to the curriculum.

The FDHEP has been evaluated in Ireland on several occasions. The initial pilot study was conducted by Horne et al. (2009) to establish whether the intervention was effective and reported that in the intervention school the parental provision and children's consumption of



fruit and vegetables increased following the 16-day intervention period and at the 12-month follow-up compared to the control school (1). More recent evaluations were conducted between 2010 and 2011 by O'Connor and McKenzie (2) and in 2016 by Martin et al. (3) under supervision of the Principal Investigator of this project, Dr Celine Murrin.

Each evaluation has demonstrated that the intervention is effective in increasing the frequency of fruit and vegetables being brought to school in the short term to medium term. The most recent evaluation by Martin et al. (3) from the National Nutrition Surveillance Centre, also indicated that there was evidence of a longer-term residual effect of the intervention where fruit and vegetable consumption remained greater than the levels prior to the introduction of the programme. However, while consumption is high following the intervention, the challenge is to maintain these levels in the longer term, particularly for older children. Hence, there is a need for a longitudinal evaluation, incorporating an additional evaluation on the new maintenance phase of the intervention.

School Milk Scheme

The School Milk Scheme (SMS) has been running in Ireland since 1982. It is a nationwide scheme in which approximately 550 nursery, pre-school, primary and post-primary schools in Ireland participate including DEIS and non DEIS Schools (DEIS: Delivering Equality of Opportunity in Schools; these schools receive additional supports from Government to address educational disadvantage) - The EU School Milk Scheme (SMS) is managed by the National Dairy Council (NDC) in conjunction with participating cooperatives and local authorities under guidance of the DAFM. It aims to promote and encourage the consumption of milk amongst school children. It involves the distribution of 189ml (approximately.) milk cartons to participating children which also aims to improve the nutritional quality of school children's diets and complement nutritional programmes operated by other agencies.

A review of the SMS carried out by the National Dairy Council in 2014 demonstrated that the number of participating primary schools (where participation in the SMS is highest) has dropped

by 24% from 2005 to 2013. In several counties, for example Clare and Galway, no primary schools have participated since 2012. In other counties, such as Limerick, Mayo, Offaly and Roscommon, participation has declined by over 50%. In contrast, a fall of just 6.5% has been observed in Dublin between 2005 and 2013; this may be attributed to schools receiving funding to support the SMS (4). In the 2013-2014 school year, approximately 51,000 pupils in 1,061 schools participated. However, the numbers of schools participating in the SMS in Ireland have declined steadily over the last number of years, except for the 2006/2007 academic year due to a free fridge initiative by the DAFM for new schools EU signing up to the SMS.

The NDC has developed Moo Crew which are teaching materials, to accompany the SMS, and increase children’s engagement. In 2018, the current state of play, barriers and facilitating factors to the uptake of the School Milk Scheme among relevant stakeholders was investigated by UCD under supervision of the current co-PI, Dr Mirjam Heinen (5). Adjustments to the programme have been made based on the findings of this research. However, the number of participating children has continued to decrease (Table 1).

Figure 2: Participation level in the School Milk Scheme up to 2018

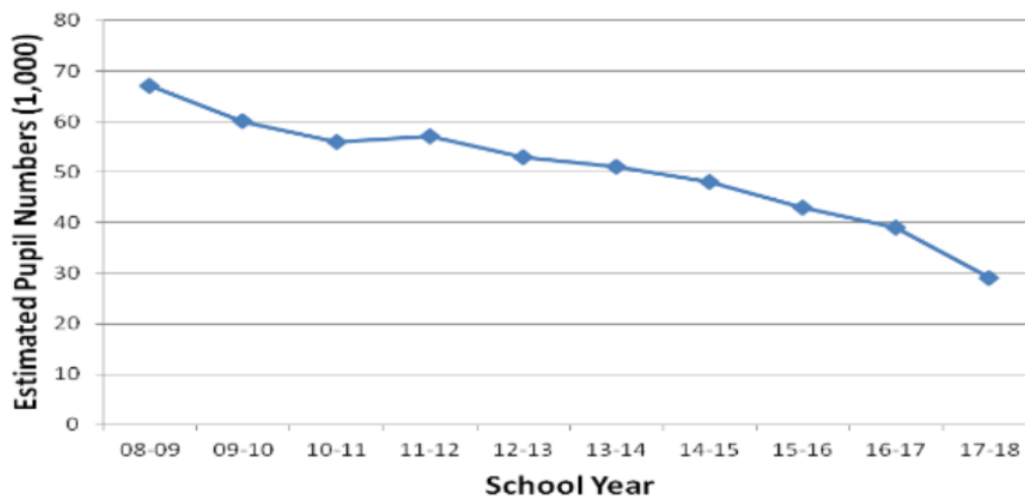


Table 1: SMS participation in recent years



School Year	Participating Schools	Participating Pupils
2021/2022	380*	31925*
2020/2021	440	42998
2019/2020	592	53517
2018/2019	577	52252
2017/2018	588	51124

Evaluation of the EU School Fruit, Vegetables and Milk Scheme

On 1 August 2017, the **School Fruit and Vegetables Scheme (SFVS)** merged with the **School Milk Scheme (SMS)** in Ireland to form the **EU School Fruit, Vegetables and Milk Scheme (SFVMS)** (Commission EU Regulations 2016/791; 2016/795; 2017/40; 2017/39). This new merged scheme, like the individual schemes, is designed to promote healthy eating to children and encourage them to increase their consumption of fruit, vegetables, and milk. Under this new EU framework, Ireland was legally obliged to submit a six-year Statement of Strategy covering school years 2017/18 to 2022/23 inclusive by the 31 July 2017, setting how it proposed to implement the SFVS and the SMS nationally over the lifetime of the Strategy. The measurement and analysis of set objectives will form the basis of an overall evaluation report which each Member State must submit to the EU under the Regulation by 1 March 2023. In Ireland, the new Scheme is funded nationally by the DAFM. An EU financial contribution under the EU Single School Scheme will be received, subject to satisfying the relevant EU Regulations.

In 2017/18 the National Nutrition Surveillance Centre (NNSC) in UCD was appointed to conduct a longitudinal evaluation of the EU School Fruit, Vegetable, and Milk Scheme in primary schools in Ireland. The study was designed in the 2018/2019 school year with field work commencing in classrooms in 2020 to track a representative sample of children's consumption of fruit, vegetables, and milk over three years. The aim was to measure if the school food schemes in Ireland (the FDHEP and SMS) and accompanying measures increased consumption levels in school children and can maintain positive changes in healthy eating attitudes and behaviours over a period of 2-3 years. In order to evaluate the scheme, a sample of 1st, 3rd and 5th class were



selected from a range of consenting schools across Ireland. The original proposal was designed to conduct follow-up visits with these classes for the 2 proceeding years to explore the children's opinion of the intervention and whether the schemes were successful in increasing or maintaining the children's consumption of milk, fruit and vegetables. Questionnaires and feedback from teachers and parents were also intended for use as part of the evaluation.

Impact of COVID-19 pandemic

The original longitudinal evaluation design methodology was approved by UCD Ethics Committee in 2019. A cohort of n=50 intervention (SFVS) and n=50 control schools were recruited into the study, with baseline data collection commenced in February 2020. The intervention group was to be evaluated at baseline and then exposed to the intervention at three time points over a period of three academic years. The outcomes were to be evaluated pre-intervention, immediately post intervention, and in the longer term.

However, with the outbreak of COVID-19 in March 2020 and the subsequent closures of schools, the SFVMS programmes were postponed and the evaluation fieldwork terminated in March 2020. As schools transitioned to online learning for the remainder of the academic year, it was not possible to visit schools to continue the programme or the evaluation with that cohort of students.

During the start of the academic year 2020/2021 schools re-opened with public health restrictions including social distancing and infection control measures. These restrictions and a further national lockdown in January 2021 to March 2021 prevented the implementation of the usual SFVMS programme during this period. Over the academic year, adapted versions of the SFVMS were developed as the situation evolved and these were implemented, evaluated and described in this report (Phase 1).

Easing of public health measures and the introduction of vaccination programmes allowed for schools to re-open with less restrictions in the academic year 2021/2022. This allowed for the SFVMS to be re-introduced into the schools and for the evaluation of the original programmes to recommence. Schools were recruited towards the end of the 2021 with baseline data being captured and with a view to rolling out the interventions in January/February 2022.

However, food suppliers also experienced challenges due to COVID-19 in terms of staffing and resourcing which impacted the delivery of fruit and vegetables to schools and therefore the intervention was postponed until April 2022 (Phase 2). As a result of these postponements there was a significant impact on the longitudinal evaluation design resulting in only one academic year for a follow-up

Aims and Objectives

This report provides an evaluation of the effectiveness of the European Union (EU) School Fruit, Vegetable, and Milk Scheme in primary schools in Ireland. The aim of this evaluation was to establish whether the Food Dudes and the School Milk Scheme were effective in changing children's fruit and vegetable and milk product consumption during school time and at home in the short and medium term. The findings and feedback of this study will also be used to make recommendations to further develop and improve the schemes in future.

The objectives of this evaluation were to:

1. Estimate the frequency and quantity of fruit, vegetables, milk and milk products usually consumed by the children in school and at home, pre- and post-intervention.
2. Identify whether any changes in consumption are sustained in the longer term.
3. Report on how the interventions are being implemented in schools.

These objectives were achieved through a series of evaluation phases over a three year period which are described in the present report:

- Section 1 outlines a series of evaluation activities on the adapted versions of the EU School Fruit, Vegetable and Milk Scheme that were implemented during the 2020/2021 academic year.
- Section 2 reports on the evaluation of the EU School Fruit, Vegetable and Milk Scheme Schools intervention and follow-up delivered in schools in the 2021/2022 academic year.
- Section 3 is the ongoing longitudinal arm of the evaluation, reporting on the maintenance phase of the Food Dudes Scheme and longer term impact of the School Milk Scheme in



the academic years 2022/2023. The analysis and write up is being drafted and findings will be available for the final report.

Section 1: 2021 Evaluation of the EU School Fruit, Vegetable and Milk Scheme (Targeted Interim Intervention & Direct Deliveries)

1.1 Introduction

This section of the report describes how the EU School Fruit, Vegetables and Milk Scheme in Ireland was conducted in a sample of disadvantaged primary schools in Ireland during the 2020/21 academic year. The scheme delivered during this period differed from the usual school food interventions as COVID-19 was prevalent in the population and children were displaced from their normal school attendance. Rather than pause the school food programme for an indefinite period it was agreed that specific schools would be targeted to ensure that children who may be experiencing disadvantage were prioritised. Permission was sought by the Department of Agriculture, Food and the Marine and granted by the EU Commission to temporarily adapt the scheme.

Background

Previous research demonstrates that socioeconomic factors influence diet quality in both adults and children, where individuals from disadvantaged backgrounds are more likely to have poor diet quality ⁽¹⁾. Although there is mixed evidence on the association between socioeconomic status and children's milk consumption ⁽²⁻⁴⁾, children from lower-income families and those whose parents completed a low level of education are less likely to consume fruit and vegetables and more likely to consume sugar-sweetened beverages ^(5,6).

Delivering Equality of Opportunity in Schools (DEIS) is a national programme which aims to address educational disadvantage by providing additional support to qualifying schools ⁽⁷⁾, including provision of school meals. Schools with DEIS status are unique settings as students are more likely to come from families residing in disadvantaged communities and consequently, may

be at higher risk of poor diet quality. As a result, DEIS schools are a key target of food provision initiatives such as Food Dudes and the School Milk Scheme, as they provide children from low socioeconomic status backgrounds the opportunity to consume foods that they may not otherwise have access to.

The COVID-19 crisis led to the disruption of the usual delivery of fruit, vegetables and milk to schools in Ireland in the 2020/21 academic year. However, alternative strategies were developed to deliver fruit, vegetables and milk to children attending schools with DEIS status during this time.

- Direct delivery of packs containing fruit, vegetables and milk between January and March 2021 (Section 2).
- School-based distribution of fruit and vegetables as part of an altered version of the Food Dudes programme (referred to as the Food Dudes Targeted Interim Intervention) between April and June 2021 (Section 4). School-based distribution of milk through the School Milk Scheme throughout the 2020/21 academic year (Section 5).

This report provides an evaluation of the above strategies and discusses the baseline dietary habits and attitudes of a cohort of parents and children attending a primary school with DEIS status.

1.2. Evaluation of the Direct Deliveries of Fruit, Vegetables and Milk in January to March 2021

1.2.1. Methods

Direct Deliveries of Fruit, Vegetables and Milk

Packs containing fruit, vegetables and milk were delivered to DEIS primary schools for distribution to school children who were experiencing disadvantage during this time. Accompanying measures included access to nine weeks' worth of online educational materials including activities, quizzes and tasting challenges related to healthy eating. Weekly recipe cards were also developed by Bord Bia, specifically for families with primary school-aged children. The recipes were selected to incorporate vegetables and the cards included clear instructions on how to cook the meal.

Participants

Eleven staff members from participating schools were interviewed about their experiences with the direct deliveries of fruit, vegetables, and milk in the 2020/21 academic year. In addition, three parents of children attending primary schools with DEIS status were also interviewed. Participating schools were located in Leinster, predominantly in Dublin.

Parent and Staff Interviews

A list of DEIS schools, who received the direct deliveries from January to March 2021, was provided by the food distributor involved in the direct deliveries. Researchers contacted the schools via phone, to invite their school to take part in the evaluation study. Upon agreement to participate in the study, online consent forms were distributed to staff and parents of children in 1st, 3rd and 5th class to invite them to take part in an interview. When participants' consent was received, an interview was arranged.

The interviews were semi-structured and were conducted on Zoom conferencing software. The interviews contained questions covering the following topics:

- Participants' experiences with the direct deliveries of fruit, vegetables and milk in January to March 2021.
- General attitudes towards healthy eating.
- Attitudes towards and feedback on the School Milk Scheme.

All interviews were recorded and transcribed verbatim.

1.2.2 Primary School Staff Interview Results

Perceived benefits of Direct Deliveries

The direct deliveries were advantageous for the most vulnerable families in school settings. The feedback from the interviews suggest that it fostered rapport building among school children, their families and school staff. In addition, it allowed staff to meet families and children weekly and alleviated any communication barriers.

Staff C

“It really built relationships with families. With the individuals delivering. It was hard work; the lockdown was unprecedented. It was important for our families to know that we were there for them, and we were thinking of them”.

Staff members felt that the direct deliveries overall had a positive impact in their schools and encouraged children to eat fruit and vegetables. In addition, certain staff members felt the recipe cards were beneficial for families to aid their cooking and to encourage the families to cook together during the COVID-19 lockdown.

Staff I

“There is no doubt that it encourages consumption of fruit and vegetables”.

Staff A

“I do think they promoted fruit and vegetable consumption...The fact that there were recipes with them helped a lot”.

Staff C

“There was one parent I know of who used to make soup with it every week. It really helped them. There were recipes in the food packs as well which I thought were great because it showed them, I suppose what they can make with the fruit and vegetables. It also gave them something to do which as well was great”.

Furthermore, one staff member felt that families of school children were particularly pleased when the fruit and vegetable packs were delivered directly to high-risk members during the COVID-19 pandemic.

Staff C

“A lot of the parents came and collected the fruit and vegetables every Tuesday[.....] They were delighted with it”.

Another staff member mentioned that it was difficult to monitor the foods that were consumed, but that school children and their families were very satisfied with receiving the direct deliveries.

Staff K

"I don't know. That's a difficult one to ascertain. We targeted 30 families. They were delighted and grateful. It's very hard to know what they ate and didn't eat. All we know is they really were grateful and respectful and kind to us hugely for the deliveries. These are vulnerable families that always need help. It's very very difficult to get our children to eat fruit and vegetables".

This highlights the importance of the direct food deliveries to certain vulnerable families with school children during the COVID-19 lockdown.

Quality of deliveries

In general, most staff members felt that the quality of the food provided was excellent and that the products received were fresh. In addition, staff felt that the fruit and vegetables received were suitable for direct deliveries.

Staff A

"Yes, it was fresh. The fruit and veg was really nice. It was like broccoli, onions, carrots. Like stuff you would actually use".

Staff J

"Oh yeah absolutely they were very fresh. Cold as well too, so you knew they were refrigerated and weren't left lying around. No, the quality of food was really good".

". Another staff member specifically mentioned how the quality was similar to that of produce available in supermarkets.

Staff I

"Oh absolutely, it was very good. It was the standard fruit and vegetables you would see in the supermarkets. It was consistent with what you would see in most houses. Accessible food that wouldn't require a huge amount of prep but is also sustainable".

Deliveries and Packaging

Staff discussed the various methods used to deliver the packages to school children and their families. Some schools opted to transport the packages to the houses themselves, whereas others requested that parents or guardian collect the packs at school. An important component of the delivery channels was building up trust and rapport among staff members and families. of school children

Staff A

"Yeah, the food was delivered to the school, and I coordinated the whole thing so I would group the families...Then the SNAs and caretaker would help deliver to the same families every week. So, there was a trust built up there"

Staff B

"Yes, most parents came and collected the packs from the school and then those who couldn't I delivered the pack to their houses or their homeless accommodation"

Staff I

"Both. We arranged collections every Tuesday and Wednesday. Everything was in the one parcel. That worked very well. For families who couldn't make it or had no transport, our HSCL dropped it to their houses. Particularly needy families. It worked very well. There was a bit of work involved. We estimated we gave out over 10,000 food parcels over the lockdown which is quite a lot"

One staff member felt that the direct deliveries of milk would be difficult and therefore opted for alternative methods.

Staff D

"No during lockdown, we didn't. We felt with transport and storage it would be difficult. We got a dry goods pack every week and the fruit and veg"

Uptake of direct deliveries

Overall, staff members reported that the uptake of the direct deliveries was excellent and increased further throughout the initiative, through communication between school children and their families.

Staff D

"Word of mouth spread that there was free food being given out so then yeah a lot more families wanted it. So, my phone was ringing all the time saying I heard there was a free pack of food being delivered"

Staff B

“There was great uptake. The parents were really happy to receive it, wouldn’t we all be”.

Impact of accompanying measures : the recipe cards

There was mixed feedback on the recipe cards from members of staff. Some staff felt that using the recipe cards were an excellent idea as it gave parents and children an activity to do together, which was particularly enjoyable during lockdown due to the implementation of restrictions. Furthermore, it was an opportunity to demonstrate to children how fruit and vegetables can be used in different meals and introduced children to new fun recipes and cooking.

Staff C

“There were recipes in the food packs as well which I thought were great because it showed them, I suppose what they can make with the fruit and vegetables. It also gave them something to do which as well was great”.

Staff G

“Yes, they loved that. It worked well during lock down because the kids were at home and the kids were bored and they were looking for something to do so cooking was a great thing to do. so, I don't know didn't have a long-term impact”.

In contrast, other staff members did not feel that they were beneficial to include, as they may be perceived as condescending to some families. Other staff members had not seen the content of the recipe cards.

Staff D

“Personally, I don’t think the recipe does anything. I think people can google recipes themselves. Personally, I don’t know, I think it’s a bit condescending to put the recipes in. Just because it’s an area of disadvantage doesn’t mean they can’t source things themselves you know. I often think, if we are trying to empower people then stop spoon feeding them so much”.

Staff B

“I saw them in the packs but to be honest I didn’t look at them, read them or use them myself so I don’t know anything about them”.

Parental Feedback provided to Staff

Staff felt parents/guardians were very appreciative of the packs that they received.

Staff I

"Oh, they said it was wonderful. For some families they said it was a 'godsend'. Some of the older children would come down and collect it. You could just sense when they do come to collect it the feeling of appreciation and need that they really needed it but also really wanted it".

Staff J

"They were so appreciative of whatever came in they really really were. Even if they hadn't even looked in the bags, they would be saying thanks very much and we even found some kids would be waiting at the door, waiting for it".

One staff member felt that families changed their perceptions of the deliveries throughout the process. Some parents who had not initially accepted the packs, subsequently realised that they would be of benefit to school children and their families

Staff A

"At the beginning they were kind of were saying I wouldn't use all that food. I wouldn't use all the fruit and veg and then kind of the next four or five times they were like my God I didn't realise how much the children ate".

Other staff members felt that it is difficult in general to obtain feedback from parents and that often, it is easier to speak directly to children about the direct delivery methods.

Staff E

"No. it's very hard to get feedback with the parents. It is easier to speak with the children; they're more accessible. If we were asked at the beginning to get feedback, we might have made a conscious effort".

Staff felt that parents would have been happy for the direct deliveries to continue, regardless of the re-opening of schools.

Staff K

"Oh, they wanted them to continue. See all these families are on social welfare so covid wasn't any different for them finance wise. They are always struggling. They would want this all the time covid or non-covid. What they missed was the children would normally come into school eating their lunch. Whereas they were at home, eating all round them".

Food waste and leftovers

Staff commented on the food waste associated with the delivery packs and discussed strategies they used to deal with any leftovers. Most staff members felt the quantity delivered was adequate.

Staff B

“Yes, everything was gone.

Staff [.....]

“No, I thought there was a perfect amount and there was a variety. There was nothing too obscure; they were family staples”.

As waste was one of the main areas of concern for certain staff members, effective strategies to reduce the waste were important. One suggestion was to distribute to other vulnerable groups, however, the current School Food Scheme requires that the food can only be distributed to school children. Excess packs were also given to certain families of school children who required additional food.

Staff F

“In terms of the programme I think food wastage would probably be my biggest concern and you know is the like first we were kind of left with a lot of food in the school and then I was trying to find some worthy cause I suppose of giving it to. Somewhere maybe that wasn't in the school or whatever and so it wouldn't go to waste. I hate food waste and I suppose yeah my biggest concern would be the food wastage”.

Importance of parental involvement in healthy eating initiatives

Staff members felt that it is important to include parents in any healthy eating initiatives that are taking part in the school, and to be mindful of the approaches used.

Staff B

“Yes definitely. It comes from the home. I think an education piece around healthy eating is so important”.

Staff D

“It's just really healthy to have the parents feel that sense of ownership in the school. If they have the sense of ownership, then why can't we do a cooking course and involve the parents that way. You're always going to get parents who won't get involved and that's standard across the board in every school”.

Staff I



“Yes absolutely. We have a lot of involvement from parents in this regard. Because we have a lot of outreach programmes for parents. We do cook classes on simple and healthy meals and that’s a very popular course...from the financial perspective, quick and easy is good but it might be cheaper if they put a bit of thought into it”.

One staff member commented on how it can be difficult to engage certain parents in these healthy school initiatives and that sometimes the households who may benefit the most from the initiatives are the most difficult to reach.

Staff K

“Oh yes most definitely it is vital. But it’s very hard to do. The people you want to target will not come into the school; they don’t get involved. It’s the same parents who come in and they’re not the ones we want to target. You’re preaching to the converted”.

1.2.3 Parent Interview Results

Parental interviews and attitudes

Overall parents had a positive attitude towards the direct deliveries. Some parents highlighted that because of the programme, new foods have been introduced at home. Parents also felt that children enjoyed the deliveries and therefore it encouraged them to make healthier food choices.

Parent A

“They did definitely encourage them to eat healthy”.

Parents felt that the programme was particularly valuable during the lockdowns for COVID-19.

Parent C

“They were so handy especially during lockdown when we were kind of scared to go to the shop. The kids were always so excited for them to come. I find if there is especially fruit in the house the kids will eat it instead of maybe snacking on chocolate or crisps or whatever”

In addition, parents appreciated when the fruit and vegetables were delivered to the home.

Parent A

“Yep. It was wonderful. It was better when they were delivered. I am very local but the bags were so heavy. I had to drive around and then collect the bags for other people who a bit further away”.

Quality and Selection of Fruit and Vegetables

Participants agreed that the produce was of excellent quality and the selection of fruit and vegetables for the direct deliveries was very suitable for the children. Every parent interviewed complimented the freshness of the fruit and vegetables received.

Parent A

“No, they were perfect. It was all the things that were in season I suppose...Oh they were so fresh”.

Parent B

“Oh yeah.... I think there was some weeks where the school put in extra fruit and vegetables from their own garden as well. The muck was on them and everything they had just been dug up that morning or whatever. Yeah it was extremely fresh”.

Parent C

“I was very impressed with everything; I couldn’t have asked for more. It was all very fresh. The kids were delighted with it as well and I was delighted too it stopped me from going to get bread and milk. I was really happy with everything”.

Impact of the Recipe Cards

There were mixed views on the inclusion of recipe cards within the pack. One parent felt that they were an important reminder to aid their cooking when using fresh foods, whereas others did not feel that they were necessary.

Parent A

"The reason why I didn't use them is because the school has done courses on nutritional cooking and I took that up. And I know when I'm cooking to use everything there that's fresh. I don't know if others needed the recipe cards. They were fantastic as a reminder of how to use this food"

Parent C

"I saw there were recipes but to be completely honest I didn't look at them or use them".

Another parent reported adapting the recipes provided on the cards.

Parent B

"Yeah, like we kind of did our own variation of them like the pasta bake and all...the kids are looking forward to getting them... They get excited to cook... its handy when the recipe cards were just there".

Waste and leftovers

Parents felt there was a large quantity of food provided, but they used the produce received in various forms to avoid any waste accumulating.

Parent A

We have a big freezer so I would freeze stuff too and we were getting good brands".

Parent C

"The only thing is there was a bit too much.

Impact of the deliveries on the family

Parents reported that the deliveries have influenced their own behaviours. It has resulted in parents purchasing new fruit or vegetables in the household that they would not have previously bought.

Parent A

The best part about it was I have started to buy some stuff now that my boys didn't previously eat. ... they never ate brown bread and didn't realise they were having it. It changed me in that respect. Or blending the onions, they don't even notice"

Another parent felt that healthy eating programmes had a positive impact on all the families' healthy behaviours during the lockdown.

Parent B

"It can be very difficult to get people on board especially with the lockdown. But it helped us in so many ways. I don't think we would have done as well during the lockdown as we did with the school".

Attitudes towards fruit and vegetables

Parents have a positive attitude towards fruit and vegetables and believe that children should be encouraged to eat them from a young age, to develop lasting healthy eating habits.

Parent A

"Yes definitely, 110%. If they are not encouraged to eat them when they are young they never will. You have to start them young"

Parent B

"of course, you have to promote healthy eating. You know what to eat instead of other things and how many portions and stuff like that. They also need to up the PE in schools, extra exercise".

1.2.4. Summary of the Direct Delivery Evaluation

The direct deliveries were valuable for vulnerable families in DEIS schools in Ireland during the COVID-19 pandemic between January and March 2021. Staff felt it was a constructive method to build relationships between staff members and families in an informal setting. In addition, it was felt that some families would not have eaten any fruit or vegetables if they had not received the delivery packs. It was particularly welcomed among families with parents who were no longer working, due to the pandemic.

Overall, parents had a positive attitude towards the direct deliveries. Certain parents felt that the packs helped to change the eating behaviours of their children and encouraged them to eat more fruit and vegetables in the home setting. The parents and staff interviewed were very content with the quality of the direct deliveries and the freshness of the products received.

The participants interviewed also felt healthy eating initiatives are important in schools. Specifically, staff felt parental involvement is crucial to children maintaining these healthy eating behaviours at home and that educating parents is critical for the successful implementing of these programmes. In general, staff members felt that the uptake of the direct deliveries was excellent and increased further through word-of-mouth as the initiative progressed. The interviewed participants had varying views and attitudes towards the importance of the accompanying measures in the form of recipe cards. Certain participants found them beneficial for cooking ideas and aiding their cooking skills, whereas other participants did not see any benefit from including them.

One of the main disadvantages of the direct deliveries was the additional work load it created for staff members. Some schools physically delivered the packs to households whereas in other schools, parents and guardians collected the packs from the school. In addition, some families that initially signed up to the programme did not arrive to collect their designated packs, which was disheartening for staff who organised the initiative. The issue of food waste and leftovers was mentioned in the interviews by parents and staff. Certain participants felt that there was too As the intervention was an emergency response to food security issues during the pandemic, there were no set criteria to identify which households were in greater need of the food items,

therefore distribution was at the discretion of the staff member. If a similar scheme were to be considered in future, a more structured programme could be designed to address some of the issues highlighted in this specific evaluation, including the issues around food access or delivery and of food waste. .

1.3 Targeted Interim Intervention (April to June 2021) and School Milk Scheme Evaluation 2020/21 Academic Year

Food Dudes Targeted Interim Intervention (FD TII)

As schools began to re-open in the second quarter of 2021, Food Dudes was offered to primary schools with DEIS status as a priority group. The programme included deliveries of fruits and vegetables to schools and varying levels of accompanying measures. A choice of three implementation models (A, B and C) were offered to schools; Model A was the standard version of Food Dudes, Model B was a less intensive version of Food Dudes with a reduced number of accompanying measures and Model C included daily deliveries of fruits and vegetables with light activities for parents and children. The accompanying measures included, a recipe booklet for families, online resources and a minimum of two rewards were offered in each model.

School Milk Scheme

The School Milk Scheme was delivered in its standard format upon reopening of primary schools in March 2021.

1.3.1 Methods

This is a qualitative evaluation of an adapted version of Food Dudes, delivered in Delivery Equality of Opportunity in Schools (DEIS) primary schools in the 2020/21 academic year. A qualitative study was also conducted on staff and parents' attitudes towards the School Milk Scheme and children's milk consumption in general.

Sample Selection and Recruitment

A list of DEIS schools who agreed to take part in the Food Dudes healthy eating programme, for the 2020/2021 academic year, was provided by the programme managers. Upon agreeing to take part in Food Dudes, primary schools were contacted by researchers via phone and email for



recruitment to an evaluation study of the programme. In November 2020, 45 schools were contacted and 13 schools consented to take part via electronic or paper consent form.

In January 2021 schools were closed due to the COVID-19 pandemic, the evaluation study was postponed until Spring 2021. In a second wave of recruitment in March 2021, communication was re-established with consenting schools and eight schools agreed to partake in the evaluation.

Consent

When primary schools expressed interest in taking part in an evaluation study, UCD researchers distributed an information sheet and electronic consent form to the principal or Food Dudes school coordinator. A physical copy of the information sheet and consent form was provided upon request. When consent was received, UCD sent an electronic link to schools for distribution to parents of children in 1st, 3rd and 5th class, which contained a consent form, information leaflet and online questionnaire. Parents could not proceed with the questionnaire until full consent was provided.

Ethical Approval

Ethical amendment was granted by the University College Dublin Human Research Ethics Committee in July and a further amendment in November 2020/2019.

Inclusion and Exclusion Criteria

Primary School Settings

The inclusion criteria for the primary schools, recruited to the evaluation, were participation in Food Dudes in the 2020/2021 academic year and having DEIS status. Schools did not necessarily have to take part in the School Milk Scheme to participate.

Children and Parents

To be eligible to take part in the evaluation, children had to be in 1st, 3rd or 5th class. Parents/guardians of children in 1st, 3rd and 5th class were invited to participate in the evaluation.



Staff

All staff members involved in Food Dudes, in consenting schools were eligible to take part in the interview aspect of the study.

Data Collection

Parent and Child Baseline Questionnaire

Before the Food Dudes intervention, parents of children in 1st, 3rd and 5th class were invited to complete an online questionnaire. Demographic data including children's class and age were collected, as well as parental education level. The questionnaire assessed parents' and children's consumption of dairy (milk, cheese and yoghurt), fruit, vegetables, sugar-sweetened beverages and sweet and savoury snacks. It also assessed parent-reported availability of fruit, vegetables and milk, as well as their liking of and attitudes towards milk, fruit and vegetables. The questionnaire had a children's section, where children were asked to express their liking of and attitudes towards fruit, vegetables and milk, using five-point smiley face Likert scales.

Staff and Parent Interviews

Parents who completed the baseline questionnaire and staff members in 7 participating schools were invited to take part in an interview. The interviews were semi-structured and were conducted on Zoom conferencing software. The interviews contained questions covering the following topics:

- Participants' experiences with the Food Dudes programme in the 2020/21 academic year.
- Participants' attitudes towards milk.
- Attitudes towards and feedback on the School Milk Scheme.

All interviews were recorded and transcribed verbatim.

Data on the School Milk Scheme collected as part of interviews conducted for the home delivery scheme evaluation (described previously in section 2.1) were also included in the evaluation of the School Milk Scheme.

Parent and Child Post-Intervention Questionnaire

Parents who completed the baseline questionnaire were also invited via email to complete a post-intervention questionnaire, following the completion of the Food Dudes TII. The questionnaire repeated questions regarding children's and parents' dietary intake, their attitudes towards milk, fruit and vegetables and it included questions evaluating the Food Dudes programme.

1.3.2 Parent and child baseline data: diet and nutrition attitudes

Baseline questionnaires were completed by 107 parents of children in 1st, 3rd and 5th class from the 15th to the 17th of April 2021. Parents from seven schools participating in the Food Dudes Targeted Interim Intervention completed the baseline questionnaire.

Population Characteristics

Table 1.1 outlines the characteristics of the parents and children who responded to the baseline questionnaire. Ninety-three percent of respondents were mothers and 56% had completed further education or training following the completion of secondary school. Children were aged between 6 and 12 years and 56% were female. Seventy-six percent of respondents reported that their children were taking part in Food Dudes in the 2020/21 academic year and 29% reported that their children were taking part in the School Milk Scheme. Seventeen percent of parents were unsure whether their child was taking part in Food Dudes and 40% were unsure whether their child was taking part in the School Milk Scheme.

Table 1.1 Parent and child demographics

Child demographics		Total N	N	%
Gender	Male	105	49	46.7
	Female		56	53.3
Class	1st	105	7	6.7
	3rd		59	56.2
	5th		39	37.1
Age (years)		107	Range 6-12	Median (IQR) 9 (9-11)
Parent demographics		Total N	n	%
Relation to child	Mother	107	99	92.5
	Father		5	4.7
	Grandfather		1	0.9
	Other Relative		1	0.9
	Guardian		1	0.9
Education level	Up to secondary school	107	47	43.9
	Additional/higher training		60	56

IQR; Interquartile range

Parent-reported dietary intake of children

Overall, 93% of parents reported that their children were consumers of cow’s milk, with full-fat milk being the most commonly consumed type of milk (Table 1.2). Twelve percent of children were reported as consumers of non-dairy drinks. The proportion of children consuming milk was similar to that recorded in the 2017/18 National Children’s Food Survey (NCFS), where 88% of Irish 5 to 12 year-olds were consumers of cow’s milk ⁽⁸⁾. Consumption of non-dairy milk is higher in this cohort than the level of consumption reported in the 2017/18 NCFS, where 3% of Irish children consumed non-dairy alternatives to milk. Eighty-five percent of parents were cow’s milk consumers and 36% of parents reported consuming non-dairy milk.

Table 1.2. Children’s Milk Consumption

	Total N	N	%
Total cow’s milk	100	93	93.0
Full-fat milk	100	78	78.0
Low-fat milk	73	21	28.8
Skimmed milk	74	7	9.5
Fortified milk	78	9	11.5
Lactose-free milk	74	5	6.8
Flavoured milk	74	18	24.3
Non-dairy drink	76	9	11.8

Forty-one percent of children consumed fresh fruit every day and 32% consumed vegetables daily (Table 1.3). Fruit and vegetable consumption in this cohort was lower than the consumption measured as part of the Childhood Obesity Surveillance Initiative (COSI) in Irish children, where 60% of children consumed fruit daily and 44% consumed vegetables daily ⁽⁹⁾. Flavoured milk and sweet and savoury snack consumption was also higher in this cohort than in the cohort of 1st and 2nd class children who participated in COSI.

Table 1.3. Children's dietary consumption: markers of healthy eating

	Total N	N (consumers)	%
Vegetables	100	32	32.0
Fresh fruit	99	41	41.4
Dried or tinned fruit	99	6	6.0
Fruit juices	100	16	16.0
Fruit-flavoured drinks	100	21	21.0
Fizzy drinks	100	4	4.0

Sweet snacks	100	20	20.0
Savoury snacks	100	31	31.0

Availability of fruit, vegetables and milk in the household

Milk was available every day in 83% of households. Fruits and vegetables were available every day in 84% and 85% of households respectively. Thirty-one percent of parents reported serving milk to their children with meals and snacks two or more times per day and 40% served milk once per day. Fruit was served to children two or more times per day in 47% of households and once per day in 33% of households. Vegetables were served to children two or more times per day in 46% of households and once per day in 44% of households.

Attitudes towards Fruit, Vegetables and Milk

Children's Attitudes

Table 1.4 outlines children's attitudes towards milk, fruits and vegetables respectively. Overall, children believed that milk, fruits and vegetables are good for their health. Children's liking of fruit and milk was high (79% and 78% respectively) and a lower proportion of children reported liking the taste of vegetables (62%). Social influences, including parental influence and peer influence have an important influence on children's milk consumption. Therefore, it is valuable to measure children's perceptions of their parent/guardian's dietary habits and attitudes, as well as those of their peers. The majority of children felt that their parents would like for them to consume milk, fruit and vegetables every day and generally reported that their parents like the taste of fruits and vegetables and milk. Children were asked to rate their friends' liking of milk, vegetables and fruit. Fewer children reported that their friends liked vegetables (31%) compared to the milk or fruit. Children reported that most parents (>77.6%) liked all three food items.

Table 1.4. Children's attitudes towards milk, fruit and vegetables

Statement		Milk			Fruit			Vegetables		
		Total			Total			Total		
		N	n	%	N	n	%	N	n	%
Is/are good for my health	Agree	84	77	91.7	85	79	92.9	84	76	90.5
My parents eat/drink it every day	Agree	85	55	64.7	85	71	83.5	84	77	91.7
My parents think that I should drink eat/drink it every day	Agree	84	71	84.5	85	83	97.7	83	81	97.5
My friends eat/drink it every day	Agree	85	48	56.4	84	55	65.5	84	30	35.7
My friends think that I should drink eat/drink it every day	Agree	84	43	51.2	84	53	63.1	83	39	47
Child liking	Agree	85	66	77.6	85	67	78.9	84	52	61.9
Parent liking (Child-reported)	Likes	85	66	77.6	85	79	93	84	76	90.4
Friend liking (child-reported)	Likes	85	50	58.8	84	59	70.2	84	31	36.9

Parental Attitudes

More than 90% of parents believed that it was important for their child and for themselves to eat fruits and vegetables (Table 1.5). Respondents also felt that fruits and vegetables have health benefits for adults and for children. Parental liking of fruits and vegetables was high and the majority of respondents reported eating fruit and vegetables when they were growing up. Liking of milk among parents was lower than the liking of other foods. While 83% of parents felt that milk has health benefits for children and 71% felt that it has benefits for adults, the importance of milk consumption to parents was lower than that reported for fruits and vegetables. Just 49% of parents felt that it was important to include milk in their own diet.

Table 1.5. Parents' attitudes towards milk, fruit and vegetables

Statement		Milk			Fruit			Vegetables		
		Total			Total			Total		
		N	n	%	N	n	%	N	n	%
It is important to me that my child eats/drinks	Agree	93	68	73.1	91	88	96.7	90	88	97.8
It is important to me that I eat/drink	Agree	92	45	48.9	91	86	94.5	89	85	95.5

It is difficult to encourage my child to eat/drink	Agree	92	16	17.4	91	31	34.1	89	42	47.2
Has health benefits for adults	Agree	92	65	70.6	88	86	97.7	87	85	97.7
Has health benefits for children	Agree	82	68	82.9	81	80	98.8	81	79	97.5
I ate/drank when I was growing up	Agree	87	77	88.5	81	75	92.6	82	74	90.2
Parent liking (parent-reported)	Likes	93	63	67.7	89	84	94.3	87	73	83.9

1.4 Evaluation of the Food Dudes Targeted Interim Intervention April to June 2021

1.4.1 Primary School Staff Interview Results

Participants

Four staff members from four participating schools were interviewed about their experiences with the Food Dudes Targeted Interim Intervention (TII) in the 2020/21 academic year. All teachers worked in schools who availed of Model C, an adapted version of Food Dudes which was the least intensive of the intervention models. Participants were seven parents of children in 3rd class (n=3) and in 5th class (n=4), attending primary schools with DEIS status. One parent was also a teacher in a participating primary school. The seven parent participants were from 5 schools who were participating in Food Dudes models B and C.

School Participation in Food Dudes

Three teachers stated that they take part in Food Dudes any time it is offered to their school. One Food Dudes Coordinator stated that their school participated three times over the past six years and that they would not have participated in the 2020/21 academic year, if the alternative, less-intensive model was not offered.

A motivating factor for school participation in Food Dudes is the school having DEIS status.

Staff B

“We’re a DEIS school and it was most important to be in it.”

Teachers also felt that Food Dudes integrates well with the theme of Healthy Eating and other health promotion initiatives in the school.

Staff D

"...after we developed the Healthy Eating Policy then Food Dudes just blended in with it... It just worked hand in hand."

Perceived effects of Food Dudes TII

Staff members felt that the Food Dudes programme overall had a positive impact in their schools and encouraged children to eat fruit and vegetables.

One staff member commented that Food Dudes provides an opportunity for fruit and vegetable consumption for children who may not otherwise be exposed to such foods.

Staff C

"I mean, the fact that they're trying it every day and they're exposing themselves to new fruit and new vegetables. ... one child had said to me "I've never seen this before", "I've never eaten an orange before", it was a mandarin. He had never eaten one before. ... Just having the opportunity is brilliant"

Children's Liking of the Fruits and Vegetables Provided

The teachers reported that, generally, the fruit provided as part of the Food Dudes programme is well-liked by children. Some foods provided, such as cucumbers and peppers, were less popular among children.

Staff A

"I think some days are more popular than others. Blueberry day, there won't be any leftovers, you know? But cucumbers, yeah you'll get them leftover, some peppers and things."

Staff C

"Yeah the peppers and the cucumbers aren't as, they're not as popular, but some of them do eat them"

Teachers' Perceptions of Food Dudes TII Model C

Four staff members preferred the less intensive model of Food Dudes which was delivered in the 2020/21 academic year. Three staff members commented that the programme was more relaxed, which was particularly effective for older children.

Staff A

"This stripped back version does work- there's an assumption that you're going to eat it, or that you're going to try it. And it's a more kind of grown up, relaxed approach in a way."

Two teachers suggested that the charts and number of rewards, usually incorporated in the standard Food Dudes programme can put pressure on the children and therefore, the less intensive Food Dudes model relieved this perceived pressure.

Staff C

"You know, I think that it's nearly a little bit more relaxed. I think that the tick charts... hmm... I know they can sort of put pressure on the children but I don't know if the pressure encouraged them to eat the food."

Staff D

"There wasn't as much pressure, you know, in the sense that there was a prize to get. If they didn't want it, they put it in their bag and it was no big deal, they brought it home. ... I just think it suited our school, the way the programme was run this year."

Teachers reported that the less intensive model of Food Dudes was easier and less overwhelming for teachers to implement.

Staff A

"I think, in a way, it's slightly better in that regard, because I know that when you're trying to fit all that into your school day they can just get a little bit tired. Ehm I just know that from being a class teacher, and I was gung Ho about Food Dudes when I was in the classroom, and I definitely stuck to it. But not everyone will or does."

Staff C

"Oh, it was very easy, yeah, much easier than previous years, yeah. We would definitely like this version again."

One staff member commented that it is beneficial for teachers to decide when to use the resources and rewards.

Staff A

"When it's left up to the teachers' discretion it's actually better. They know themselves when kids will use stuff or want stuff so it actually worked at a lot better without the pile of resources, this year."

Fruit and Vegetable Deliveries and Packaging

Teachers did not report any issues with fruit and vegetable deliveries. Two teachers commented on the convenience of the packaging when the fruits and vegetables were delivered to the school. The clear labelling reduced the burden on school staff members.

Staff A

"They're so clear, the stickers are on it, teacher's name, amount of children... To be honest, I think that's ideal like, because otherwise I was doing that, you know? Divvying them out."

Food Dudes TII Rewards

Teachers commented on the high quality of the rewards provided as part of Food Dudes Targeted Interim Intervention.

Staff B

"the lunch boxes were beautiful... Everyone commented on the quality of them, so that's very good. That was very good quality, especially the drink containers and they're a nice size."

Four teachers felt that the number of rewards provided as part of Food Dudes model C was sufficient. Two teachers felt that too many rewards are provided as part of the standard Food Dudes programme.

Staff B

"They're so used to rewards, you know, they're burnt out from all rewards really. Yeah, from lots of programmes, you know?"

One teacher felt that for older children in particular, the number of rewards provided in the standard Food Dudes model is not necessary and that they would prefer if fruit and vegetables were distributed in a more natural environment.

Staff D

"I know, in the junior school they go mad even for a sticker, you know, and they love all that- the senior school, not so much. I mean, you know, they're kind of maturing and I don't know if that kind of stuff is needed, so I would much prefer the programme the way it is now that the fruit and veg come in and they're given out with their lunches and it's a part of it. It becomes normal, it becomes part of their daily diet."

However, one staff member felt that the number of rewards included in the standard Food Dudes programme is effective, particularly for younger children.

Staff E

“So maybe spend less on stuff and have more, you know, like pens and magnets in previous years. You know little dinky things. Especially the younger kids, they’re dying to get those.”

Accompanying Measures

Coordinators reported distributing links to the online Food Dudes materials to teachers and parents. However, interviewees who were class teachers stated that they did not use the resources in their classrooms this year.

Staff D

“Now they’re in fourth class, they’re that much older and you know I don’t think they were keen on it, so I didn’t use the resources, but we had kind of, because I had that class last year, we spoke about what we had remembered from the previous year and that but I didn’t use any of the online stuff that was there.”

Other Food Dudes coordinators were unsure if the resources were used by teachers, but felt that it was unlikely that they were used, due to time pressures caused by school closures during the COVID-19 pandemic.

Staff C

“I told the class teachers about the website and the recipes and quizzes and all the fabulous materials that are on the website. I’m not too sure if they were used, to be honest. I haven’t asked, but then I haven’t been told either. My guess would be that maybe not, because there’s just so much curricular work to catch up on”

At the time at which the interviews took place, the Food Dudes recipe books had not been distributed to schools.

1.4.2 Parent Interview Results

Parental Attitudes towards Food Dudes and Perceived Impact

Overall, parents had a positive attitude towards Food Dudes and were happy for their child to participate in the programme. Some parents highlighted that because of the programme, new foods have been introduced at home.

Parent C

"I think it's a brilliant initiative. One thing we've discovered is that he likes certain vegetables that we probably would not have given them before..."

Parent D

"We were doing a salad for lunch the other day, and he actually asked for salad. Whereas before it would have been "no mam I'm not eating that" and we're now growing fruit and veg out in the garden, so we've strawberries and apples and beetroot and stuff and he can't wait 'til they grow so he can actually taste them from the garden"

Parents felt that the peer influence and influence from their teachers, associated with Food Dudes, encourages children to eat fruit and vegetables.

Parent A

"I think it's because the teacher told them, because they're quite like "when my teacher tells me to do this, that's what happens". They're enjoying the programme, they're finding it quite fun."

Parent C

"Yeah, I think when he sees the other kids if people, you know, in his classes, peers trying things, then he'll do it as well, whereas at home, we probably wouldn't have that influence on him."

Some parents felt that the programme also has an influence on their own behaviour.

Parent B

"I found myself grabbing a carrot from the back of fridge because the little lunchbox is there to remind me to put something separate in. I find myself like putting in random bits of veg that probably would have been thrown out in the back of the fridge."

Parental Feedback on Accompanying Measures

None of the parents reported seeing the Food Dudes online materials.

However, parents were aware of the awards provided as part of Food Dudes and believed that the incentives worked in encouraging fruit and vegetable consumption.

Parent G

"...there was little incentives as well, so she kind of did want to try the stuff because I think if you try the certain amount of stuff, you got like a pencil or, do you know, so she's like "Oh well I'll try it" because if you try each day I think, on a Friday maybe, you might get a pencil or something so there was little incentives, so I think that was encouraging the children to try the food a little bit, whereas if there wasn't, they probably would be like "Ah I don't want to try it", you know?"

Parent E

"I think the prizes are a big incentive, you know, because all the kids in the school are getting the same prize, they just like to, I suppose, be the same as everyone else."

1.4.3 Parental Post-Intervention Questionnaire

Twenty-two responses to the post-intervention questionnaire were received. This sub-sample is not representative of the overall population who received the TII and therefore, conclusions cannot be drawn. Data on parental feedback on the TII from this sub-sample is provided in Appendix 1. The data suggested that the accompanying measures provided as part of the TII were not seen by the majority parents. Parents were aware of the fruits, vegetables and rewards provided as part of the TII but were less frequently aware of the other supporting measures.

Six parents submitted comments on the family support materials (recipe book, Food Dudes website, online recipes and online videos). Three parents felt positively towards the Food Dudes resources, with two parents stating that their children have been using the recipe book. Two parents commented that they had not been involved in using the resources. One parent felt that the recipe book was received too late in the programme.

Ten parents submitted feedback on what could be improved about Food Dudes, as part of the questionnaire. Parents most frequently commented on the quality of the fruit and vegetables when served in bags, suggesting that fruit and vegetables be prepared on site. Parents also raised concerns regarding the sustainability of the packaging. Two parents suggested further family involvement, including sampling foods at home or integrating fruits and vegetables into home meals. Two parents suggested offering more variety in the fruit and vegetables provided and another parent suggested providing fruit and vegetables in alternative forms such as smoothies. One respondent felt that children should learn how to prepare fruits and vegetables and older children could learn to do so through cooking lessons.

1.4.4 Challenges Encountered and Participants' Suggestions for Improvement: Interview Results of Parents and Staff

Variety of Fruits and Vegetables

Teachers and parents suggested providing a wider of variety of fruits and vegetables to children. Strawberries were suggested by two teachers as a potential addition to the programme.

Staff B

"I suppose teachers have said to me, and I suppose I see it myself, just a bit more variety, that kind of the same thing is coming every three or four days. ... Could you have melon? Could you have strawberries?"

Parent E

"It's a bit maybe repetitive where, like after the first week or two they start getting the same thing over and over again, and if they don't like it, then it becomes a problem because they won't keep trying it, but I think it's a good idea, the principle behind it like."

The most frequently discussed issue with the Food Dudes programme among interview participants was the waste generated from the programme.

Participants were unhappy with the amount of plastic packaging used to store the food.

Staff B

"We're a green school, and some of the teachers take it very seriously and they objected to the soft plastic that's coming in."

Some parents also felt that the plastic transferred an unappealing taste to the fruits and vegetables.

Parent A

"I just have a serious issue with the amount of plastic involved in it. The food comes in little bags, that's a massive issue for me, but I understand it's probably the only way of doing it, so when they get the food like, they get say the bag of carrots, there's a funny taste off them compared to the carrots I put in their lunch boxes."

Food Waste and Leftovers

Participants also commented on the food waste associated with Food Dudes and discussed strategies used to deal with leftovers. The COVID-19 pandemic was a barrier to dealing with food waste, as additional packets of fruit and vegetables could not be shared with other classes.

Staff A

"...in a non-COVID world that'd be grand because those leftovers would be mopped up by other other classes, or the kids will be brought in to do a cookery or something, which just can't happen now."

Teachers viewed children bringing leftover food home as a solution to the issue of food waste.

Staff D

"if they don't eat it at school, they bring it home, which is great because it's not going to waste, it's not staying here and they're, you know, parents are either using it or somebody at home might be eating it."

However, some parents felt children bringing home left over fruits and vegetables was an issue. Some parents commented on the quality of the fruit and vegetables after they had been stored in their children's school bag.

Parent E

"they're bringing them home in their bag and then they're forgetting they're in their bag and they destroy the school bag. Red peppers just turn into water after a couple of hours so I've had to wash their school bags I don't know how many times because they tried it the first time and they won't try it again then."

A suggestion provided by parents and teachers to prevent food waste, was to provide the fruit and vegetables in bulk for teachers to distribute in the classroom.

Staff E

"I don't know if it would work, but perhaps if the Food Dudes food came in bulk. Like say, obviously when its banana that's fine, but we'll say the blueberries. The day the blueberries are being given out, if they came in a large plastic container and that if there were gloves provided, that the teacher could give it out to the kids and maybe at the start of Food Dudes, that every child would get their plastic, you know that little lunchbox thing, and you could put it into that."

1.4.5 Summary of Food Dudes Targeted Interim intervention evaluation

The less intensive model of Food Dudes, implemented in the 2020/21 academic year, was preferred by the majority of teachers interviewed. It addressed some of the challenges typically encountered when implementing the standard Food Dudes programme, including burden on teachers and the pressures children can experience when aiming to complete a rewards chart. The school closures and COVID-19 pandemic were a barrier to the use of the educational resources, as teachers experienced time pressures in covering curricular work. While the link to the Food Dudes website was shared by staff members, none of the parents interviewed had seen the online materials and therefore, direct feedback on the resources could not be obtained. Parents had a positive attitude towards Food Dudes and were happy for their child to be involved in a programme which encouraged their children to try new fruits and vegetables. Some parents reported a positive change in their children's healthy eating behaviour at home since participating in the programme. Parents and school staff members felt that a wider variety of fruits and vegetables would help to improve Food Dudes in future.

The feedback on food waste was reported by parents and teachers and in light of the evaluation work, the Food Dudes programme is now using compostable packaging to distribute fruit and vegetables. Some suggestions were made including bulk provision of fruit and vegetables. However, bulk provision in "pillow packs" was piloted in 2018 but abandoned due to practical reasons including lack of space in classrooms, leftover food and spoilage and burden of work on teachers in large busy classrooms.

1.5 Evaluation of the School Milk Scheme 2020/21

1.5.1 Interviews with Primary School Staff

Sixteen staff members from primary schools with DEIS status were interviewed. Eleven schools reported receiving school milk deliveries in the 2020/2021 academic year, five of which received milk from the School Milk Scheme. One interviewee was uncertain whether the milk their school received was provided under the School Milk Scheme. Another staff member reported that their school usually participate in the School Milk Scheme, however, did not participate in the 2020/21 academic year due to the COVID-19 pandemic.

School Milk Scheme Participation at a School-Level

The majority of interviewees were uncertain of the reasoning behind their schools' decision to participate or not participate in the School Milk Scheme. For several schools, this was because participation in the scheme was based on a decision made years prior.

Staff D

"It has always been here. I mean, I'm here nearly 20 years, it's always been, we've always had the milk come in."

Staff B

"I don't know because I'd say I wasn't here. I'm here 20 years and I'd say it was 20 years since it was done here, definitely."

Similarly, a staff member discussed how the School Milk Scheme has been implemented in their school for generations.

Staff F

"I was actually a pupil in the girls' school here and my husband came here, my brothers came here, my sons came here my grandson there now so since I can remember, you know, the milk was always here."

Some teachers speculated that perhaps practical issues such lack of storage for the milk, may have contributed to their school deciding not to participate in the School Milk Scheme.

Staff E

"I think there was hassle with storing it before and keeping it at the correct temperature and stuff like that."

One principal made the decision not to opt into the School Milk Scheme due to their own negative experience with the scheme as a child.

Staff P

"No no. Not since my bad experience as a child. Giving us sour milk, it turned us off for life."

Three schools participating in the School Milk Scheme commented that not all children drink the milk, so milk is ordered for approximately half of the pupils.

Staff D

"I'd say we're only at half. I know, last year we did have the milk, there was only about half my class who drank it daily."

Staff Perception of the School Milk Scheme

Overall, staff members reported that the School Milk Scheme is important to participating children and those who receive the milk enjoy it.

Staff O

"It comes in daily to the school and the kids love it. The kids that like milk love having it. You will often see the kids hanging around after lunch looking to see if there are spare 'bainnes' around."

One staff member felt that the School Milk Scheme plays a role in preventing the consumption of unhealthy drinks among children.

Staff F

"I mean some kids would never drink milk otherwise. They would drink milkshakes or that flavoured milk. At least here in school they're getting proper milk and food."

Interviewees believed that the School Milk Scheme is important in their schools to provide an opportunity for milk consumption to children experiencing challenging home circumstances or to those who otherwise may not have access to healthy foods and drinks.

Staff M

"It's very important, particularly in a DEIS school because you don't really know what's going on in some houses ... It also gives us a chance to start educating regarding the food pyramid and things like that and good things to eat. Look, when the food is there they are going to eat it and even seeing their teachers and peers eat healthy food, it's just part of their overall education."

Staff D

"I think here a lot of families, we're a DEIS one school, so I'm not sure how much would be readily available at home for them or if milk is bought at home or is it in the fridge, I don't know. ... there are children who were taken out specifically just to get a milk for them, you know, on even on movement breaks and stuff, so in that sense, it has worked positively in the school."

Two teachers felt that intervening at a young age can create dietary habits which last further into life. One staff member felt that peer influence in school can help in forming the habit of drinking milk, which can translate into the home environment.

Staff I

"If you get milk into children when they are younger. There is a domino effect we see in schools, if one child has it then another child will have it and then it's not considered as big of a deal and then I suppose these kind of habits kind of creep into the home then as well that they'll go for a glass of milk with their lunch with their dinner."

Challenges Associated with the School Milk Scheme

Two staff members from schools participating in the School Milk Scheme reported issues with maintaining the freshness of the milk and storing it at a suitable temperature.

Staff I

"When the milk is delivered it's normally left in a classroom lukewarm, and they don't want to drink it. It becomes gloopy and is warm. It seems the smaller cartons are more susceptible to going off than the big cartons."

"If we keep going with this warm milk we are going to turn the kids off it for life."

Staff O

"Like I don't know how they do it but even in the afternoon when the milk is warm they still drink it."

Conversely, a contributor to the success of the School Milk Scheme in another school is the refrigerator, provided by the scheme, which enables the milk to be served at a suitable temperature.

Staff D

"...it is lovely cold like there's nothing nicer than a cold glass of milk, so when you've a carton of milk sitting there all day and it's not cold, it's harder for them to drink, so I suppose, I mean, we have, we got the fridge, I think we got the fridge through the milk"

scheme, which is great. We're lucky that we have a caretaker who waits 'til kind of the last minute to deliver the milk for us, so it is cold"

'Moo Crew' Accompanying Resources

Three teachers reported using the 'Moo Crew' resources in the past. Teachers enjoyed using the materials and felt that they were well-received by children.

Staff F

"Yeah they are, they're brilliant. A toothbrush is good for every child to have."

Two teachers commented on the value of the resources in helping children to make a connection between the origin of milk and drinking the milk from a carton.

Staff A

They were more chatty about it, like, you know, they would, you know they'd pick up the milk and they might make a funny joke about the farm or you know that they saw in the video or something like that, so they were making that connection, which I think is so important because these kids would never have been on a farm- -at all, like not a real one, so you know, to make the connection that this came from- now some kids were like "Eww" when they were watching the video . . . they were just so responsive actually to the learning materials of that.

Staff D

". . . it integrates into healthy eating and your dairy products, and, you know, there's been days we've made butter here. We've showed them how to make cream, you know, using milk and stuff, ehm so I do think that, you know, programmes like this are useful to them. . . some of them are shocked to find out that, you know, milk came from cows like."

Two staff members reported distributing 'Moo Crew' toothbrushes this year, however COVID-19 was cited as a barrier to using other resources in 2020/21.

Staff D

"We just dished out our toothbrushes there last week. Moo Crew had sent in the toothbrushes and we delivered them. Yeah, we have used the resources. I won't lie, there was very little used this year, because some teachers just didn't want extra products being left into their rooms so even with the toothbrushes I kind of had them sprayed down."

1.5.2 Interviews with Parents

Seven parents of children in 3rd class (n=3) and in 5th class (n=4) from five DEIS schools were interviewed about their attitudes towards milk and their beliefs surrounding children's milk consumption and the School Milk Scheme.

General Attitudes Towards Milk

Three parents reported that their family commonly use milk in their household and four parents reported using a small amount of milk. Three parents reported that their children were regular milk consumers and four parents reported that their child drinks a small amount of milk.

Five parents believed that milk consumption was important for children. Obtaining calcium for bone health and prevention of osteoporosis were the most commonly discussed benefits of children consuming milk.

Parent F

"For calcium, bone density, ehm you know, all the vitamins you obtain from milk for those reasons."

Parent G

"she suffers with kind of her bones and joints and stuff like that, so that's why I'd like more milk-based products in her, just to kind of keep her bones and keep the calcium and that up in her body."

Some interviewees felt that their beliefs surrounding the health benefits of milk were instilled in them from a young age.

Parent E

"...my own mother would always insist we have milk and she thinks, you know, that it's really good, so I suppose she instilled that in me."

Parent D

"Well we've been encouraged to drink the Super Milk because of the osteoporosis, but even when we were growing up as kids it was always known that milk is good for the bones, you had your man dancing on the telly. ... I don't think it's anything that we've learned, or know that we that we've learned. I think it's just, it's always been there, subliminally like, do you know that kind of way?"

Negative Beliefs surrounding Milk Consumption

Two parents had negative beliefs surrounding milk consumption, but did not restrict their children entirely from consuming dairy.

Parent A

"I'm actually not a big believer in milk. We don't take a lot of dairy in the house. The kids would take a few yoghurts just because I don't want to deprive them of anything but, if I had it my way I wouldn't give them any dairy."

Neither parent believed that humans should drink cow's milk.

Parent C

"I don't know whether humans should be drinking cow's milk to be honest. That's my personal feeling. It doesn't mean I set that as a household rule or anything. I just don't, I think as far as calcium is concerned that's really it like. That's the only benefit from it."

One parent reported that milk has adverse health effects on their children.

Parent A

"One of them gets kind of a real mucousy reaction to it, the other one gets a rash under her arm and then ... the oldest fella, has real pimply skin and I know it's all directly linked."

This parent also felt that milk has a negative impact on the environment and that calcium should be obtained from plant sources.

Parent A

"I think if we want the calcium, we go to the source of it, like go to broccoli, go to the nuts, go the greens ... I just find it bizarre that we would go to a cow for our source of calcium. It's so processed, it's high in sugars."

Potential Contributions to Decreased Milk Consumption

When asked their opinions on why milk consumption may have decreased among Irish children, parents most commonly felt that this was potentially due to increased variety in the diet, compared to what was available in Ireland previously.

Parent A

"Like it's the same way we don't have cabbage and bacon three times a week like, people are eating asparagus and broccoli and stuff. We have more available to us as a nation and then, we have also travelled and realised other countries don't consume milk the way we do."

Some parents stated that alternative drinks such as juices can be more economical and convenient for parents.

Parent G

"...like that, you can buy the packets of cartons of juice and stuff for really, really cheap like a euro or two euro in Lidl or Aldi so sometimes I think it's easier for parents to just grab a 10 pack of juices for, cartons for two euro that they can throw in their lunch boxes rather than fill a little thing of milk, do you know?"

One parent felt that sugar-sweetened beverages are more promoted in the media, making them a more attractive choice for children.

Parent F

"I suppose in one sense I feel fizzy drinks and cordials and all those are more promoted on TV than milk. The whole media part, the social media. Like milk isn't seen as being cool..."

Two parents stated that there is conflicting information surrounding milk consumption and discussed the beliefs and dietary practices which may lead to excluding milk from the diet and choosing plant-based alternatives.

Parent B

"I'd say all the kind of articles and all that, that are out there as well and the different kind of diets and fads and vegans and just all the options I suppose. They're probably drinking less cow's milk but they might be drinking almond milk and oat milks and all that so I'm not too sure actually."

Children's Participation in the School Milk Scheme

Two parents reported that the School Milk Scheme was offered in their child's school, but their children were not participating.

For one parent, this was due to adverse health effects experienced by their child when consuming milk.

Parent A

"No, they don't obviously now [participate in the School Milk Scheme] but I remember when the first child went to school in junior infants, I let him have it and actually I just noticed his skin was in bits so then I just kind of gradually phased it out."

For the second parent, the choice to not participate in the scheme was because their child preferred to bring water to school.

Attitudes towards the School Milk Scheme

While the majority of parents had positive attitudes towards milk, there was uncertainty on whether promotion of milk consumption should occur in schools.

Parent B

"Maybe not [the School Milk Scheme is not necessary]. I think the diet is so varied now like I'm sure that they're getting their nutrients somewhere else in their diet."

Parent D

"I definitely think it should be optional. I don't agree with an institution like a school deciding, you know, whether or not this should be brought in ... I don't agree with people forcing their opinions on people. If a child sitting beside him wants to drink almond milk, that's perfectly fine"

Conversely, one parent who expressed negative beliefs towards milk consumption felt that the School Milk Scheme is necessary in schools to provide milk to children who may be experiencing challenging home circumstances.

Parent A

"the school is giving it for kids that are kind of maybe going home to an empty fridge and that's absolutely fine. They actually provide it for free to a lot of these kids, so I'm not against it. It just doesn't agree with my kids, but absolutely and some kids love it, do you know, so, but just for me, it's not the right choice."

One parent expressed that they would like for their child's school to offer the School Milk Scheme. Another parent stated that they may have liked if their child was offered the scheme due to nostalgia, as they received the scheme when they were in school.

Parent B

"We would have been offered it and given it as kids and I'm like "oh we got that. You should get it"."

Three other parents also discussed their memories of receiving the School Milk Scheme as a child.

One parent recounted a negative experience, which affected their present view of the scheme.

Parent E

"I remember from school where you got a carton of milk and it was sitting out all day in the sun, and, you know, by the time you got it, you were lucky if it wasn't gone sour."

1.5.3 Summary of the School Milk Scheme Evaluation

Participants reported that the School Milk Scheme has had a positive impact in participating schools, particularly among children from disadvantaged backgrounds. Participants felt that an important benefit of the scheme is the opportunity for milk consumption that it provides to children who may not receive milk at home. While, in some cases, use of the ‘Moo Crew’ resources was limited in the 2020/21 academic year, interviewees who previously used the materials enjoyed them and felt that they increased children’s awareness of the origin of milk.

The largest barrier to school participation in the School Milk Scheme and the implementation of the scheme, discussed by participants, was the storage of the milk and maintaining a suitable temperature. This is consistent with previous research carried out, evaluating the School Milk Scheme. While refrigerators can be provided to schools as part of the scheme, further promotion of this feature may be beneficial.

The parents interviewed shared varying views and attitudes towards milk. While the majority of parents interviewed generally felt that it was beneficial for their children to consume milk, there were mixed views on whether milk promotion should occur in schools. The decision for children to consume milk was viewed as a personal choice for families, but parents saw the benefit in providing milk to children who may need it. Parents felt that the wide variety of food and drinks available in Ireland may be contributing to the decline in children’s milk consumption. The issue of misinformation surrounding milk consumption was also discussed, highlighting the need for clear public health messaging around children’s milk consumption and its benefits.

The interviews conducted with staff members and parents highlighted an element of tradition associated with the School Milk Scheme, with eight participants recounting experiences with the School Milk Scheme from their childhood. Some participants who had positive experiences with the School Milk Scheme when they were in school, felt positively towards the current scheme. However, some participants with negative past experiences of the scheme felt that it should not be implemented in schools today. Several teachers were unsure on the reasoning behind their school’s decision to participate or not to participate in the School Milk Scheme. In the majority of cases, teachers believed that the decision to participate or not participate was made many

years prior. It appears that generally, in the schools interviewed, the School Milk Scheme is something that is consistently present or consistently absent.

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1.7. Appendix 1.

Targeted Interim Intervention feedback in a sub-sample of parents (N=22) who completed a post-intervention questionnaire.

Table 1.6. Children's enjoyment of Food Dudes Targeted Interim Intervention (N=22)

Children's enjoyment	n	%
Very much enjoyed	7	31.8
Enjoyed	4	18.2
Somewhat enjoyed	11	50
Did not enjoy	0	0

Table 1.7. Parental perception of changes in their children's healthy eating behaviour since participating in Food Dudes (N=21)

Since participating in Food Dudes my child has asked me to buy...	Agree		Neutral		Disagree	
	n	%	n	%	n	%
More fruit	7	33.4	8	38.1	6	28.5
Different types of fruit	6	28.6	7	33.3	8	38.1
More vegetables	5	23.8	8	38.1	8	38.1
Different types of vegetables	3	14.3	8	38.1	10	47.6

Agree; strongly agree or agree
Disagree; strongly disagree or agree

Table 1.8. Parental awareness and children's enjoyment of the Targeted Interim Intervention components

	Parental Awareness* (N=21)		Child enjoyed* (N=20)	
	n	%	n	%
Fruit	17	81.0	11	55.0
Vegetables	19	90.5	8	40.0
Rewards and Certificates	15	71.4	13	65.0
Food Dudes Website	5	23.8	2	10.5
Online Videos	3	14.3	1	5.0
Online Recipes	4	19.0	3	15.0
Recipe Book	7	33.3	7	35.0

66

*Parent was aware of the Targeted Interim Intervention component

*Parent reported that their child enjoyed the Targeted Interim Intervention component

Table 1.9. Parental feedback on accompanying resources: helpfulness of the family support materials.

	Food Dudes Website (N=19)		Online Videos (N=17)		Online Recipes (N=18)		Recipe Book (N=19)	
	n	%	n	%	n	%	n	%
Very Helpful	0	0	1	5.9	1	5.6	6	31.6
Helpful	3	15.8	2	11.8	2	11.1	5	26.3
Somewhat helpful	3	15.8	0	0	1	5.6	3	15.8
Not very helpful	0	0	0	0	0	0	0	0
Not at all helpful	0	0	0	0	0	0	0	0
I was not aware of this resource	13	68.4	14	82.4	14	77.8	5	26.3



Section 2: Evaluation of the European Union School Fruit, Vegetables and Milk Scheme in Ireland: 2021/2022 Report

2.1 Introduction

This section of the report evaluates the effectiveness of the European Union (EU) School Fruit, Vegetable, and Milk Scheme in primary schools in Ireland for the period 2021/2022. The longitudinal evaluation recommenced in September 2021 when the unprecedented public health measures enforced to curb the spread of COVID-19 had eased, and schools re-opened. This section reports on the implementation, delivery, and results of the resumed Food Dudes Healthy Programme and the School Milk Scheme, with regards to the functioning of these schemes and their impact on the consumption of, and attitudes towards, fruit, vegetables, and milk in school children.

2.2 Evaluation of the Food Dude Healthy Eating Programme (FDHEP)

2.2.1 Methods

The evaluation was quantitative and qualitative in design to ensure the results' credibility, reliability, and robustness.

Ethical Approval

The UCD Human Research Ethics Committee - Sciences granted ethical approval for this research on 20th December 2019 (Reference LS-19-93-Heinen-Murrin and amendments in July and November 2020)

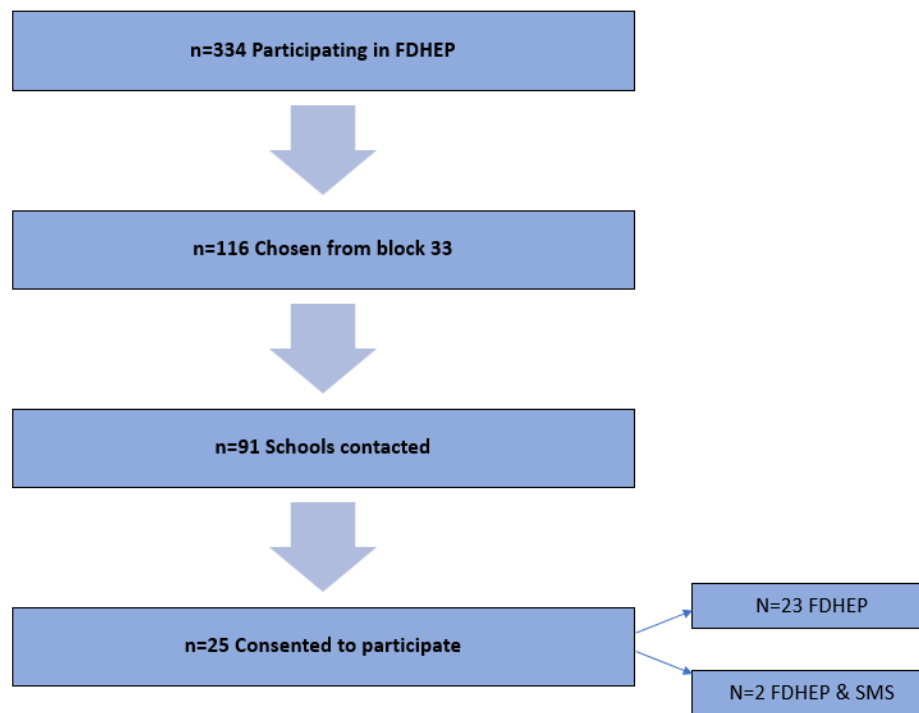
Sample Selection and School recruitment

FDHEP Schools

During the 2021/22 school year, a total of 344 schools were recruited to participate in FDHEP, a 16-day intervention programme for junior pupils, and an 8-day intervention for senior pupils. For the purpose of recruitment, the selected schools were categorised into 3 blocks based on their resources and logistical capacity in different regions. Block 33, comprising 116 schools was selected for use in this evaluation. The primary schools had previously been invited to participate

in the FDHEP in the 21/22 academic year by Real nation (Figure 2.1). Due to logistical issues and the impact of COVID 19, the master list consisted of 91 schools out of the 116 participating primary schools that were previously chosen by Real Nation. The NNSC researcher sent invitations to participate via email (n=91) and then telephone (n=60). Between November 2021 and January 2022, 25 intervention schools (23 FDHEP schools & 2 FDHEP/School Milk Scheme schools) consented to participate in the evaluation study via electronic or paper consent forms.

Figure 2.1: Flow Chart of FDHEP Schools

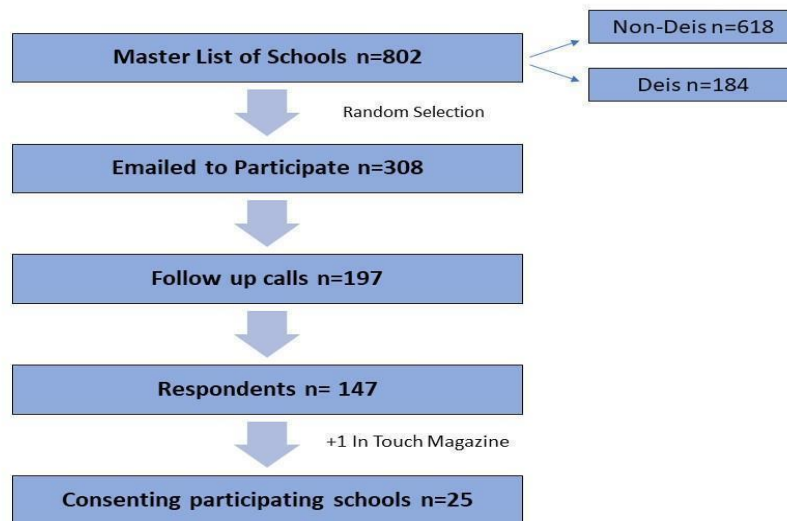


Control Schools

As part of the programme evaluation, control schools were included for comparative purposes. For recruitment of control schools, the Department of Education website was utilised which contains a list of the 3123 primary schools in Ireland. From this, a master list of primary schools (n=802) was selected by the NNSC and were further subdivided into Delivering Equality of Opportunities in Schools (DEIS) (184) and non-DEIS (618) schools (Figure 2.2). Following a simple random selection, 308 schools were invited to participate in the evaluation study by email.

Follow-up phone calls were then made to 197 schools. Contact was made with 147 of these schools. An article inviting schools to participate was also published in Intouch magazine, a publication disseminated to teachers, which generated one response. An online consent form was emailed to the schools that expressed an interest in participating. A total of 25 control schools agreed to partake in the evaluation.

Figure 2.2: Flow Chart of Control Schools



The characteristics of the intervention and control schools that participated in the evaluation are described and compared in Table 2.2.1. No differences were found between the participating intervention and control schools' size ($p=0.225$) or DEIS status ($p=0.684$). Meanwhile, statistical differences were observed for school region (0.004) and region classification ($p=0.009$) between the intervention and the control schools, with statistical significance being defined as a P-value ≤ 0.05 .

Table 2.2.1. Characteristics of participating schools: intervention versus control

	Intervention			Control			p-value
	Total N	n	%	Total N	n	%	
School Size	25			25			
Small		10	40		6	24	0.225
medium		15	60		19	76	
School Type	25			25			0.684
DEIS		3	12		4	16	
Non-DEIS		22	88		21	84	
School Region	25			25			0.004
Leinster		4	16		11	44	
Munster		17	68		7	28	
Connacht		0	0		5	20	
Ulster		4	16		2	8	
Region classification	25			25			
Urban		11	44		20	80	0.009
Rural		14	56		5	20	

Consent

When primary schools expressed interest in taking part in an evaluation study, UCD researchers distributed an information sheet and electronic consent form to the principal or FDHEP school coordinator (appendix 1). Upon request, a physical copy of the information sheet and consent form was provided. Upon receipt of school consent, UCD sent an electronic link to the schools for distribution to parents of children in 1st, 3rd, and 5th classes, which contained a consent form, information leaflet, and online questionnaire. Parents could not proceed with the questionnaire until full consent was provided.

Inclusion and exclusion criteria

FDHEP schools

The inclusion criteria for the primary schools recruited into the intervention group for the evaluation was participation in the FDHEP in the 2021/2022 academic year.

Control Schools



The inclusion criteria for the primary schools recruited into the control group for the evaluation were schools not participating in the FDHEP over the past 5 years.

Children and parents of FDHEP and control group

Children in 1st, 3rd or 5th classes only were eligible to participate in the evaluation. Parents/guardians of the children in these selected classes were also invited to participate in the study.

Teachers' of FDHEP schools

All teachers involved in the FDHEP in consenting schools were eligible to take part in the feedback aspect of the study.

Quantitative Data Collection

Parent and child baseline questionnaire

Between the 1st of December 2021 and the 11th of January 2022, consenting parents of children in 1st, 3rd and 5th classes were sent an email from the school inviting them to complete an online questionnaire that was developed using Qualtrics, an online survey platform..

Between the 3rd of November and the 3rd of December 2021, consenting parents of children in 1st, 3rd and 5th classes in the control group were also sent an email from their school inviting them to complete the same online questionnaire.

The questionnaire included demographic characteristics, including children's age, gender, class, school, and parental education. The questionnaire assessed parents and children's consumption of dairy (milk, cheese, and yoghurt), fruit, vegetables, sugar-sweetened beverages, and sweet and savoury snacks. It also assessed parent-reported availability of fruit, vegetables, and milk in the home, as well as their liking and attitudes towards these food products. A section about the children's liking and attitudes towards fruit, vegetables, and milk, was also included in the questionnaire, using a five-point child-based Likert scale, which gives 5 options represented by images to prompt a child's response.

Parent and child follow-up questionnaire

On the 25th of April 2022, following completion of the FDHEP, a follow-up questionnaire was distributed by email to all parents in the intervention and control groups who had completed the baseline questionnaire and agreed to their email being used for further contact. To identify if the FDHEP was responsible for behavioural changes (i.e., an increase in fruit or vegetable consumption among participating children and a difference in their attitudes towards their consumption), the questionnaire repeated questions regarding the children's and parents' dietary intake and their attitudes towards fruit, vegetables, and milk. In addition, the follow-up questionnaire sent to the intervention group included questions to evaluate the FDHEP.

Teachers' follow-up questionnaire

On 25th April 2022, following the completion of the FDHEP, a post-intervention questionnaire was distributed by email to all participating schools. One teacher involved in the FDHEP was nominated as a school representative to take part in the post-intervention feedback aspect of the study and provided their email address.

The questionnaire assessed the teacher's perception of the success rate of the FDHEP, the ease of implementing it into their daily routine, and the children's overall enjoyment of the programme. The questionnaire also examined the teachers' opinions about whether the programme improved children's liking of fruit and vegetables and their healthy eating behaviour and attitudes. Questions on the delivery times, packaging, waste, and the quality and variety of fresh fruit and vegetables received were also included. Teachers also gave their opinion about the relevance, usefulness, and age suitability of the FDHEP supporting materials. The final questionnaire component examined the school's healthy eating policies and nutrition plan. The questionnaire additionally allowed the teachers to elaborate on their selected responses to a number of key questions.

Qualitative Data Collection

FDHEP process evaluation

A list of all schools (n=25) that consented to participate in the FDHEP evaluation study was compiled based on geographical location, rural and urban classification, school size, and DEIS status. From this main list, a sub-sample of schools (n=13) was randomly selected that included a mix of school types based on location, regional classification, school size and DEIS status. This mix of school types ensured that the sample chosen represented the larger group of schools participating in the FDHEP.

The schools had previously consented to participate in the process evaluations as part of the FDHEP evaluation recruitment process. The Real Nation programme managers provided a list of the FDHEP regional start dates. In March 2022, observation visits were scheduled by telephone with the FDHEP coordinators or the school principals for a date during the intervention period (14/Mar/22 – 08/Apr/22) that the school deemed suitable. The times of visits to the participating schools were then arranged for the time during the school day that the FDHEP was being delivered in class. Telephone contact was made initially with ten of the thirteen schools.

A standard observation checklist for the process evaluations was developed and completed by two researchers during each observation. This checklist included questions on the school and class environments, the supporting materials, the quality and variety of the fruit and vegetables received, the tasting experience of the children, and the waste management of the plastic packaging and the leftover fruit and vegetables.

The researchers adhered to the latest COVID-19 Infection Prevention and Control (IPC) Guidance for Schools and Education Settings as advised by the Health Protection Surveillance Centre (HPSC) for each school visit.

Data Analysis

Quantitative data analysis

1) Parent and child baseline questionnaire

By the cut-off date, 14th March 2022 (the FDHEP start date), 640 parent baseline questionnaires (n=412 intervention group, n=228 control group) from 23 of the 25 intervention schools and 16 of the 25 control schools were submitted to Qualtrics. The data was exported from Qualtrics into a password-protected Excel workbook on a UCD computer for data screening to check for errors. Data screening showed that 193 questionnaires (n=108 intervention group, n=85 control group) were initiated but contained no or little relevant data for analysis; therefore, they were deleted. A further n=25 duplicate entries were also deleted and excluded from the study. A final dataset of n=422 (n=348 fully completed, n=74 partially completed; n= 286 intervention group, n=136 control group) was therefore used for the baseline data analysis.

2) Parent and child follow-up questionnaire

The cut-off date was set for the 7th of June 2022, by which time, n=155 (n=97 intervention group, n=58 control group) parent follow-up questionnaires were submitted into Qualtrics from 18 of the 25 intervention and 12 of the 25 control schools. The data was exported from Qualtrics into a password-protected Excel workbook on a UCD computer for data screening to check for errors. Data screening showed that 44 questionnaires (n=24 intervention group, n=20 control group) were initiated but contained no or little relevant data for analysis; therefore, they were deleted. A dataset of n=111 (n=71 intervention group, n= 38 control group) was consequently used for the follow-up data analysis.

3) Teachers' follow-up questionnaire

A total of twenty-two online questionnaires that were developed using Qualtrics were sent by email to the teachers involved. A reminder email was sent on both the 11th and 24th of May 2022. In total eighteen responses to the post-intervention questionnaire were received. The data was exported from Qualtrics into a password-protected Excel workbook on a UCD computer for data screening to check for errors and to anonymise it. Incomplete data was removed as well as any duplicate entries.

4) Pre-Post Analysis

For pre-post analysis of the intervention, it was intended to match the data from the baseline questionnaire to data from the follow-up questionnaire by the unique identifier number. However, due to inconsistencies in the identifier numbers, the responses were matched by correspondents' information. Certain data was extracted for use in the analysis such as responses regarding children's and parent's demographic characteristics, consumption, attitudes and feedback. The data extracted for use in the pre-post analysis was then anonymised in excel before importing into SPSS 27 for analysis. Incomplete data was removed and excluded from the pre post analysis, yielding a dataset of n=126 (n=63 baseline and n=63 follow-up).

Data screening of the above four datasets revealed that there were many missing values across the variables. Missing data were excluded from the statistical analysis by dummy coding it in SPSS and specifying this dummy code as a missing value. To allow for ease of interpretation, the seven response options for the variable 'frequency of consumption' were collapsed and recoded into three categories: '3+ servings per day', '1-2 servings per day', and 'none or less than daily'. The attitudes were further categorised into agree, neutral or disagree, or good, okay or bad.

Data analysis for each dataset was performed using SPSS 27 for Windows. The descriptive analysis was performed by calculating frequencies and percentages for categorical variables and means standard deviations for continuous variables. Pearson's Chi-square tests assessed categorical variables. Statistical significance was set at p values ≤ 0.05 . Qualitative data from the open-ended comment questions were grouped according to relevant themes that emerged.

Qualitative data analysis

After each observation visit, the two researchers discussed the checklist questions and their observations to ensure data consistency. The observation checklist was coded, and following each school visit, the data was input into Excel and grouped according to relevant themes.

2.2.2. Results

2.2.2.1. Parent and child baseline data: diet and nutrition attitudes

Population characteristics

The characteristics of the parents and children who responded to the baseline questionnaire are outlined in Table 2.2.2. No statistically significant difference in the frequencies of the demographic characteristics was found between the intervention and the control apart from gender ($p=0.018$). While gender was almost evenly split in the intervention group with 52.4% females and 47.6% males, the control group had 64.7% females compared to 35.3% males. The highest percentage of children were between 8 -10 years old in both the intervention (43.7%) and the control (45.6%) group and the majority of both groups attended non-DEIS schools (90.9% and 92.6%, respectively). Most of the respondents were mothers in both the intervention (94.2%) and the control group (87.5%) who had completed further higher education or training following the completion of secondary school (74.3% and 76.5%, respectively). In the intervention group, while 63.7% of parents were aware that their child was participating in the FDHEP in the 2021/2022 academic year, 9.6% reported that their child was not partaking, and 26.7% were unsure of their child's participation in the programme (table 2.2.3).

Table 2.2.2. Parent and child demographics: intervention versus control

	SMS			Control			P-Value
	Total N	N	%	Total N	N	%	
Child Demographics							
Gender	286			136			
Male		135	38.3		48	35.9	0.018
Female		150	61.2		88	64.1	
Prefer not to say		0	0.5		0	0	
Class	283			136			
1st		99	39.8		42	31.3	0.351
3rd		88	30.4		38	28.2	
5th		96	29.8		56	40.5	
Age (Years)	283			136			0.813
5-7 Years		96	39		40	29.8	
8-10 Years		125	42.3		62	45	
11-12 Years		68	18.7		34	25.2	
Parent Demographics							
Relation to child	286			136			
Mother		269	94.1		119	87.5	0.058
Father		14	4.9		17	12.5	
Grandmother		1	0.3		0	0.0	
Guardian		1	0.3		0	0.0	
Other Relative		1	0.3		0	0.0	
Education Level	284			136			0.630
Up to secondary school		73	25.7		32	23.5	
Additional training or higher		211	74.3		104	76.5	
School	286			136			
DEIS		26	9.1		10	7.4	0.550
Non DEIS		260	90.9		126	92.6	

Table 2.2.3: Parent reported child's participation in FDHEP

Childs Participation	Total N	N	%
	281		
Yes		179	63.7
No		27	9.6
Unsure		27	26.7

Children's baseline dietary intake of fruit and vegetables

No statistically significant differences were found between the intervention and control's fruit intake ($p=0.897$) and vegetable intake ($p=0.147$) at baseline (Table 2.2.4). Fruit consumption was low in both groups, with only 21% of parents in the intervention group and 19.9% in the control group reporting that their children consumed three or more servings of fruit per day. Consumption of vegetables was even lower, with only 11.9% of parents in the intervention group and 16.2% of the control group disclosing that their children consumed three or more servings per day. Further analysis showed that only 7.3% of parents in the intervention group and 9.6% in the control group reported that their children consumed three or more servings of both fruit and vegetables per day, thereby meeting the daily recommended guidelines of five portions of fruit and vegetables. Further analysis was conducted on fruit and vegetable consumption for both genders due to the significant difference of gender in the intervention and control groups at baseline. There was no significant difference between gender and fruit and vegetable consumption in either group, therefore the gender imbalance should not impact the results.

Table 2.2.4. Children's baseline fruit and vegetable intake: intervention versus control

Freq. of Cons.	Fruit						P	Vegetables						P
	Intervention			Control				Intervention			Control			
	N	n	%	N	n	%		N	n	%	N	n	%	
	286			136				286			136			
3 + servings per day		60	21		27	19.9	0.897		34	11.9		22	16.2	0.147
1-2 servings per day		109	38.1		55	40.4			87	30.4		49	36	
None or less than daily		117	40.9		54	39.7			165	57.7		65	47.8	

The children’s baseline consumption of sweet and savoury snacks was also analysed, however there was no significant difference between the intervention and control group across both categories ($p=0.185$ and $p=0.536$, Table 3.2.5). The majority of parents in both groups reported their child consuming both savoury and sweet snacks less than once per day, with 88.8% and 91.15% for savoury and 74% and 78.7% for sweet. Meanwhile, there was a higher proportion of both the intervention and control groups reporting consuming 1-2 servings of sweet snacks per day (22.5% and 19.1%) compared to savoury snacks (8.8% and 8.9%).

Table 2.2.5. Children’s baseline savoury and sweet snack intake: intervention versus control

Frequency Of Consumption	Savoury Snacks							Sweet Snacks							
	Intervention			Control				P-Value	Intervention			Control			
	Total N	N	%	Total N	N	%	Total N		N	%	Total N	N	%	P-Value	
	285			135					285			136			
3 + servings per day		7	2.5		0	0.0	0.185		10	3.5		3	2.2	0.536	
1-2 servings per day		25	8.8		12	8.9			64	22.5		26	19.1		
None or less than daily		253	88.8		123	91.1			211	74.0		107	78.7		

Attitudes towards fruit and vegetables

Children’s attitudes

No statistically significant differences were found in children’s attitudes towards fruit or vegetables between the intervention and control at baseline (Table 2.2.6). While at least 85% of children liked the taste of fruit in both the intervention and the control group, only 55.3% and 63.4% of children respectively liked the taste of vegetables. Overall, children believed that both fruit and vegetables were good for their health in both groups.

Table 2.2.6. Children’s baseline attitudes towards fruit and vegetables: intervention versus control

Statement	Fruit						P-Value	Vegetables						P-Value
	Intervention			Control				Intervention			Control			
	N	n	%	N	n	%		N	n	%	N	n	%	
Child's Liking	234			113			0.528	235			112			
Tastes Good		199	85.0		99	87.6			130	55.3		71	63.4	0.236
Tastes Okay		25	10.7		8	7.1			60	25.5		27	24.1	
Tastes Bad		10	4.3		6	5.3			45	19.1		14	12.5	
They are good for my health														
Good for health	234			113				234			112			
Okay for health		227	97.0		110	97.3	0.861		216	92.3		106	94.6	0.726
Bad for health		7	3.0		3	2.7			15	6.4		5	4.5	

Parental attitudes

No statistically significant differences in parental attitudes towards fruit and vegetables between the two groups were found (Table 2.2.7). At least 96% of parents in both the intervention and the control group reported that it was important for their child to eat fruit and vegetables. Likewise, most parents were aware that fruit (99.2% and 97.6%) and vegetables (99.2% and 100%) had health benefits for children in both the intervention and control groups, respectively.

More parents in the control group believed that fruit was needed in their child’s diet to provide vitamins and minerals than in the intervention (98.4% and 89.6%, respectively; $p = 0.002$). However, no statistically significant difference ($p = 0.221$) was observed between the two groups for vegetables in this regard, with close to 95% of parents in both groups reporting that vegetables were needed in their child’s diet to provide micronutrients.

More parents in the control group compared to the intervention group perceived that their child liked the taste of both fruit (86.4% versus 79.8%; $p = 0.074$) and vegetables (54.5% versus 46.3%; $p = 0.032$) however, statistical significance was only found for vegetables in this regard.

Table 2.2.7. Parental baseline attitudes towards fruit and vegetables: intervention versus control

Statement	Fruit						Vegetables							
	Intervention			Control			P Value	Intervention			Control			
	N	n	%	N	n	%		N	n	%	N	n	%	P Value
It's Important to me that my child eats fruit/veg	264			126				263			126			
Agree		254	96.2		121	96.0	0.86		259	98.5		125	99.2	0.747
Neutral		9	3.4		4	3.2			3	1.1		1	0.8	
Disagree		1	0.4		1	0.8			1	0.4		0	0.0	
Fruit/ Veg has health benefits for children	259			123				259			120			
Agree		257	99.2		120	97.6	0.18		257	99.2		120	100.0	0.334
Neutral		2.0	0.8		3	2.4			2	0.8		0	0.0	
Disagree		0	0.0		0	0.0			0	0.0		0	0.0	
Fruit&Veg are needed in child's diet for Vitamins/Minerals	260			125				258			124			
Agree		233	89.6		123	98.4	0.009		242	93.8		120	96.8	0.41
Neutral		20	7.7		1	0.8			14	5.4		3	2.4	
Disagree		7	2.7		1	0.8			2	0.8		1	0.8	
Child liking (parent reported)	258			125				259			123			
Good		206	79.8		108	86.4	0.074		120	46.3		67	54.5	0.032
Okay		37	14.3		8	6.4			86	33.2		44	35.8	
Bad		15	5.8		9	7.2			53	20.5		12	9.8	

2.2.2.2. Parent and child follow-up data: diet and nutrition attitudes

There was a low response rate to the parental post-intervention questionnaire compared to the baseline questionnaire despite continuous efforts to push parents to respond. Thus, the sub-sample, in this case, is not representative of the overall population who received the FDHEP. Moreover, the available data from the parent and child follow up questionnaires was utilised in two separate analyses, one comparing the intervention and control group, as detailed below, and one comparing baseline and follow up data.

Children's follow-up dietary intake of fruit and vegetables

Table 2.2.8. Children's follow-up fruit and vegetable intake: intervention versus control

Frequency Of Consumption	Fruit						P-Value	Vegetables						P-Value
	Intervention			Control				Intervention			Control			
	N	n	%	N	n	%		N	n	%	N	n	%	
	73			38				73			38			
3 + servings per day		19	26.0		16	42.1	0.175		11	15.1		7	18.4	0.615
1-2 servings per day		32	43.8		11	28.9			28	38.4		17	44.7	
None or less than daily		22	30.1		11	28.9			34	46.6		14	36.8	

As can be seen in table 2.2.8, the number of questionnaires completed at follow-up significantly reduced the sample size of both the intervention (N=73) and the control (n=38), thus limiting the comparisons. At follow-up, while daily fruit consumption was lower in the intervention group (26%) compared to the control group (42.1%), the differences observed were not statistically significant ($p = 0.175$) (Table 2.2.8). Similar results, meanwhile, were found for vegetable intake in both groups, with 15.1% of parents in the intervention group and 18.4% in the control group reporting that their children consumed three or more servings of vegetables daily ($p = 0.615$).

With regards to snack consumption, there was no significant difference between consumption of sweet or savoury snacks across the two groups (Table 2.2.9). Similar to baseline consumption, the majority of both groups reported their child consuming savoury (89% and 94.7%) and sweet (78.1% and 89.5%) snacks less than daily.

Table 2.2.9. Children's follow-up sweet and savoury snack intake: intervention vs control

Frequency Of Consumption	Savoury Snacks						P-Value	Sweet Snacks						P-Value
	Intervention			Control				Intervention			Control			
	N	n	%	N	n	%		N	n	%	N	n	%	
	73			38				73			38			
3 + servings per day		0	0.0		0	0.0	0.32		0	0.0		0	0.0	0.138
1-2 servings per day		8	11.0		2	5.3			16	21.9		4	10.5	
None or less than daily		65	89.0		36	94.7			57	78.1		34	89.5	

Attitudes towards fruit and vegetables

Children's attitudes

At follow-up, no differences were observed between the groups in children's attitudes towards fruit or vegetables (Table 2.2.10). Overall, children's liking of fruit was high while just over half of the children in both the intervention (52.4%) and the control (55.9%) group reported liking the taste of vegetables at follow-up. All children in both groups believed that fruit was good for their health, while 93.7% and 88.2% of children in the intervention and control groups respectively felt the same about vegetables ($p=0.355$).

Table 2.2.10. Children's follow-up attitudes towards fruit and vegetables: intervention versus control

Statement	Fruit						P-Value	Vegetables						P-Value
	Intervention			Control				Intervention			Control			
	N	n	%	N	n	%		N	n	%	N	n	%	
Child's Liking	63			34				63			34			
Tastes Good		53	84.1		31	91.2	0.62		33	52.4		19	55.9	0.926
Tastes Okay		7	11.1		21	61.8			17	27.0		9	26.5	
Tastes Bad		3	4.8		1	2.9			13	20.6		6	17.6	
They are good for my health	63			34				63			34			
Good for health		63	100.0		34	100.0	-		59	93.7		30	88.2	0.355
Okay for health		0	0.0		0	0.0			4	6.3		4	11.8	
Bad for health		0	0.0		0	0.0			0	0.0		0	0.0	

Parental attitudes

Most parents in both the intervention and control groups reported that it was important to them that their children ate both fruit and vegetables (Table 2.2.11). Respondents in both groups also believed that fruit and vegetables have health benefits for children. Child liking of both fruit and vegetables as reported by the parents were similar in both groups at follow-up and consistent with the child's liking reported by the children, with lower proportions of parents reporting that their children liked vegetables compared to fruit. A difference in parental beliefs about the need for fruit in their child's diet to provide micronutrients was observed ($p = 0.018$), with 8.3% of participants in the control group disagreeing with this statement. Meanwhile, no difference was found between groups for vegetables in this regard ($p=0.208$)

Table 2.2.11. Parental follow-up attitudes towards fruit and vegetables: intervention versus control

Statement	Fruit						P Value	Vegetables						P Value
	Intervention			Control				Intervention			Control			
	N	n	%	N	n	%		N	n	%	N	n	%	
It's Important to me that my child eats fruit/veg	72			37				72			37			
Agree		72	100.0		37	100.0	-		70	97.2		36	97.3	0.982
Neutral		0	0.0		0	0.0			2	2.8		1	2.7	
Disagree		0	0.0		0	0.0			0	0.0		0	0.0	
Fruit/ Veg has health benefits for children	71			34				71			35			
Agree		71	100.0		33	97.1	0.147		71	100.0		34	97.1	0.152
Neutral		0.0	0.0		3	8.8			0	0.0		0	0.0	
Disagree		0	0.0		1	2.9			0	0.0		1	2.9	
Fruit/Veg are needed in child's diet for Vitamins/Minerals	72			36				72			37			
Agree		68	94.4		33	91.7	0.018		69	95.8		37	100.0	0.208
Neutral		4	5.6		0	0.0			3	4.2		0	0.0	
Disagree		0	0.0		3	8.3			0	0.0		0	0.0	
Child liking (parent reported)	71			36				71			35			



Evaluation of the EU School Fruit, Vegetables, and Milk Scheme in Ireland:
Interim Report



An Roinn Talmhaíochta,
Bia agus Mara
Department of Agriculture,
Food and the Marine

Good	61	85.9	31	86.1	0.935	35	49.3	19	54.3	0.697
Okay	5	7.0	2	5.6		21	29.6	11	31.4	
Bad	5	7.0	3	8.3		15	21.1	5	14.3	

2.2.2.3. Pre-Post Analysis

There were 63 responses of the baseline and follow up parent and children questionnaire that could be utilised for pre-post data analysis. Data was analysed for descriptive statistics using cross tabulation and Pearson chi-square analysis and was performed on SPSS 27 for Windows.

Demographics

Table 2.2.12 displays the parent, child and school demographics of the sub sample at baseline. Of these, the majority of children were between aged between 5-7yrs (52%) and 8-10 yrs (46%) and were in 1st class (50%). There were slightly more males (55.6%) than females (44.4%) in the sub sample. Meanwhile, the children were predominately enrolled in schools classed as non-DEIS (96.8%). Of the parents who responded to the questionnaires, 96.8% were mothers and 80.6% had completed additional training or higher.

Table 2.2.12: Parent, Child, and School Demographics: Pre-post Analysis

Demographics	Total N	N	%
Childs Age	63		
5-7 Yrs		33	52.4
8-10 Yrs		29	46.0
11-12 Yrs		1	1.6
Class	62		
1st Class		31	50.0
3rd Class		15	24.2
5th Class		16	25.8
Gender	63		
Male		35	55.6
Female		28	44.4
Parents			
Relationship to child	63		
Mother		61	96.8
Father		2	3.2
Parent Education	62		
Up to Secondary School		12	19.4
Additional Training or Higher		50	80.6
School	63		
DEIS		2	3.2
Non DEIS		61	96.8

When comparing the sub sample for pre-post analysis with the total population for FDHEP, there are some statistically significant differences which indicate it may not be a representative of the overall sample (Table 2.2.13). Firstly, the groups differ by child’s age, with 52% of the sub sample between 5-7 yrs and 1.6% between 11-12 years, compared to 32.5% and 23.8% in the total population, respectively ($p < 0.001$). Likewise, the class level of the children differs slightly, with 35% of the total population enrolled in 1st class, compared to 50% in the sub-sample ($p = 0.087$). In addition, the gender balance in both groups also differs slightly but not significantly ($p = 0.25$), with more males than females in the sub-sample, while in the total population there was more females than males. These differences were apparent for the children’s characteristics; however, the parent characteristics were similar, with the majority of the respondents being mothers in both groups (96.8% sub-sample and 94.1% total population), and most completing additional training or higher (80.6% and 74.3% respectively). The school characteristics were also similar in the pre-post cohort and the total population with over 90% of children attending a non-DEIS school.

Table 2.2.13: Parent, Child and School Demographics: pre-post vs total population

Demographics	Pre-Post			Main Sample			P-Value
	Total N	N	%	Total N	N	%	
Childs Age	63			286			
		33	52.4		93	32.5	<0.001
		29	46.0		125	43.7	
		1	1.6		68	23.8	
Class	62			283			
		31	50.0		99	35.0	0.087
		15	24.2		88	31.1	
		16	25.8		96	33.9	
Gender	63			286			
		35	55.6		136	47.6	0.25
		28	44.4		150	52.4	
Parents							
Relationship to child	63			286			
		61	96.8		269	94.1	0.596
		2	3.2		14	4.9	
		0	0.0		3	1.0	
Parent Education	62			284			

	Up to Secondary School	12	19.4	73	25.7	0.293
	Additional Training or Higher	50	80.6	211	74.3	
School		63		286		
	DEIS	2	3.2	26	9.1	0.118
	Non DEIS	61	96.8	260	90.9	

Dietary Intake

Table 2.2.14 displays the results of the analysis of fruit and vegetable consumption at baseline versus follow up. Regarding fruit consumption, 19% of parents reported their child consuming at least three servings of fruit per day at baseline, compared to 27% at follow-up, indicating a slight increase in the child's consumption of fruit after the intervention. Similarly, for vegetable consumption, there was a slight increase in those who consumed 3+ servings per day (15.9% versus 7.9%) and 1-2 servings per day (42.9% versus 30.2%) at follow-up versus baseline. The latter changes are noteworthy as they indicate a change in a positive direction in terms of an increased proportion of children meeting FV recommendations following the intervention. While the increased proportions were not statistically significant for fruit they were of borderline significance for vegetables.

Table 2.2.14. Children's fruit and vegetable intake: baseline vs. follow-up

Frequency Of Consumption	Fruit							Vegetables						
	Baseline			Follow-up			P-Value	Baseline			Follow-up			P-Value
	N	n	%	N	n	%		N	n	%	N	n	%	
	63			63				63			63			
3 + servings per day		12	19.0		17	27.0	0.419		5	7.9		10	15.9	0.059
1-2 servings per day		27	42.9		28	44.4			19	30.2		27	42.9	
None or less than daily		24	38.1		18	28.6			39	61.9		26	41.3	

Table 2.2.15 refers to children’s snack consumption at baseline and at follow up. At both baseline and follow-up, 87.3% of parents reported their child consuming savoury snacks less than daily or never. Likewise, consumption of sweet snacks was also quite low, with 68% and 76% reporting their child consuming sweet snacks less than daily at baseline and follow-up. While the results for consuming less than daily were similar, there was a slightly higher proportion of parents at both baseline and follow up who reported their child consuming 1-2 servings of sweet snacks (25% and 23%) compared to savoury snacks (9.5% and 12.7%, respectively). Therefore, there was a slightly higher proportion of children consuming sweet snacks daily as opposed to savoury snacks. There was no significant difference found in consumption at baseline versus follow up, but despite this, the analysis still indicates a slight change/decline in snack consumption patterns.

Table 2.2.15. Children’s snack consumption: baseline vs. follow-up

Frequency Of Consumption	Savoury Snacks							Sweet Snacks						
	Baseline			Follow-up			P-Value	Baseline			Follow-up			P-Value
	N	n	%	N	n	%		N	n	%	N	n	%	
	63			63				63			63			
3 + servings per day		2	3.2	0	0		0.319	4	6.3		0	0		0.116
1-2 servings per day		6	9.5	8	12.7			16	25.4		15	23.8		
None or less than daily		55	87.3	55	87.3			43	68.3		48	76.2		

Children's attitudes

Due to an absence of data on the follow up questionnaires, there was a smaller sample size used in the analysis of children's attitudes (n=48) (Table 2.2.16). There were no significant differences between the child’s opinion of the taste of fruit and vegetables at baseline compared to follow up. However, these findings were expected as the sample size is too small to draw meaning from the pre-post findings. Children's liking of fruit was high at both baseline and follow

up, with 79.2% of children reporting liking the taste of fruit. Meanwhile, it was apparent that children liked the taste of vegetables less than fruit, with only over 50% reporting liking the taste of vegetables at both baseline and follow up, while 18.8% and 20.8% reported not liking the taste of vegetables. Despite this, the majority believed that both fruit and vegetables were good for their health at baseline and at follow up.

Table 2.2.16. Children’s attitudes towards fruit and vegetables: baseline versus follow up

Statement	Fruit						Vegetables							
	Baseline			Follow-up			P-Value	Baseline			Follow-up			
	N	n	%	N	n	%		N	n	%	N	n	%	
Child's opinion about the taste	48			48				48			48			
Good		38	79.2		38	79.2	-		27	56.3		25	52.1	0.919
Okay		7	14.6		7	14.6			12	25.0		13	27.1	
Bad		3	6.3		3	6.3			9	18.8		10	20.8	
They are good for my health	48			48				48			48			
Good		47	97.9		48	100.0	0.315		47	97.9		45	93.8	0.307
Okay		1	2.1		0	0.0			1	2.1		3	6.3	
Bad		0	0.0		0	0.0			0	0.0		0	0.0	

Parental attitudes

There were only 55 responses used in the pre-post analysis of parental attitudes due to incomplete data (Table 2.2.17). Almost all parents (>96%) believed it was important that their child ate both fruit and vegetables at baseline and at follow up. Similarly, at least 98% of parents at baseline and follow up agreed that fruit and vegetables have health benefits for children. Following on from this, 87% and 92% of parents at baseline agreed that fruit and vegetables were needed for vitamins and minerals, compared to 94.5% at follow-up, which indicates a slight but non-significant increase (p=0.264 for fruit and p=0.696 for vegetables). Despite this, the children's liking of vegetables remained low, with only 45.5% and 47.3% of parents reporting their child liking the taste of vegetables at baseline and follow up. However, a higher proportion

of parents reported their child liking the taste of fruit, with 80% at baseline and 81.8% at follow-up. These results are consistent with those of the children's attitudes, where the proportion of children liking the taste of fruit was higher than those liking the taste of vegetables.

Table 2.2.17 Parental attitudes towards fruit and vegetables: baseline versus follow up

Statement	Fruit							Vegetables						
	Baseline			Follow-up			P Value	Baseline			Follow-up			P Value
	N	n	%	N	n	%		N	n	%	N	n	%	
It is Important to me that my child eats fruit/veg	55			55			0.154	55			55			
Agree		53	96.4		55	100.0			55	100.0		54	98.2	0.315
Neutral		2	3.6		0	0.0			0	0.0		1	1.8	
Disagree		0	0.0		0	0.0			0	0.0		0	0.0	
Fruit/ Veg has health benefits for children	55			55				55			55			
Agree		54	98.2		55	100.0	0.315		55	100.0		55	100.0	
Neutral		1.0	1.8		0	0.0			0	0.0		0	0.0	
Disagree		0	0.0		0	0.0			0	0.0		0	0.0	
Fruit/Veg are needed in child's diet for Vitamins/ Minerals	55			55				55			55			
Agree		48	87.3		52	94.5	0.264		51	92.7		52	94.5	0.696
Neutral		5	9.1		3	5.5			4	7.3		3	5.5	
Disagree		2	3.6		0	0.0			0	0.0		0	0.0	
Child liking (parent reported)	55			55				55			55			
Good		44	80.0		45	81.8	0.95		25	45.5		26	47.3	0.917
Okay		5	9.1		5	9.1			19	34.5		17	30.9	
Bad		6	10.9		5	9.1			11	20.0		12	21.8	

2.2.2.5. FDHEP Feedback

Children's feedback

77.4% of children liked receiving Food Dude fruit, while fewer (59.7%) liked receiving vegetables in school during the intervention (Table 2.2.18). Over 86% of children participating in the FDHEP watched the Food Dude videos and heard the Food Dude letter read by the teachers in class. At least 75% of children enjoyed these activities. Meanwhile, less than half (42.9%) of the children liked receiving the home diary, and only 35% claimed to have used it. Rewards had the most reach in terms of the supporting materials with 95.1% of children receiving rewards during the intervention and over 93% of the children reporting their liking of receiving them.

Table 2.2.18. Child's feedback on the FDHEP participation

Feedback statement		Total N	n	%
Child's liking of receiving Food Dude fruit in school	Agree	62	48	77.4
Child's liking of receiving Food Dude vegetables in school	Agree	62	37	59.7
Did child watch Food Dude videos in class?	Yes	61	53	86.9
Child's enjoyment of Food Dude videos	Enjoyed	56	42	75
Did child hear the teacher reading out the Food Dude letter in class?	Yes	61	54	88.5
Child's enjoyment of hearing Food Dude letter	Enjoyed	59	45	76.3
Did child receive rewards in class?	Yes	61	58	95.1
Child's liking of receiving Food Dude rewards	Liked	61	57	93.4
Did child use home diary?	Yes	54	19	35.2
Child's liking of receiving Food Dude home diary	Liked	42	18	42.9

Parental feedback

Almost half of the parents reported that their child had eaten more and different fruit while fewer reported that their child had eaten more (38%) and different (36%) vegetables since participating in the programme (Table 2.2.19). Almost a third of parents felt that their child's healthy eating behaviour had changed since participating in the programme and, to a greater extent, their healthy eating attitudes (46.4%). Many parents explained that their children requested or were more willing to try and taste new fruit and vegetables. Some elaborated on their answers further by commenting that their children were more aware of the importance of fruit and vegetables, that their children talked with them about making healthy choices, and how fruit and vegetables were good for their bodies following participation in the FDHEP.

Parents were also given the option to provide qualitative feedback in the questionnaire. In general, parents noticed a greater interest in fruit and vegetables with their children, mentioning they are more 'willing to try different fruit', being 'more aware and interested to try new things', requesting more fruits and healthy snacks and being 'more conscious of what is fruit and what is a vegetable and wanting a variety in lunchbox'.

The parents also noted a greater interest in the benefits of fruit and vegetables, some noting their child 'talks about health and healthy eating', and 'remarks about what healthy choices are and why it's important (for health and growth)', and in general, 'they make better choices' and are 'motivated to eat more vegetables'.

Parents were also asked on their children's use and enjoyment of the food dudes' supporting material, and the results of such are reported in Table 20 below. Almost a third of parents used the information brochure and the home diary. However, almost 30% of respondents reported that they did not receive this supporting material. Of those that received the brochure and the home diary, 63% found the brochure to be informative and almost half felt that the home chart encouraged their child to eat fruit and vegetables. Consistent with the feedback responses of the children, over 90% of parents reported that their children enjoyed receiving the Food Dude rewards. More than three-quarters of parents reported that their children enjoyed using the Food Dude certificates; however, 13.6% of parents were not aware of them. Almost 90% of parents felt that their child enjoyed the lunchbox, however, 4.6% were unfamiliar with this reward.

Table 2.2.19. Parental feedback of the FDHEP

Feedback statement		Total N	n	%
Behavioural change				
Child eats more fruit since participation	Agree	72	33	45.8
Childs eats different fruit since participation	Agree	72	33	45.8
Child eats more vegetables since participation	Agree	71	27	38.0
Child's eats different vegetables since participation	Agree	69	25	36.2
Child's healthy eating behaviour has changed since participation	Agree	72	22	30.6
Child's healthy eating attitudes have changed since participation	Agree	69	32	46.4
Use and enjoyment of Food Dude supporting material				
Did parents use home chart and information brochure?	Yes	71	23	32.4
	No	7	27	38.0
	Never received	71	21	29.6
The brochure was informative	Yes	38	24	63.2
	Neutral	38	1	2.6
	Not applicable	38	13	34.2
Home chart was useful to encourage child to eat F&V	Agree	39	19	48.7
	Disagree	39	6	15.4
	Not applicable	39	14	35.9
Child's enjoyment of rewards	Enjoyed	68	62	91.2
	Did not enjoy	68	3	4.4
	Not aware	68	3	4.4
Child's enjoyment of certificates	Enjoyed	66	51	77.3
	Did not enjoy	66	6	9.1
	Not aware	66	9	13.6
Child's enjoyment of lunchbox	Enjoyed	65	58	89.2
	Did not enjoy	65	4	6.2
	Not aware	65	3	4.6

Teachers' feedback

Perceived success rate of programme

In general, teachers reported the fruit component of the intervention was more of a success than the vegetable component (Table 2.2.20). 77.8% of teachers felt the intervention was successful for fruit consumption, with a slightly lower percentage (61.1%) stating it was successful for vegetable consumption. In addition, 16.7% (n=3) stated it was somewhat successful for fruit consumption, while 33.3% (n=6) stated it was somewhat successful for vegetable consumption. Only one teacher (n=1) felt the intervention was not a success for consuming both fruit and vegetables.

Table 2.2.20. Teacher's perception of success of Food Dudes Intervention

	Fruit			Vegetables		
	Total N	n	%	Total N	n	%
	18			18		
Successful		14	77.8		11	61.1
Somewhat successful		3	16.7		6	33.3
Not successful		1	5.6		1	5.6

As shown in Table 2.2.21, 83.4% of teachers reported that children enjoyed the Food Dudes Intervention. Another 11.1% of children somewhat enjoyed the intervention and only one teacher reported that children in their school did not like the intervention at all.

Table 2.2.21. Teacher's perception of children's enjoyment of Food Dudes Intervention

	Total N	n	%
	18		
Enjoyed		15	83.4
Somewhat enjoyed		2	11.1
Did not enjoy		1	5.6

Resources

Table 2.2.22 shows which resources were used by the children during the Food Dudes Intervention. Lunchboxes and the rewards were used by all the teachers (n=18), whereas the home diaries (n=14) were used fewer according to the teachers, however these were for home use and therefore this could be underreported. Seventeen teachers reported using the Food Dudes Letters, DVDs, Sticker Charts, and Certificates.

Table 2.2.22. Teachers report of resources used during the Food Dudes Intervention

Resource	Total N	Used		Not Used	
		N	%	N	%
Food Dudes Letters	18	17	94.4	1	5.6
DVD/ Online Episodes	18	17	94.4	1	5.6
Sticker Charts	18	17	94.4	1	5.6
Home Diary	18	14	77.8	4	22.2
Rewards	18	18	100.0	0	0.0
Lunchbox	18	18	100.0	0	0.0
Certificates	18	17	94.4	1	5.6
Wall Chart	17	16	94.1	1	5.9

Table 2.2.23 displays the results of how useful the teachers deemed the resources for promoting healthy eating in their schools. Teachers felt that the lunchbox (n=16), the rewards, (n=17) and the stickers (n=16) were deemed most useful. There are mixed results on the use of the DVD/Online episodes in the additional comments section, however, twelve teachers (n=12) found them of use in promoting healthy eating, with one teacher commenting *“the resources were suitable for both age groups”*, referring to both junior and senior classes, while another teacher mentioned *“the main part was that the children loved receiving the rewards and they enjoyed the episodes”*.

Six of the teachers (n=6) were not entirely satisfied with the content of the episodes, with one teacher reporting it wasn't suitable for younger classes while the rest (n=5) viewed it as not age appropriate for older pupils.

One teacher stated that *“the videos are a bit silly for the older pupils”*, while another reported that *“the senior classes felt that the episodes were better geared for the younger classes”*. Another two teachers had similar sentiments on the videos for older classes; *“Videos were a little childish for the senior classes”*, and *“Videos need updating for senior classes”*. One teacher said the children felt that the *“videos were not good, children didn't enjoy them”*, while another thought the characters were not suitable for younger classes, *“The videos with the twins and General Junk frightened some of our younger children”*.

Thirteen teachers (n=13) felt the letters, home diaries, and certificates were beneficial in promoting healthy eating.

Although, in general, the results from the resources section were predominantly positive, there were some mixed responses about the resources from various teachers in the additional comments section. Some teachers felt the resources were a positive feature and complemented the healthy eating intervention, while other teachers felt they had little significance on the overall rollout of the programme.

Table 2.2.23. Teachers report of the usefulness of the Food Dudes resources in promoting healthy eating

Resource	Total N	Useful		Somewhat Useful		Not Useful	
		N	%	N	%	N	%
Food Dude Letters	17	13	76.5	4	23.5	0	0.0
DVD/ Online Episodes	18	12	66.7	5	27.8	1	5.6
Sticker Charts	18	16	88.9	2	11.1	0	0.0
Home Diary	16	13	81.3	3	18.8	0	0.0
Rewards	18	17	94.4	1	5.6	0	0.0
Lunchbox	18	16	88.9	2	11.1	0	0.0
Certificates	18	13	72.2	4	22.2	1	5.6
Wall Chart	17	13	76.5	3	17.6	1	5.9

As shown in Table 2.2.24, more teachers reported the resources were age appropriate for the junior classes (88.9%) as opposed to the senior classes (72.2%). This is reflected in the open comment feedback section from the questionnaires as mentioned in the above section.

Table 2.2.24. Teachers feedback on the age appropriateness of Food Dude Resources

	Total N	Agree		Neutral		Disagree	
		n	%	n	%	n	%
Food Dude Resources were age appropriate for Junior Classes	18	16	88.9	-	-	2	11.1
Food Dude resources were age appropriate for Senior Classes		13	72.2	1	5.6	4	22.3

As shown in Table 2.2.25, more teachers reported children enjoyed receiving fruit (94.4%) than vegetables (55.5%). Again, the lunchboxes and rewards got a positive response from children with all teachers reporting children enjoyed receiving them (100%). There was a lower percentage of children who enjoyed the home diary compared to other resources according to the teacher's feedback, however, the majority (68.8%) still reported enjoyment of the diary. This may reflect a lack of understanding by teachers about how they are used in the home environment, but there is still evidence to suggest a potential positive impact of this resource.

Table 2.2.25. Teachers feedback on children's enjoyment of Food Dude Resources

Resources	Total N	Enjoyed		Somewhat Enjoyed		Did not enjoy	
		N	%	N	%	N	%
Receiving Fruit	18	17	94.4	1	5.6	0	0.0
Receiving Vegetables	18	10	55.6	6	33.3	2	11.1
Food Dude Letters	16	10	62.5	6	37.5	0	0.0
DVD/ Online Episodes	18	15	83.3	2	11.1	1	5.6
Sticker Charts	18	16	88.9	1	5.6	1	5.6
Home Diary	16	11	68.8	3	18.8	2	12.5
Rewards	18	18	100.0	0	0.0	0	0.0
Lunchbox	18	18	100.0	0	0.0	0	0.0
Certificates	18	15	83.3	2	11.1	1	5.6
Wall Chart	16	14	87.5	2	12.5	0	0.0

Management of Programme

In general, teachers found the daily tasting either manageable (50%) or easy (38.9%) to incorporate into their daily routine (Table 2.2.26). There were mixed results on the use of resources for teachers, with 35.3% and 41.2% finding the implementation of resources to be easy and manageable, however, 23.5% found these resources difficult to implement in their daily routine. This difficulty was reflected and elaborated on in the comments and feedback section, with some teachers (n=5) reporting the use of resources as *'time-consuming'* and noted how they had to be creative about how they incorporated it into their daily routine.

"Occasionally it can be time consuming, tried to integrate into other curricular areas/ break time as a result".

One teacher found the second aspect of the programme more challenging. This is the period of time following the 16-day intervention, where lunchboxes are provided and children are encouraged to bring their own fruit and vegetables in from home.

"Phase 2 of the programme, where the children were to bring their own fruit and vegetables was difficult and time-consuming as it was the control and responsibility of the children and parents".

Another teacher found the programme difficult to include in a packed curriculum and would prefer to know before the commencement of the term if they are participating in the programme.

“It was difficult to find time to incorporate the resources into the timetable (4 classes in the classroom and an overcrowded curriculum). It would possibly work better if we knew during the previous summer term that we would be partaking in Food Dudes so that we could incorporate it into our planning”.

Despite these comments in the feedback section, the majority of teachers found the food dudes programme to be manageable or easy to implement.

Table 2.2.26. Teacher’s feedback on the management of the Food Dudes Programme (n=18)

	Daily tasting			Use of resources		
	Total N	n	%	Total N	n	%
	18			17		
Difficult		2	11.1		4	23.5
Manageable		9	50		7	41.2
Easy		7	38.9		6	35.3

Healthy eating, curriculum planning

The reviews on whether Food Dudes improved children’s healthy eating attitudes, behaviour, liking, and knowledge of fruit and vegetables were largely positive, however, there were some mixed reviews. Approximately 66.7% felt there was an improvement in children’s eating behaviour, almost 78% felt there was an improvement in children’s healthy eating attitude and 55.6% of teachers felt children’s knowledge and liking of fruit and vegetables improved following the intervention (table 2.2.27). Six teachers (n=6) left additional comments and in general, they were very positive about the influence the Food Dudes Programme had on the children’s healthy eating.

“Children do seem more open to trying foods as a result and want to bring more fruit and veg into school for lunch”.

“They are more aware of healthy eating”.

“The children's knowledge and attitude of the health benefits of fruit and vegetables has greatly improved”.

Two teachers noted how it is easier for children to include fruit in their lunches, but they are still finding it difficult to include vegetables in their daily lunches.

“I have noticed an increased presence of fruit in school lunch boxes - the children find it difficult to find ways to incorporate vegetables into their lunches, though”

“Overall, there was a notable uptake in eating fruit on a daily basis but not vegetables”

There was only one negative comment left by one teacher about the association of fruit and vegetables from Food Dudes, *“While it was an interesting initiative to take part in, I feel as though it just created an even more negative association with healthy eating because the children hated feeling as though they were forced to eat fruits and veg, that in a lot of cases, they already knew they disliked”*.

Table 2.2.27. Teachers report of improvements in healthy eating attitudes/behaviour following intervention

Statement	Total N	Agree		Neutral		Disagree	
		n	%	n	%	n	%
	18						
Improvements in children's healthy eating behaviour		12	66.7	3	16.7	3	16.7
Improvements in children's healthy eating attitude		14	77.8	3	16.7	1	5.6
Improvements in children's knowledge of fruit and vegetables		10	55.6	5	27.8	3	16.7
Improvements in children's liking of fruit and vegetable		10	55.6	6	33.3	2	11.1

As shown in Table 2.2.28, most schools reported having a healthy eating policy in their school (88.9%) and including nutrition education in the curriculum (84.4%). Almost two thirds of teachers reported using Food Dudes to help learning in their lessons, however, 38.9% reported they did not. Most teachers stated they incorporated nutrition lessons into SPHE, Science and

the teaching of the Food Pyramid. This highlights the potential of integrating Foods Dudes within curriculum, for the promotion healthy eating in the school.

Table 2.2.28. Use of Health Promotion in the school curriculum

Statement	Total N	Yes		No	
		n	%	n	%
	18				
Healthy Eating Policy in the school		16	88.9	2	11.1
Include Nutrition education		17	84.4	1	5.6
Use Food Dudes to help learning		11	61.1	7	38.9

Most of the schools reported not including healthy eating initiatives outside the curriculum in 1st, 3rd and 5th classes (Table 2.2.29). Only 22.2% are used in 1st and 3rd class, with a marginally higher figure using health promotion initiatives in the senior class (33.3%). These results highlight a potential lack of emphasis on healthy eating within the broader school environment, outside of the FDHEP and the set curriculum.

Table 2.2.29: Initiatives in school to promote Healthy Eating in different classes

	Total N	1st Class		3rd Class		5th Class	
		n	%	n	%	n	%
	18						
Yes		4	22.2	4	22.2	6	33.3
No		14	77.8	14	77.8	12	66.7

Deliveries, packaging, variety and quality of Fruit and Vegetables

In general, teachers were happy with the deliveries, packaging, and quality of fruit and vegetables. 89.9% reported the deliveries were on time, 94.4% reported the correct amount of fruit and vegetables were delivered and were of good quality (Table 2.2.30). 83.3% reported the variety was satisfactory and 88.9% reported the packaging helped maintain the freshness of the deliveries.

Eleven teachers (n=11) submitted additional comments. In general, the responses were excellent, and teachers were very happy with the organisation of the programme and felt it ran smoothly

in their schools. Teachers felt that the prompt arrival of deliveries helped in the overall delivery of the intervention,

“Fruit arrived first thing every morning which was fantastic, we were never left short, always had enough”. One teacher also felt, the way the fruit and vegetables were individually packaged aided the delivery of the programme.

“As the fruit and vegetables were already counted out per class, this left the administration very easy, and this was greatly appreciated”.

However, it was a recurring theme in the comments section about a need for a more varied selection of fruit and vegetables. Some of the responses from teachers can be viewed below.

“A more varied and unusual selection (fruits and vegetables that they weren't as familiar with) would have been preferred but the selection given was satisfactory”.

“The variety of fruit and veg over the 16 days didn't allow for children to get to know fruits and veg that they had not tasted before”.

“Children said they would have liked a wider variety rather than getting the same things every week”

“Cherry tomatoes turned up a few days. They tend to be bitter to taste”

Although most teachers were happy with the quality of the fruit and vegetables (94.4%), there were comments by three teachers (n=3) that the quality was not good on certain days.

“Other than one day, when the apples didn't taste very good, the quality and freshness was good”.

“The quality of some of the food was good the majority of time but a handful of times fruit and veg was gone soft or bruised”.

“Once or twice, we found a rotten orange or banana”

Finally, one teacher said the packaging was *“difficult to open”* for first class.

Table 2.2.30. Teachers feedback on fruit and vegetable quality, variety, packaging, and deliveries

Statement	Total N	Agree		Neutral		Disagree	
		n	%	n	%	n	%
	18						
Fruit and vegetable deliveries were on time		16	89.9	1	5.6	1	5.6
Correct amount of fruit and vegetables was delivered		17	94.4	0	0	1	5.6
Fruit and vegetables were of good quality		17	94.4	1	5.6	0	0
Variety of fruit and vegetables was satisfactory		15	83.3	1	5.6	2	11.1
Fruit and vegetables were packaged to maintain freshness		16	88.9	1	5.6	1	5.6

2.2.2.6. Process evaluation findings: Observations

The ten FDHEP process observations were conducted between 14th March and 6th April 2022. The observations were conducted nationwide in the geographical regions of Dublin (n=2), Cavan (n=2), Limerick (n=2), Cork (n=2), Kerry (n=1), Kilkenny (n=1). One of the original ten school visits that had been scheduled was cancelled last minute due to a local outbreak of COVID-19. Another observational visit was therefore scheduled with a similar school type from the list of thirteen schools selected. The schools were in both rural (n=5) and Urban (n=5) areas and were medium (100-499 pupils) (n=7) and small (<100 pupil) (n=3) in size. The schools were also a mix of DEIS (n=3) and non-DEIS (n=7) status. Many of the classes observed were first class (n=8), these classes had not been exposed to the intervention previously. Observations were also conducted with pupils in fifth class, but to a lesser extent (n=2). The classes that participated in the FDHEP process evaluation ranged in size from six to 25 children with an average of 18 children per class. All children in the evaluation classes participated in the FDHEP.

Programme supporting material

Food Dude posters and other health promotion programmes

FDHEP information and the poster provided was displayed in a few of the classrooms. A poster or a wall chart was placed on the door, on a window among artwork or at the back of the class which were not clearly visible to most of the pupils or parents. One school had both a Food Dude and Moo Crew poster, and the lifecycle of a tomato displayed.

As part of the observation, the observers also monitored other initiatives present in the schools, to gauge how active the school is in terms of health promotion outside of the programme. Some schools had a clear ethos of promoting health with nearly half of the schools observed displaying other health promotion programmes which included a healthy eating policy, and a Healthy Ireland 'Active School' display on noticeboards in the hall of the schools. The same schools also had other health-promoting activities such as 'Green School', biodiversity, or exercise display noticeboards. A health and wellbeing promotion noticeboard and a 'Sustainable Energy Ireland' poster were also visible in a few other schools.

Food Dude Letter

Food Dude letters were read out by the teachers in the classrooms before the tasting session in most of the schools observed. No issues were observed during the reading of the letters, however, while the correct letter was read out for the correct day of the intervention in most of the schools, it was observed that a Day 9 letter was read on Day 15 of the intervention in one class. The enthusiasm expressed by the teachers during the reading of the letters varied. Half of the teachers were enthusiastic and asked their pupils questions about F&V while reading, i.e., what F&V they ate at home and why should they eat F&V. Most pupils of these enthusiastic teachers appeared very engaged in the activity and were eager to answer the questions. One class observed chanted the Food Dude's motto excitedly after the letter had been read. Other teachers showed little or no enthusiasm and read the letter quickly. Some pupils in these cases lacked engagement in the activity and their attention was drawn elsewhere.

Food Dude videos

Food Dude videos were shown to the pupils in the classroom in some of the classes during the process observations. The videos were shown by most teachers before the F&V was distributed, while one class watched it during the tasting session. The correct videos were shown by all the teachers using the online video link. No issues were observed with the video in most of the observations; however, a teacher informed the researchers that they could not show the Day 1 video as no DVD had arrived in the box with the other FDHEP supporting material and they were unaware of the online video link.

The children's engagement with the video varied. Many of the younger classes were excited and very engaged and laughed along with the funny parts of the video and clapped at the end. While some pupils in an older class laughed at the funny moments in the video, many laughed as if the video was 'uncool'.

As part of the FDHEP, videos are shown on a 'two days on, one day off' cycle. During some of the observations, the younger children expressed their disappointment that there was not a video shown on that day of the programme.

Wall Chart

There was no evidence of wall charts being used in most of the classrooms. While some teachers knew that the wall chart was a Phase 2 supporting material, others were misusing them during the observations in Phase 1 by ticking if the children had tried the fruit and vegetables each day. The wall chart had not arrived at the school according to another teacher.

Home Diary

The diaries had been previously sent home in some of the classes, but other teachers were unsure, and another had not received any. Some of the teachers were unsure of how or when the home diaries would be used.

Stickers/Sticker charts

Stickers were given to the children as a reward in half of the classes observed.

In most of the classes, the children who had tried both the fruit and vegetables received a sticker, while all children in other classes received a sticker regardless of trying both. Most of the children

were very excited to receive their stickers. The children particularly enjoyed placing their stickers on their sticker charts, however, sticker charts were only used in a few of the classes observed. Other teachers placed the stickers on the children's jumpers or on their tables. During another observation, the stickers were given out during the video and while the children ate the fruit and vegetables. These children were the least interested in the reward as they were otherwise engaged. While the distribution of stickers was not observed in another class, the teacher informed the researchers that they were given out on certain days based on the sticker chart, therefore would not be present on that particular day.

Other rewards

During the observation, other rewards such as the water bottles and erasers were previously distributed, while the lunchboxes had not as they are only distributed at the end of the intervention period. Teachers commented how the children enjoyed receiving the rewards, especially the stickers, sticker charts, lunch boxes, and water bottles. The water bottles were used in class by the children in many of the classes observed.

Organisation and class distribution

Teachers did not report any issues with fruit and vegetable deliveries. All the schools reported that fruit and vegetables arrived on time each day. However, there was one issues with the deliveries of resources, with one teacher mentioning the stickers had not arrived as part of the delivery.

The FDHEP was implemented in most schools before or during the small break (10.05 - 10.45 a.m.) while two schools carried out the programme before lunch (12.15 p.m.). Only the teacher distributed the fruit and vegetables in most of the schools, while the special needs assistant (SNA) or pupils helped the teacher in others. In another school, the teacher delegated the distribution of the fruit and vegetables to three of the pupils and was not involved in the distribution.

The enthusiasm expressed by the teachers during the distribution of the fruit and vegetables varied considerably. Great enthusiasm during fruit and vegetable distribution was observed by

some teachers. Meanwhile, while others exhibited some enthusiasm, half of the teachers observed expressed little or no enthusiasm.

Quality

The tasting of apples, bananas, oranges, blueberries, tomatoes, peppers, cucumber, and carrots was observed during the process evaluations. No issues with the quality of the fruit and vegetables were observed. Most of the fruit and vegetables were fresh and ripe, however, some of the bananas distributed during one observation were green. Some of the tomatoes during another observational visit were overripe and ‘squishy’ according to some of the pupils.

Tasting

Enthusiasm before tasting

All the children in most of the schools received a packet of both fruit and vegetables. However, during one observation the teacher did not distribute the packets of peppers to some students who expressed that they did not like them. Before the tasting, three teachers gave the pupils great encouragement to try the fruit and vegetables. One such teacher discussed the shape of peppers before they were cut up, what was inside of peppers, and the different colours of peppers. They also commented how peppers were in many foods that the students may have tried but that they may not have realised that they were eating them. Other teachers gave some encouragement explaining to the pupils that they were not expecting them to finish the bag but just to try both the fruit and vegetables. Other teachers offered little to no encouragement to try the foods.

The pupils’ enthusiasm before the tasting session varied. Most children in many of the classes were excited to try the fruits and vegetables, especially apples and bananas. Some children, however, expressed their dislike for tomatoes, peppers, and cucumbers and were not happy about trying them. No major negative reactions before tasting were observed among pupils in other classes.

Consumption and reactions during the tasting

During most of the tasting sessions observed approximately 75% of pupils tried both the fruit and vegetables. Approximately 25% of the children in most classes tried fruit only while no children in any of the classes tried vegetables only. It was most frequently observed that only approximately 25% of children consumed all the fruit and vegetables distributed to them. Of the 75% that did not eat all of both, many more children ate all of the fruit than all of the vegetables.

Only one teacher during the observations demonstrated role modelling by tasting the fruit and vegetables with their class during the tasting. This appeared to motivate some of the more hesitant children to try them also.

Tomatoes and cucumber were the least favourites of the vegetables tried by the children with some commenting that the tomatoes were 'disgusting' or 'sour' or 'squishy' and that cucumber had 'no flavour'. Apples and oranges were the most liked fruits tasted by the children in many of the classes, while there was a mixed reaction to the blueberries and bananas because of the texture. Some children had difficulty peeling the oranges and needed help from their teacher.

Portion Size explained

Few teachers mentioned the recommended portion sizes of fruit and vegetables (a palm-sized amount of either food) to their classes. One teacher incorrectly explained to their class that a recommended portion was a piece of fruit or a piece of vegetable. However, another teacher demonstrated what a portion of vegetables looked like by placing tomatoes in the palm of their hand.

She asked the children to do the same and for each of them to count how many tomatoes equal one portion. The children appeared very engaged in this activity.

Waste Management

Packaging waste

The packaging waste was managed in a variety of ways. Packaging waste was gathered by the teachers in some classes and placed back in the bigger plastic packaging that the portions of fruit and vegetables arrived in. This packaging waste was then collected and recycled by the fruit and

vegetable distribution company that delivered the fruit and vegetables to the school each morning during the intervention period. Packaging waste was placed in recycling bins in the classrooms by the children in other schools, while pupils placed the packaging in their lunchboxes in some classes to be recycled at home.

Packaging waste was not dealt with in an environmentally friendly manner in two of the schools observed and was placed in general waste bins in the classroom. On the contrary, a teacher in one such school reported that there were no issues with the recycling of waste and that their school participated in the Green Schools Programme.

Food waste

Food waste was managed responsibly by most of the schools observed. Food recycling bins present in the classrooms managed food waste in some of the classes after the tasting. Leftover fruit and vegetables were placed in the children's lunchboxes to be eaten during a later break or taken home at the end of the day in many of the schools observed. Any extra unopened packets of fruit and vegetables left over after the tasting was offered to children who wanted to eat them in class or take them home. Food waste was placed in a general waste bin along with the packaging in one class. Leftover tomatoes were collected by one class teacher who explained to the class that tomatoes taste different when they are cooked and during their lunch break, they would cook the tomatoes in the staff room and bring them back to the class for the children to taste them again. Another teacher, who was also an enthusiastic FDHEP coordinator commented however that in their school food waste was a big issue. They suggested that fewer fruit and vegetable packages be provided for tasting weeks and shared out among the children by the teacher to reduce waste.

2.2.3. Conclusions

COVID-19 heavily impacted how this evaluation was conducted, especially in terms of the timings. Previous evaluations have recommended that it is optimum to perform evaluations in the first half of the school year when schools are more amenable to extracurricular activities. Towards the end of the school year when this evaluation was conducted, it can be difficult to engage with schools as they are trying to complete their course work and have more school events (school trips, sports days, religious celebrations etc) during this time. Moreover, teachers may have been under more pressure to finish the 2021/2022 curriculum in the final term compared to previous years due to the school closures during the pandemic; thus, they may have not had the time and motivation to fully engage in the intervention.

The management of the programme in schools is likely to have been impacted by the pandemic, particularly the lack of in-house training that was attributable to the timing of the intervention programme. Prior to COVID-19, one or two teachers in each school were selected as staff coordinator(s) and received in-service, in-house training from Real Nation. For this block of schools, training took place over Zoom which may have resulted in less engagement with the teachers.

The findings from the pre-post questionnaire indicate some positive changes in fruit and vegetable consumption, however it is difficult to draw firm conclusions as there were limited parental responses to the questionnaire. Prior to the intervention, the sample of parents and children already had existing positive attitudes towards healthy eating and recognising the health benefits of fruit and vegetables. Therefore, no significant changes were observed to these attitudes following the intervention. The children's report indicated little change in their 'liking' of fruit and there were mixed responses to the 'liking' of vegetables. However, their parents reported an increase in their liking of both, however the results must be interpreted with caution in light of the lack of statistically significant differences demonstrated.

Parents and children were also given the opportunity to provide feedback on the programme and this indicated some positive perceptions and acceptability including the liking of fruit in both the control and intervention groups. Also, the majority of children liked receiving the fruit, and more

than half liked receiving the vegetables in school. While the findings from the pre-post questionnaire did not show significant shifts in food behaviour, parents feedback about the intervention reported that almost half perceived that their child was eating more and different fruit as a result of the intervention. In addition, almost half the adults perceived a change in their children's healthy eating attitudes. Teachers' feedback also indicates a positive response to the programme for both fruit and vegetable consumption, as well as an improvement in children's eating behaviour.

There were also additional positive findings of the evaluation from the pre-post analysis. The results of the pre-post analysis revealed a slight increase in consumption of fruit and vegetables. Similarly, when looking at snack consumption, the trend in this sample shows a slight decrease in the consumption of both sweet and savoury snacks as a result of the intervention. Additionally, there was a slight change in the parents' attitudes after the intervention, with an increase in the opinion that fruit is important for and has health benefits for children and most notably, there was an increase in the number of parents who agreed that fruit and vegetables were important for vitamins and minerals. Even though the results of the pre-post analysis were not significantly different in terms of changes in consumption levels and attitudes, they still highlight a trend in the right direction as a result of the intervention.

The results of the process observation visit, parental and child feedback, and teachers' questionnaires indicate that while rewards had the most reach in terms of the supporting material, some of the rewards were liked considerably more than others by the children. The liking of the rewards and other supporting material was also dependent on the children's age. There was also a lack of awareness among some of the parents and teachers of the available supporting materials and uncertainty about how to properly utilise them.

It was also observed that the degree of tasting among the children was greatly influenced by the teacher's role in implementing the programme and the encouragement that they gave the children during the tasting sessions. In particular, positive role modelling demonstrated by the teachers by tasting the fruit and vegetables with the children appeared to motivate some of the more hesitant children to taste them.

2.2.4. Recommendations

There are numerous recommendations that can be drawn from the evaluation.

1. It is recommended that there are a wider variety of fruits and vegetables provided in schools, in particular fruits and vegetables not delivered in the programme previously. This will enable children to taste a more diverse range of fruits and vegetables and widen their tasting experiences. However, this is difficult to implement in practice due to seasonality and supplier chains.
2. In addition, it is recommended that some of the resources, in particular the DVD/Online episodes, and home diaries are further evaluated for their usefulness in promoting healthy eating in the school and home environment. Specifically, the resources are differentiated appropriately according to the junior and senior end of the school and that they have a purpose in promoting fruit and vegetable consumption in primary schools.
3. Increasing the teachers' awareness of the available resources and the importance of role modelling may also increase the effectiveness of the programme, by encouraging more children to participate and actively try the fruit and vegetables.

2.3. Evaluation of School Milk Scheme

2.3.1 Methods

The evaluation was quantitative and qualitative in design to ensure the results' credibility, reliability, and robustness.¹

Ethical Approval

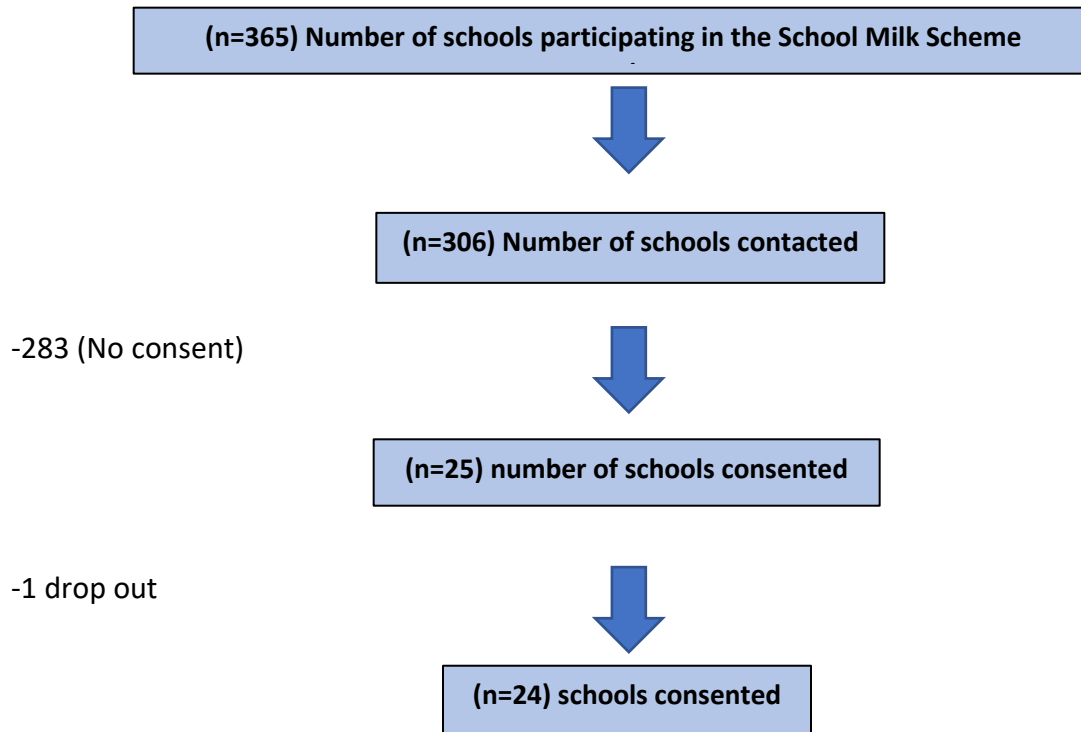
The UCD Human Research Ethics Committee - Sciences granted ethical approval for this research on 20th December 2019 (Reference LS-19-93-Heinen-Murrin). and ethical amendment in July and November 2020.

Sample selection and recruitment

SMS schools

A master list of all primary schools who signed up to take part in the SMS in the 2021/2022 academic year was developed and provided by the NDC (n=303), which represented a selection of schools published on the Department of Education's website (total n=3123). Of the participating primary schools, n=283 were emailed by the NNSC with an invitation to participate in an evaluation study of the programme; the remaining 20 schools had previously been contacted as control schools. Several of these schools (n=129) were also contacted by telephone. Between November 2021 and January 2022, 25 schools consented to taking part in the evaluation study via the website link. One of these schools later dropped out. Of the remaining 24 schools, 6 were classified as DEIS schools (25%). The size of the schools varied between small (<100 pupils enrolled), medium (100-500 pupils enrolled) and large (>500 pupils enrolled), with the majority (n=16) falling into the medium category. These schools were distributed across all 4 provinces of Ireland.

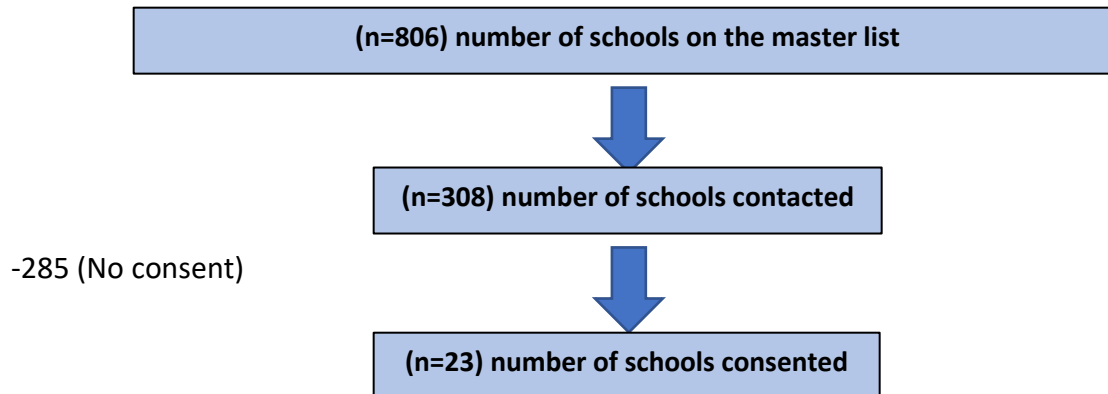
Figure 2.3.1: Flow Chart of SMS Schools



Control schools

In this evaluation, control schools were used as a basis for comparison to establish the effect of the school milk scheme. A master list of 806 schools was created by The NDC of eligible control schools based on the information published on the Department of Education's website. These were then divided into DEIS schools and non-DEIS schools. A random number allocation tool was used to select the schools to be contacted. Schools were emailed (n=308) and of these, n=147 were contacted by phone also to be invited to participate in this study. An article was written for INTOUCH magazine for further recruitment resulting in 1 response. All schools who expressed interest in participating were sent a link to provide consent and sign up for the evaluation. A total of 23 schools gave consent to participate in the evaluation. Of these, 3 schools were classified as DEIS schools (13%), and 20 were classed as non-DEIS schools (87%). The size of the schools varied between small (<100 pupils enrolled) and medium (100-500 pupils enrolled), with the majority (n=17) falling into the medium category. These schools were distributed across all 4 provinces of Ireland.

Figure 2.3.2: Flow Chart of SMS Control Schools



The characteristics of the SMS and control schools that participated in the evaluation are described and compared in Table 2.3.1. No differences were found between the SMS and control schools across the categories of size ($p=0.581$), DEIS status ($p=0.298$), region ($p=0.495$) or region classification ($p=0.940$).

Table 2.3.1: Characteristics of SMS versus control schools

	Intervention			Control			P-Value
	Total N	N	%	Total N	N	%	
School Size	24			23			
Small		7	29		6	26	0.581
Medium		16	67		17	74	
Large		1	4			0	
School Type	24			23			
Deis		6	25		3	13	0.298
Non-Deis		18	75		20	87	
School Region	24			23			
Leinster		13	54		9	39	0.495
Munster		8	33		7	30	
Connacht		2	8		5	22	
Ulster		1	4		2	9	
Region Classification	24			23			
Urban		19	79		18	78	0.94
Rural		5	21		5	22	



Consent

When primary schools expressed interest in taking part in an evaluation study, UCD researchers distributed an information sheet and electronic consent form to the principal or SMS coordinator. A physical copy of the information sheet and consent form was provided upon request. Upon receipt of school consent, UCD sent an electronic link to the schools for distribution to parents of children in 1st, 3rd and 5th class, which contained a consent form, information leaflet, and online questionnaire. Parents could not proceed with the questionnaire until full consent was provided.

Inclusion and exclusion criteria

Primary schools

The inclusion criteria for the purpose of the evaluation was primary schools recruited for participation in the SMS in the 2021/2022 academic year.

Children and parents of SMS and Control Group

Children in 1st, 3rd or 5th class only were eligible to participate in the evaluation. Parents/guardians of the children in these selected classes were also invited to participate in the study.

Teachers of SMS schools

All teachers involved in the SMS, in consenting schools were eligible to take part in the staff survey aspect of the study.

Quantitative Data Collection

Parent and child baseline questionnaire

All parents of children in 1st, 3rd and 5th class in the SMS schools were invited to complete an online questionnaire between the 1st of December 2021 and the 15th of February 2022. The questionnaire included questions regarding demographic characteristics including children's age, gender, class, school, and parental education level. The questionnaire assessed parents' and

children's consumption of dairy (milk, cheese, and yoghurt), fruit, vegetables, sugar sweetened beverages, and sweet and savoury snacks. It also assessed parent-reported availability of fruit, vegetables, and milk in the home, as well as their liking of and attitudes towards these food products. A section about the children's liking of and attitudes towards fruit, vegetables, and milk, using five-point child-based Likert scales was also included in the questionnaire.

Parent and child follow-up questionnaire

A follow-up questionnaire was also distributed by email to parents who had completed the baseline questionnaire. These questionnaires were completed between the 25th of April 2022 and the 7th of June 2022. To identify if the SMS contributed to behavioural changes (i.e., an increase in milk consumption among participating children and a change in their attitudes towards their consumption), the questionnaire repeated questions regarding the children's and parents' dietary intake, and their attitudes towards fruit, vegetables, and milk. In addition, the follow-up questionnaire included both parent and child feedback questions to evaluate the SMS.

Process evaluation: Teacher's Questionnaire

On 25th April 2022, following the completion of the SMS programme, a questionnaire was distributed by email to all participating schools in the evaluation. One teacher was nominated as a representative of a school involved in the SMS, to take part in the post-intervention aspect of the study. The results of the staff questionnaire describe the teachers perceived success rate of SMS for encouraging milk consumption in primary school children, the overall enjoyment of the programme, and the ease of implementing it into their daily routine. There were also questions based on the relevance and usefulness of the resources attached to the programme, as well as questions on the delivery times, quality, and temperature of milk received. Teachers were also asked whether they felt the SMS improved the healthy eating behaviour and attitudes of children and whether it helped in improving children's knowledge and liking of milk. The final component of the questionnaire was based on whether the school already had healthy eating policies and nutrition plans in the school. The questionnaire also allowed teachers to elaborate on their selected responses at various stages, however, the responses in these sections were low.

Qualitative Data Collection

A list of all schools (n=24) who consented to participate in the SMS evaluation study was compiled based on geographical location, rural and urban classification, school size, and DEIS status. A list of 8 schools which included a mix of school types was then randomly selected. This mix of school types ensured that the sample selected was representative of the larger group of schools that were participating in the SMS.

The schools had previously consented to participate in the process evaluations as part of the SMS evaluation recruitment process. Telephone contact was successfully made with the 8 schools. Observation visits were scheduled by telephone with the SMS coordinator or the principal of the schools for a date that the school deemed suitable. The visits to the participating schools were then arranged for the time during the school day that the SMS was being delivered in class. Two researchers attended each school where they both completed an observation checklist addressing areas such as the school and class environment, school organisation of the milk scheme, child behaviours when tasting the milk, waste management and use of NDC support materials.

Data Analysis

Quantitative Data analysis

Parent and child baseline questionnaire

Baseline questionnaires were completed by 184 parents of children in 1st, 3rd and 5th class before the programme was implemented in schools using a link to the online questionnaire. The data (n=290) was exported from Qualtrics where it was screened and cleaned by researchers. Incomplete data was removed as well as any duplicate entries. Descriptive statistics and Pearson Chi-square tests were performed on the cleaned data.

Figure 2.3.3: Flow Chart of SMS Baseline Questionnaire

(n=290) number submitted responses

-106 (initiated but contain no relevant data)



(n=184) number of usable data

-1 (younger sibling of another participant)

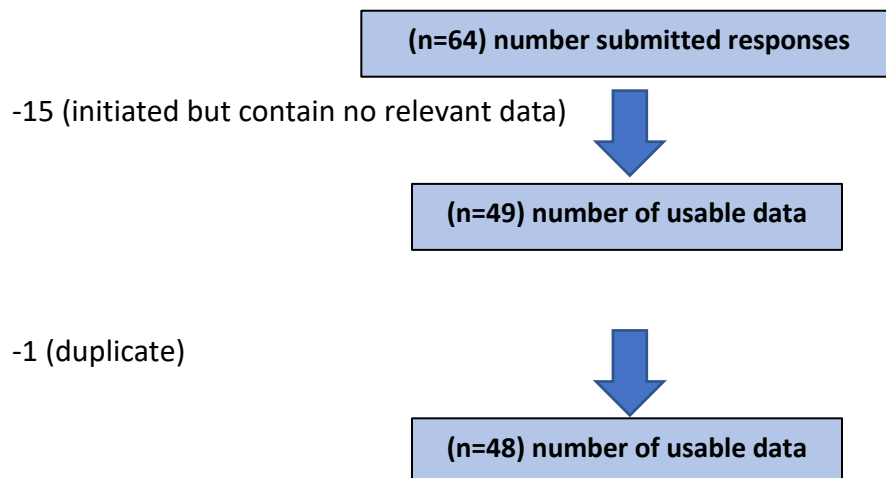


(n=183) number of usable data

Parent and child follow-up questionnaire

Follow-up questionnaires were completed by 64 parents who completed the baseline questionnaire. The data (n=64) was exported from Qualtrics where the data was screened and cleaned by researchers. Incomplete data was removed as well as any duplicate entries. Descriptive statistics and Pearson Chi-square tests were performed on the cleaned data using SPSS 27 for Windows.

Figure 2.3.4: Flow Chart of SMS Follow Up Questionnaire



Teachers' questionnaire

A total of 22 questionnaires were sent through email with a link to the online questionnaire that was developed using Qualtrics. A reminder email was sent on both the 11th and 24th of May 2022 and in total 13 responses to the post-intervention questionnaire were received from teachers. The data was exported from Qualtrics into Microsoft Excel for data screening to check for errors. Incomplete data was removed as well as any duplicate entries. Data analysis was then performed using SPSS 27 for Windows. The descriptive analysis was performed by calculating frequencies and percentages for categorical variables.

Pre-Post Analysis

Data from the baseline questionnaire and the follow-up questionnaire was collated and used to perform the pre-post SMS analysis. The responses from the questionnaires were matched by correspondents' information due to inconsistencies in the unique identifier numbers. Data such as children's and parent's characteristics, consumption, and attitudes was extracted then used to evaluate the intervention at an individual level. The data was anonymised and incomplete data was removed and excluded from the analysis, which eliminated 27 responses. A total sample of n=74 was used in the analysis, with n=37 for baseline and n=37 for follow up. The data was then imported into SPSS 27 for windows, where descriptive analysis and Pearson chi square analysis was performed on the cleaned data.

For the purpose of this report and for ease of interpretation, the variables relating to consumption and attitudes in the datasets were collapsed and recoded on all the datasets. For the consumption variables, the seven response options on the questionnaire were recoded into three categories: '3+ servings per day', '1-2 servings per day' and 'none or less than daily' or 'Daily consumption', 'less than daily consumption' or 'never consumed'. The attitudes were further categorised into agree, neutral or disagree, or good, okay or bad. The results of this recoded data analysis are contained in the current report.

Qualitative data analysis



The hard copy observation checklists were coded and input into excel where they were analysed. Frequencies were carried out on coded variables. Content analysis was carried out on text response. Common themes were grouped and frequencies recorded.

2.3.2. Results: School Milk Scheme

2.3.2.1. Parent and child baseline data: diet and nutrition attitudes

Population Characteristics

Parents from 21 schools participating in the EU School Food Scheme Evaluation completed the baseline questionnaire. Of these 35% were DEIS (n=7). Table 2.3.2 outlines the characteristics of the parents and children who responded to the baseline questionnaire. Eighty-eight percent of respondents were mothers for both the SMS and control groups and over 70% of both had completed further education or additional training. Children were aged between 5 and 12 years and 61% were female in the SMS group. In the control group children were aged between 6 and 11 years of age and 63% were female. There was a significant difference in the school characteristics between the SMS and control group, with 35.5% of the SMS group enrolled in a DEIS school, compared to 3.8% in the control group ($p=0.001$), meaning a higher proportion of the control group attended non-DEIS schools (96.2%). Fifty-three percent of respondents reported that their children were taking part in the SMS in the 2021/22 academic year (Table 2.3.3). Seventeen percent of parents in the SMS group were unsure if their children were taking part in the SMS.

Table 2.3.2. Parent and child demographics

	SMS			Control			P-Value
	Total N	N	%	Total N	N	%	
Child Demographics							
Gender	183			131			
Male		70	38.3		47	35.9	0.626
Female		112	61.2		84	64.1	
Prefer not to say		1	0.5		0	0.0	
Class	181			131			
1st		72	39.8		41	31.3	0.127
3rd		55	30.4		37	28.2	
5th		54	29.8		53	40.5	
Age (Years)	182			131			0.175
5-7 Years		71	39.0		39	29.8	
8-10 Years		77	42.3		59	45.0	
11-12 Years		34	18.7		33	25.2	
Mean		8.55 (SD 1.697)			8.92 (SD 1.667)		
Parent Demographics							
Relation to child	182			131			
Mother		162	89.0		116	88.5	0.523
Father		17	9.3		15	11.5	
Grandmother		2	1.1		0	0.0	
Guardian		1	0.5		0	0.0	
Other Relative		0	0.0		0	0.0	
Education Level	181			131			0.403
Up to secondary school		49	27.1		30	22.9	
Additional training or higher		132	72.9		101	77.1	
School	183			131			
Deis		65	35.5		5	3.8	0.001
Non Deis		118	64.5		126	96.2	

Table 2.3.3. Parent reported child participation in SMS

	Total N	N	%
Childs Participation	179		
Yes		96	53.6
No		54	30.2
Unsure		29	16.2

Dietary Intake

Overall, 94% of SMS children and 86% of control children were consumers of cow's milk with full-fat milk being the most commonly consumed type of milk (Table 2.3.4). The proportion of children consuming milk was similar to that recorded in the 2017/18 National Children's Food Survey (NCFS) and the Evaluation of the EU School Fruit, Vegetables and Milk Scheme October 2021 report, where 88% and 93% respectively, of children were consumers of cow's milk (2,3). In the same October 2021 report, the proportion of children consuming non-dairy drink was 11.8%, which was higher than the NCFS report, in which only 3% of children were consumers (2,3). Interestingly, in this report, there were no children who reported consuming non-dairy drink in the SMS group, but 6.1% of the control group reported consumption at baseline. 85% of SMS parents and 80% of control parents were cow's milk consumers, while 24% of SMS parents and 26% of control parents reported consuming non-dairy drink (Table 2.3.5).

Table 2.3.4. Milk type bought for children in the home

	SMS			Control		
	Total N	N	%	Total N	N	%
	183			130		
Total Cow's milk		172	94		112	86.2
Full fat/whole milk		110	60.8		67	51.1
Low-fat/semi skimmed milk		40	22.1		35	26.7
Fat free/skimmed		3	1.7		0	0
Fortified/super milk		14	7.7		14	10.7
Lactose-free milk		10	5.5		0	0
Non-Dairy						
Alternative		0	0		8	6.1
Protein Milk		0	0		1	0.8
I do not drink milk		2	1.1		5	3.8
Other		2	1.1		1	0.8

Table 2.3.5. Parents baseline consumption of milk: SMS vs control

Consumer	Cow's milk						P value	non-dairy drink alternative						P value
	SMS			Control				SMS			Control			
	Total N	n	%	Total N	n	%		Total N	n	%	Total N	n	%	
	183			131			0.309	183			130			0.754
Yes	156	85.2		106	80.9		45	24.6		34	26.2			
No	27	14.8		25	19.1		138	75.4		96	73.8			

Approximately 50% of both the SMS and control parents reported that their children consumed no servings of cow's milk or consumed it less than daily (Table 2.3.6). Similarly, there was no statistically significant difference in non-dairy drink alternatives, yoghurt or cheese consumption between the SMS and control groups. When looking at cow's milk consumption more closely, there was a significant difference observed in consumption of cow's milk as a drink between the SMS and control groups. There was a larger proportion of control parents who recorded their children consuming no servings of cow's milk as a drink compared to SMS parents (52.8% and 28.4%). With regards to consumption of yoghurt and cheese, the majority (>80%) of SMS and control groups consumed these products less than daily.

However, these results may be partially explained by differences in control schools vs SMS schools. Nine (43%) of the SMS schools who responded to the questionnaire were DEIS schools, whereas only one (7%) of the control schools who responded to the questionnaire were DEIS schools. Therefore, the two samples were quite different and thus, may have impacted the results.

Table 2.3.6. Children's milk consumption.

Servings	Cow's milk						P value	non-dairy drink alternative						P value
	SMS			Control				SMS			Control			
	Total N	n	%	Total N	n	%		Total N	n	%	Total N	n	%	
	183			130			0.557	181			131			0.403
3 or more servings per day		22	12		11	8.5			0	0		0	0	
1-2 servings per day		68	37.2		53	40.8			4	2.2		5	3.8	
None/less than daily		93	50.8		66	50.8			179	98.9		126	96.2	

Table 2.3.6. Children's milk consumption (cont.)

Servings	Yoghurt						P value	Cheese						P value
	SMS			Control				SMS			Control			
	Total N	N	%	Total N	N	%		Total N	N	%	Total N	N	%	
	183			131			0.697	183			131			0.413
3 or more servings per day		1	0.5		0	0			0	0		1	0.8	
1-2 servings per day		31	16.9		22	16.8			29	15.8		24	18.3	
None/less than daily		150	82.5		109	83.2			154	84.2		106	80.9	

Table 2.3.6. Children’s milk consumption (cont.)

Servings	Cow’s milk as a drink						P value	Cow’s milk in cereal						P value
	SMS			Control				SMS			Control			
	Total N	N	%	Total N	N	%		Total N	N	%	Total N	N	%	
	176			123			<0.001	176			123			0.718
3 servings per day		19	10.8		7	5.7			3	1.7		4	3.3	
2 servings per day		20	11.4		20	16.3			15	8.5		13	10.6	
1 serving per day		87	49.4		31	25.2			117	66.5		76	61.8	
None		50	28.4		65	52.8			41	23.3		30	24	

Children’s Milk Consumption: child level participation (parent reported)

Table 2.3.7 displays the analysis of children’s consumption of milk by parent reported participation in the SMS. Data from baseline questionnaire including consumption data and parent reported participation data was used to perform chi square analysis by cross tabulation of descriptive statistics in SPSS 27. When analysing consumption by participation level, there were significant differences between those participating and those not ($p=0.01021$). Sixty percent of those who participated reported daily consumption of milk, compared to forty-five percent in those who were not participating or whose parents were unsure of participation.

Table 2.3.7. Differences in children’s cow's milk consumption between participants and non-participants of the School Milk Scheme, as reported by parents.

Servings	Cow's milk						
	Yes			No or unsure			P value
	Total N	n	%	Total N	n	%	
	96			213			0.021
3 or more servings per day		15	15.6		18	8.5	
1-2 servings per day		43	44.8		77	36.2	
None/less than daily		38	39.6		118	55.4	

Other Drinks

Table 2.3.8 refers to other drinks consumed by the children which includes flavoured milk, fizzy drinks, flavoured drinks such as squashes, cordial and ready to drink juices and water. The majority of both SMS and control groups consumed flavoured milk less than daily or never (94.5% and 97.2%). 95.6% and 96.9% of the SMS and control groups consumed fizzy drinks less than daily, and similarly for flavoured drinks, 86% and 82% consumed these drinks less than daily. Water consumption was overall low across the two groups, with 8.8% of SMS and 9.9% of control group reporting consuming greater than 1L or more per day. There were no statistically significant differences between the SMS and control across the categories, with the exception of flavoured milks, as the SMS group reported more daily consumption of flavoured drinks (5.5% versus 1.5%, p-value=0.074).

Table 2.3.8: Children’s ‘other drinks’ consumption: SMS versus control

Servings	Flavoured Milk						Fizzy Drinks							
	SMS			Control			P value	SMS			Control			P value
	Total N	N	%	Total N	N	%		Total N	N	%	Total N	N	%	
	181			130			0.074	181			131			0.46
Daily Consumption		10	5.5		2	1.5			8	4.4		4	3.1	
Less than daily		54	29.8		31	23.8			94	51.9		61	46.6	
None		117	64.6		97	74.6			79	43.6		66	50.4	

Table 2.3.8: Children’s ‘other drinks’ consumption (cont.)

Servings	Flavoured Drinks						P value
	SMS			Control			
	Total N	N	%	Total N	N	%	
	181			130			0.703
Daily Consumption		36	19.9		23	17.7	
Less than daily		86	47.5		68	52.3	
None		59	32.6		39	30.0	

Table 2.3.8: Children’s ‘other drinks’ consumption (cont.)

Servings	Water						P value
	SMS			Control			
	Total N	N	%	Total N	N	%	
	181			131			0.272
Less than 250ml/day		22	12.2		22	16.8	
25-500ml/day		70	38.7		42	32.1	
500-750ml/day		39	21.5		37	28.2	
750-1L/day		34	18.8		17	13.0	
1L or more/day		16	8.8		13	9.9	

Availability of milk in the household

Milk was available every day in 96% of SMS households and 98% of control households (table 3.3.10). 28% of SMS parents and 27% of control parents reported serving milk to their children with meals and snacks two or more times per day. Forty-one and thirty-seven percent of SMS and control parents respectively served milk once per day.

Table 2.3.9: Milk availability and servings

	Milk Availability						P value	Servings	Milk served with meals/snacks						P value
	SMS			Control					SMS			Control			
	Total N	N	%	Total N	N	%		Total N	N	%	Total N	N	%		
Servings	174			130			0.206		175			130			0.716
Everyday		167	96.0		128	98.5		3+ per day		12	6.9		11	8.5	
4-6 days per week		4	2.3		0	0.0		Twice per day		37	21.1		23	17.7	
1-3 days per week		2	1.1		0	0.0		Once per day		73	41.7		49	37.7	
Less than once per week		0	0.0		1	0.8		Less than once per day		21	12.0		22	16.9	
Never		1	0.6		1	0.8		Never		32	18.3		24	18.5	

Children's attitude

Table 3.3.11 outlines children's attitudes towards milk. Overall children believed that milk was good for their health (92.4% and 87.2% respectively). However, the percentage of children who reported liking milk was lower, despite the fact that they agreed milk was good for them.

Table 2.3.10. Children's attitudes towards milk

Statement		SMS			Control			P value
		Total N	N	%	Total N	N	%	
Child liking	Taste good	144	103	70.8	108	74	68.5	0.637
Is good for my health	Agree	144	133	92.4	109	95	87.2	0.381

Parental Attitudes

Seventy-one percent of parents in the SMS group and sixty-four percent of parents in the control group believed that it was important for their child to drink milk (Table 2.3.11). Similarly, more than 86% of parents in both the SMS and control groups believed that milk has health benefits for their children and more than 59% believe that milk is needed in their children's diet to provide vitamins and minerals. 69% and 65% of parents in the SMS and control groups reported that their

child likes the taste of milk, similar to that reported by the children themselves. When asked why it was important for their children to drink milk, 22% of parents in the SMS group noted the importance of milk as a source of calcium in their child’s diet and its role in healthy bones and teeth. Whereas when asked about the importance of milk in their own diet only 14% reported the same.

Table 2.3.11. Parent’s attitudes towards milk

Statement		SMS			Control			P value
		Total N	N	%	Total N	N	%	
It is important to me that my child drinks milk	Agree	170	121	71.2	122	78	63.9	0.394
Milk has health benefits for children	Agree	164	142	86.6	121	107	88.4	0.57
Milk is needed in child's diet for vitamins & minerals	Agree	168	107	63.7	122	73	59.8	0.778
Child liking (parent-reported)	Likes	168	116	69	118	77	65.3	0.751

2.3.2.2. Parent and child follow-up data: diet and nutrition attitudes

Follow-up questionnaires were completed by 48 parents in the SMS schools and 38 parents from control schools. Follow up questionnaires were sent directly to parents who had completed the baseline questionnaire if they had provided contact details and given permission to be contacted for the follow-up questionnaire. The questionnaires were distributed by email (n=278) and post (n=8) on the 25th of April 2022 and the questionnaires were closed on the 7th of June 2022. In this time a further 2 reminder emails were sent to these parents to encourage a high response rate. Parents from 17 schools participating in the EU School Food Scheme Evaluation completed the follow-up questionnaire. Of these 35% were classified as DEIS schools.

Dietary intake

A total of 94% and 87% of SMS and control children were consumers of cow’s milk with full fat being the most commonly consumed type of milk (Table 2.3.12). Only one parent reported their child being a consumer of plant-based drink

Table 2.3.12. Type of milk bought by parent for children

	SMS		Control			
	Total N	N	%	Total N	N	%
	48			38		
Total cow's milk		45	93.75		33	86.8
Full fat/whole milk		28	58.3		18	47.4
Low-fat/semi skimmed milk		14	29.2		9	23.7
Fat free/skimmed		1	2.1		0	0
Fortified/super milk		3	6.3		6	15.8
Lactose-free milk		0	0		0	0
Non-dairy drink alternative		1	2.1		0	0
I do not drink milk		0	0		4	10.5
Other		1	2.1		1	2.6

There was no significant difference between children's consumption of milk and dairy between the SMS and control groups (Table 2.3.13). Over 40% of both the SMS and control groups recorded consuming milk never or less than daily in the past week. There was no significant difference between yoghurt consumption across the SMS and control groups, however a greater number in the intervention group (31%) reported consuming 2 servings of yoghurt per day compared to 15.8% in the control group. There were similar findings for cheese consumption, with 20.8% of the SMS group reporting consuming 2 servings per day compared to only 7.9% in the control group. The majority of both SMS and control groups reported consuming yoghurt (>68%) and cheese (>79%) less than once per day. When looking further at cows milk consumption, there was a significant difference between the SMS and control group for daily consumption of cows milk as a drink ($p=0.08$), while no significant difference in consumption of cows milk in cereal ($p=0.805$). The difference in consumption of cow's milk as a drink between SMS and control would be expected, as it reflects the milk given in school as part of the programme, thereby indicating a positive change in consumption levels as a result of the scheme.

Table 2.3.13. Children's milk consumption over the last week follow-up.

Servings	Cow's milk						P value	non-dairy drink alternative						P value
	SMS			Control				SMS			Control			
	Total N	N	%	Total N	N	%		Total N	N	%	Total N	N	%	
	48			38			0.834	48			38			0.867
3 or more servings per day		6	12.5		5	13.2			0	0		0	0	
2 servings per day		22	45.8		15	39.5			1	2.1		1	2.6	
None/less than daily		20	41.7		18	47.4			47	97.9		37	97.4	

Table 2.3.13. Children's milk consumption over the last week follow-up (cont.)

Servings	Yoghurt						P value	Cheese						P value
	SMS			Control				SMS			Control			
	Total N	N	%	Total N	N	%		Total N	N	%	Total N	N	%	
	48			38				48			31			
3 or more servings per day		0	0		1	2.6	0.149		0	0		0	0	0.096
2 servings per day		15	31.3		6	15.8			10	20.8		2	7.9	
None/less than daily		33	68.8		31	81.6			38	79.2		29	92.1	

Servings	Cow's milk as a drink						Cow's milk in cereal							
	SMS			Control			P value	SMS			Control			P value
	Total N	N	%	Total N	N	%		Total N	N	%	Total N	N	%	
	47			37			0.08	45			37			0.805
3 servings per day		6	12.8		0	0.0			0	0.0		0	0.0	
2 servings per day		7	14.9		7	18.9			4	8.9		2	5.4	
1 serving per day		19	40.4		12	32.4			33	73.3		29	78.4	
None		15	31.9		18	48.6			8	17.8		6	16.2	

Table 2.3.13. Children's milk consumption over the last week follow-up (cont.)

There was no significant difference between the SMS and control group regarding consumption of other drinks during the last week at follow up (Table 2.3.14). 95% of parents in the SMS group and 97.4% in the control group reported their child consumed flavoured milk less than daily or never. There was no daily consumption of fizzy drinks reported by parents in the SMS group and only 2.6% of parents in the control group reporting daily consumption. Similarly, the majority of both the SMS and control groups consumed flavoured drinks less than daily (82.2% and 86.8%, respectively). Similar to baseline, at the follow-up, only 12.5% of children in the SMS group and 7.9% in the control group were consuming over 1L of water per day, which is the recommended water intake for children over the age of 5 (4).

Table 2.3.14: Children's other drink consumption over the last week of follow up

Servings	Flavoured Milk						P value	Fizzy Drinks						P value
	SMS			Control				SMS			Control			
	Total N	N	%	Total N	N	%	Total N	N	%	Total N	N	%		
	48			38			0.689	48			38			0.465
Daily Consumption		2	4.2		1	2.6			0	0.0		1	2.6	
Less than daily		12	25.0		7	18.4			26	54.2		18	47.4	
None		34	70.8		30	78.9			22	45.8		19	50.0	

Table 2.3.14: Children's other drink consumption over the last week of follow up (cont.)

Servings	Flavoured Drinks						P value
	SMS			Control			
	Total N	N	%	Total N	N	%	
	48			38			0.307
Daily Consumption		9	18.8		5	13.2	
Less than daily		25	52.1		26	68.4	
None		14	29.2		7	18.4	

Table 2.3.14: Children's other drink consumption over the last week of follow up (cont.)

Servings	Water						P value
	SMS			Control			
	Total N	N	%	Total N	N	%	
	48			38			0.831
Less than 250ml/day		6	12.5		4	10.5	
25-500ml/day		14	29.2		15	39.5	
500-750ml/day		12	25.0		10	26.3	
750-1L/day		10	20.8		6	15.8	
1L or more/day		6	12.5		3	7.9	

Attitudes towards milk

Children's attitudes

Table 2.3.15 outlines children's attitudes towards milk. Overall children believed that milk is good for their health however the proportion was higher in the SMS group compared to the control group (97.6% versus 81.8%). Children's liking of milk was high for the SMS group (82.9%) however only just over half of the control children reported liking milk (55.9%). Therefore, there were statistically significant differences between the SMS and control group with regards to the children's attitudes towards milk with the $p=0.01$ for child liking and $p=0.021$ for is good for health.

Table 2.3.15. Children’s attitudes towards milk

Statement	SMS			Control			P value	
	Total N	N	%	Total N	N	%		
Child liking	Taste good	41	34	82.9	34	19	55.9	0.01
Is good for my health	Agree	41	40	97.6	33	27	81.8	0.021

Parent’s attitude

The majority of SMS and control parents agreed with the statement “It is important to me that my child drinks milk” (84.4% and 70.3% respectively). There was no difference observed between the SMS and control groups for parental attitudes regarding health benefits of milk for children and the necessity of milk in a child’s diet for vitamins and minerals (Table 2.3.16). A significant difference was observed in the reporting of child liking milk by parents in the SMS and control groups (p=0.015) with only 52.8% of control parents reporting their child liking milk compared to 78.3% in the SMS.

Table 2.3.16. Parental attitudes towards milk

Statement	SMS			Control			P value	
	Total N	N	%	Total N	N	%		
It is important to me that my child drinks milk	Agree	45	38	84.4	37	26	70.3	0.123
Milk has health benefits for children	Agree	45	40	88.9	34	30	88.2	0.928
Milk is needed in child's diet for vitamins & minerals	Agree	46	32	69.6	36	20	55.6	0.191
Child liking (parent-reported)	Likes	46	36	78.3	36	19	52.8	0.015

2.3.2.3. Pre-Post Analysis

Based on the data collected in the baseline and follow-up parent and children questionnaire, pre and post analyses were carried out. There were only 37 responses eligible to be used in the pre-post analysis due to the poor follow up response rate. These responses were matched by the unique identifier number and data analysis was then performed using SPSS 27 for Windows. The descriptive analysis was performed by crosstabulation, followed by chi square analysis.

Demographics

Table 2.3.17 outlines the characteristics of the parents and children who responded to the baseline questionnaire and who were included in the pre-post analysis. Of the 37 respondents used in the pre-post analysis, 59.5% of the children were enrolled in a non-deis school. 89.2% of these respondents were mothers, and 75.7% had completed additional training or higher. While the children’s gender was almost evenly split, with 43.2% males and 56.8% females, the majority of children (48.6%) were in 1st class, and between the age of 5-7 years (45.9%).

Table 2.3.17: Parents and Child Demographics: Pre-Post Analysis

	Total N	N	%
Child Demographics			
Gender	37		
Male		16	43.2
Female		21	56.8
Class	37		
1st		18	48.6
3rd		9	24.3
5th		10	27.0
Age (Years)	37		
5-7 Years		17	45.9
8-10 Years		11	29.7
11-12 Years		9	24.3
Mean	8.41		
Parent Demographics			
Relation to child	37		
Mother		33	89.2
Father		4	10.8
Education Level	37		
Up to secondary school		9	24.3
Additional training or higher		28	75.7
School	37		
DEIS		15	40.5
Non DEIS		22	59.5

Table 2.3.18 outlines the analysis of the characteristics of the sub sample against the main sample, to indicate whether the sample used in pre-post analysis was representative of the total population. When comparing the pre-post data with the main sample, the parent characteristics

are similar with the majority of both being mothers (89%), who completed additional training or higher (>72%). There were also similarities in the school characteristics, with 59.5% of the sub-sample and 64.5% of the main sample enrolled in a non-DEIS school. Likewise, the gender split of children in both groups was similar, with slightly more females than males in both groups. However, the age profile of the children differed slightly, with the majority of the total population aged between 8-10 yrs (42.3%), compared to 29.7% in the sub-sample. Similarly, the samples differ on class level of the children, with more enrolled in 1st class in the sub sample (48.6%), than in the total population group (39.8%). Even though slight differences can be seen in the children’s demographics in the sub sample compared to the main sample, these differences were not significant. Moreover, due to the differences in children’s characteristics between the main sample and the sub sample, and the small sample size, the sample used in pre post analysis may not reflect the total population, therefore data interpretation is limited.

Table 2.3.18. Parent, Child and School Demographics: Pre-Post vs Total Population

	Pre-Post			Main Sample			P-Value
	Total N	N	%	Total N	N	%	
Child Demographics							
Childs Age	37			182			
5-7 Yrs		17	45.9		71	39.0	0.354
8-10 Yrs		11	29.7		77	42.3	
11-12 Yrs		9	24.3		34	18.7	
Class	37			181			
1st Class		18	48.6		72	39.8	0.591
3rd Class		9	24.3		55	30.4	
5th Class		10	27.0		54	29.8	
Gender	37			183			
Male		16	43.2		70	38.3	0.779
Female		21	56.8		112	61.2	
	Total N	N	%	Total N	N	%	P-Value
Parent Demographics							
Relationship to child	37			182			
Mother		33	89.2		162	89.0	0.712
Father		4	10.8		17	9.3	
Other		0	0.0		3	1.6	
Parent Education	37			181			
Up to Secondary School		9	24.3		49	27.1	0.73

Additional Training or Higher School	28	75.7	132	72.9	
	37		183		
DEIS	15	40.5	65	35.5	0.563
Non DEIS	22	59.5	118	64.5	

Dietary Intake

Overall, 94.6% of children at baseline and follow-up were consumers of cow's milk (Table 2.3.19). Regarding the milk type purchased by the parents for the children, full fat/ whole milk (48% and 54%) was the most popular at baseline and follow-up, followed by low fat/ semi skimmed milk (29% and 35%). There was no statistically significant difference between the milk type purchased at baseline and follow-up ($p=0.552$).

Table 2.3.19. Type of milk bought by parent for children

	Baseline			Follow-up			P Value
	Total N	N	%	Total N	N	%	
	37			37			
Total Cow's milk		35	94.6		35	94.6	
Full fat/whole milk		18	48.6		20	54.1	0.552
Low-fat/semi skimmed milk		11	29.7		13	35.1	
Fat free/skimmed		1	2.7		1	2.7	
Fortified/super milk		4	10.8		2	5.4	
Lactose-free milk		2	5.4		0	0.0	
Protein Milk		0	0.0		0	0.0	
non-dairy drink alternative		0	0.0		1	2.7	
I do not drink milk		0	0.0		0	0.0	
Other		1	2.7		0	0.0	

Table 2.3.20 displays the children's milk consumption at baseline versus follow up. There was no significant difference in the children's consumption of cow's milk pre and post SMS ($p=0.886$). Over 43% of the parents at baseline and follow-up reported their child consuming milk 1-2 times per day, while over 40% of parents reported their child consuming milk less than daily. For non-dairy drink consumption, all parents (100%), pre and post intervention, reported their child

consuming non-dairy drink less than daily or never. Likewise, there were no significant differences pre and post SMS for yoghurt consumption, with 67.6% of parents reporting their child consuming yoghurt less than daily at baseline and 70.3% consuming less than daily at follow-up. The majority (81%) of parents reported their child consuming cheese less than daily prior to the scheme, and 83% reported same after the scheme. There was no significant difference in the consumption of cow's milk as a drink or in cereal before and after the scheme ($p=0.207$ and $p=0.873$). However, there was a greater proportion of children at baseline consuming cow's milk as a drink at least once a day (59.5%) compared to follow-up (35.1%).

Table 2.3.20 Children's milk consumption over the last week: baseline versus follow-up

Servings	Cow's milk						non-dairy drink alternative							
	Baseline			Follow-up			P value	Baseline			Follow-up			P value
	Total N	N	%	Total N	N	%		Total N	N	%	Total N	N	%	
	37			37				37			37			
3 or more servings per day		4	10.8		4	10.8	0.886		0	0.0		0	0.0	-
1-2 servings per day		18	48.6		16	43.2			0	0.0		0	0.0	
None/less than daily		15	40.5		17	45.9			37	100.		37	100.0	

Table 2.3.20. Children's milk consumption over the last week: baseline versus follow-up (cont.)

Servings	Yoghurt						Cheese							
	Baseline			Follow-up			P value	Baseline			Follow-up			P value
	Total N	N	%	Total N	N	%		Total N	N	%	Total N	N	%	
	37			37			0.802	37			37			0.76
3 or more servings per day		0	0.0		0	0.0			0	0.0		0	0.0	
1-2 servings per day		12	32.4		11	29.7			7	18.9		6	16.2	
None/less than daily		25	67.6		26	70.3			30	81.1		31	83.8	

Table 2.3.20. Children's milk consumption over the last week: baseline versus follow-up (cont.)

Servings	Cow's milk as a drink			P value	Cow's milk in cereal		
	Baseline	Follow-up			Baseline	Follow-up	P value

	Total N	N	%	Total N	N	%	Total N	N	%	Total N	N	%
	37			37			0.207	37		37		0.873
3+ servings per day		3	8.1	5	13.5			0	0.0	0	0.0	
2 servings per day		4	10.8	5	13.5			3	8.1	2	5.4	
1 serving per day		22	59.5	13	35.1			27	73.0	26	70.3	
None		8	21.6	14	37.8			7	18.9	8	21.6	

Table 2.3.21 contains the results of the pre-post analysis for drinks other than milk, with no significant difference found between the consumption of flavoured milk, fizzy drinks, flavoured drinks, or water at follow-up compared to baseline. Over 70% of parents reported their child never consuming flavoured milk at both baseline and follow up. There were similar results found between fizzy drinks and flavoured drinks, with over 50% reporting consumption less than daily pre and post SMS. For water consumption, the highest proportion of children were consuming between 250-500ml per day at baseline (45.9%) and at follow-up (29.7%), with only 10.8% and 13.5% of the parents reporting their child consuming greater than 1L of water per day at baseline and at follow-up.

Table 2.3.21 Children's consumption of 'other drinks': baseline versus follow-up

Servings	Flavoured Milk						Fizzy Drinks							
	Baseline			Follow-up			P-value	Baseline			Follow-up			
	Total N	N	%	Total N	N	%		Total N	N	%	Total N	N	%	P-value
	37			37				37			37			
Daily consumption		1	2.7	1	2.7	0.862		2	5.4		0	0.0	0.351	
Less than daily		10	27.0	8	21.6			20	54.1		22	59.5		
None		26	70.3	28	75.7			15	40.5		15	40.5		

Table 2.3.21. Children's consumption of 'other drinks': baseline versus follow-up (cont.)

Servings	Flavoured Drink						P-value
	Baseline			Follow-up			
	Total N	N	%	Total N	N	%	
	37			37			
Daily consumption		6	16.2		8	21.6	0.757
Less than daily		22	59.5		19	51.4	
None		9	24.3		10	27.0	

Table 2.3.21 Children's consumption of 'other drinks': baseline versus follow-up (cont.)

Servings	Water						P-value
	Baseline			Follow-up			
	Total N	N	%	Total N	N	%	
	37			37			
Less than 250ml/day		5	13.5		5	13.5	0.547
250-500ml/day		17	45.9		11	29.7	
500-750ml/day		5	13.5		10	27.0	
750-1L/day		6	16.2		6	16.2	
1L or more/day		4	10.8		5	13.5	

Attitudes towards milk

Children's Attitude

Table 2.3.22 outlines the children's attitudes towards milk at baseline compared to follow up. There was a reduction in sample size (n=30) used in the pre-post analysis of children's attitudes due to incomplete data. There was no significant difference in the children's attitudes at both time points (p=0.472 and p=0.368). The majority of children (80%) at baseline and follow-up

reported milk as tasting good. With regards to the health benefits of milk, overall, most of the children (96.7%) agreed milk was good for their health, with one child reporting milk as bad for health at follow-up.

Table 2.3.22. Children’s attitudes towards milk

Statement	Baseline			Follow-up			P value
	Total N	N	%	Total N	N	%	
Child liking	30			30			
Tastes good		24	80		24	80	0.472
Tastes okay		5	16.7		3	10	
Tastes bad		1	3.3		3	10	
Milk for health	30			30			
Good for health		29	96.7		29	96.7	0.368
Okay for health		2	3.3		0	0.0	
Bad for health		0	0.0		1	3.3	

Parents attitude

Table 2.3.23 outlines the parents' attitudes towards milk at baseline and follow up. Due to insufficient data, the sample size was reduced to n=70, with n=35 for baseline and n=35 for follow-up. Regarding parents’ attitudes pre and post school milk scheme, the majority of parents believed it was important that their child drank milk (74% and 83% respectively). There was no change in the opinion that milk has health benefits for children, with 91.4% agreeing with the statement at both baseline and follow up. A slightly lower percentage of parents believed milk is needed for vitamins and minerals, with 62% agreeing at baseline and 74% agreeing at follow up. Over 70% of parents before and after the scheme reported their child liking milk. Therefore, there was no significant difference in the parents’ attitudes measured before and after the school milk scheme.

Table 2.3.23. Parental attitudes towards milk

Statement	Baseline			Follow-up		P-Value
	Total N	N	%	Total N	N	
It is important to me that my child drinks milk	35			35		
Agree		26	74.3		29	82.9
Neutral		7	20.0		5	14.3
Disagree		2	5.7		1	2.9
Milk has health benefits for children	35			35		
Agree		32	91.4		32	91.4
Neutral		3	8.6		3	8.6
Disagree		0	0.0		0	0.0
Milk is needed in child's diet for Vitamins/Minerals	35			35		
Agree		22	62.9		26	74.3
Neutral		10	28.6		5	14.3
Disagree		3	8.6		4	11.4
Child liking (parent reported)	35			35		
Good		25	71.4		27	77.1
Okay		7	20.0		7	20.0
Bad		3	8.6		1	2.9

3.3.2.4. School Milk Scheme Feedback

Child Feedback

When asked if they like receiving milk in their school, 75% of children said they liked it compared to only 17.5% not liking getting milk (Table 2.3.24). When asked what they can remember having learned this year, 20.8% (n=10) recalled milk being good for bones with 1 child specifying that milk contains calcium which is good for healthy bones.

Table 2.3.24. Children's Feedback

SMS			
How much did you like getting the milk?	Total N	N	%
	40		
I liked it		30	75.0
It was okay		3	7.5
I didn't like it		7	17.5

Parental Feedback

Only 15.9% of parents reported seeing a change in their child’s liking of milk since participating in SMS (Table 2.3.25). However, 27.8% reported their child liking milk more after participating in the programme than before. When asked what changes had been noticed in their child’s consumption of milk, 47.4% of parents noted an increase in milk consumption post participation in the SMS. Regarding health eating attitudes, several parents recalled their child talking more about healthy foods and having a greater interest in them than before, mentioning their child ‘wanting to try new things’, or how their child ‘speaks about the benefits of different types of foods’ and ‘talks more freely about healthy snacks’ and is ‘very aware of good (and) bad foods’. A comment was also made by a parent on the warm temperature of the school milk being recalled by their child, noting their child “says the milk is too warm at school”.

Table 2.3.25. Parental feedback on the SMS

Statement		Total N	N	%
Have you noticed a change in your children’s liking of milk since participating in SMS	Yes	44	7	15.9
If so, was this an increase in your children’s liking of milk	Yes	18	5	27.8
Have you noticed a change in how much milk your child drinks since participating in SMS	Yes	43	10	23.3
If so, was this an increase in consumption	Yes	19	9	47.4
Have you noticed any changes in your child’s healthy eating behaviour since they participated in SMS	Yes	42	6	14.3
Have you noticed any changes in your child’s healthy eating attitudes since they participated in SMS	Yes	38	10	26.3

Teacher feedback

The teachers responded positively to whether the SMS was successful in their school with 38.5% reporting it as very successful, 30.8% as successful and an additional 30.8% as somewhat successful (Table 2.3.26).

Table 2.3.26 Teachers' perception of success of SMS

Statement	Total N	N	%
	13		
Very successful		5	38.5
Successful		4	30.8
Somewhat successful		4	30.8

As shown in Table 2.3.27, teachers also felt the children enjoyed receiving the milk as part of the SMS with 30.8% (n=4) saying children very much enjoyed it, 46.2% (n=6) saying they enjoyed receiving milk, and an additional 23.1% (n=3) reporting they felt the children somewhat enjoyed it. In the additional comments section, one teacher commented that, "*the children enjoy drinking their milk at lunchtime and usually finish it with their food*".

Table 2.3.27. Teacher's perception of children's enjoyment of SMS

Children's enjoyment	Total N	N	%
	13		
Very much enjoyed		4	30.8
Enjoyed		6	46.2
Somewhat enjoyed		3	23.1

Change in consumption patterns

In relation to the changes in milk consumption, more than half of the teachers (53.8%) reported more children drinking milk after the scheme (Table 2.3.28). 15.4% teachers (n=2) reported less children drinking milk, and 30.8% of teachers (n=4) felt there was no change in children drinking milk following the roll out of SMS. On any given day that milk was provided, only two teachers

(15.4%) reported children finishing all of the milk provided, with more than half of the teachers (53.8%) reporting most of the children drinking the milk provided. 30.8% (n=4) reported some children drinking the milk provided. No teacher reported a refusal by children to drink the milk provided in their school. One teacher added an additional comment that there was a milk decline after term one, noting that the *“Number of children interested in the milk scheme declined after term 1”*.

Table 2.3.28: Teacher’s indication of change in milk consumption/rates

Change in consumption	Total N	N	%
	13		
More children drink milk		7	53.8
Fewer children drink milk		2	15.4
No change in milk drinking		4	30.8
Milk consumption rates			
All drank milk provided		2	15.4
Most drank milk provided		7	53.8
Some drank milk provided		4	30.8

Resources

The feedback on the use of “Moo Crew” resources linked to the SMS suggests there is a general lack of awareness of the different resources provided. As shown in Table 2.3.29, most of the teachers are not aware of most of the resources provided. 92.3% (n=12) stated they were not aware of the Eating Sustainably Challenge or Mindful in the market activity sheet. A further 84.6% were unaware of the School Milk Week. In addition, there was also a large proportion of teachers

unaware of the remaining resources; Sports Star Videos (76.9%), Moo Crew Website (69.2%), and Moo Crew Lesson Plans (61.5%).

As a result, the responses on enjoyment and usefulness of resources could not be used for the purpose of this report as most teachers were unable to answer these questions (n=12).

Two teachers (n=2) submitted additional comments after the resources section which further highlights the lack of awareness and understanding of certain teachers around the Moo Crew resources.

“I honestly just thought it was free milk. I was not aware of all the resources provided. I would like to have my time over and complete the resources. Also, I would like to see an option for alternative milks to be included”.

“We weren't aware of too many of these resources prior to completing this survey but we will be exploring how they can be used”.

Table 2.3.29: Teachers feedback on SMS resources used

Resources	Total N	Used		Did not use		Wasn't aware of resources	
		N	%	N	%	N	%
	13						
Moo Crew website		2	15.4	2	15.4	9	69.2
Sport star videos		1	7.7	2	15.4	10	76.9
Moo Crew lesson plans		2	15.4	3	23.1	8	61.5
Eating sustainably challenge		0	0	1	7.7	12	92.3
Mindful in the market activity sheet		0	0	1	7.7	12	92.3
School Milk week		1	7.7	1	7.7	11	84.6

It is difficult to assess how appropriate the resources are for the different age groups as most of the resources were not used by teachers and therefore, they are not applicable (69.2% and 53.8%). Of the teachers that used them, 21.1% found them beneficial for the Junior Classes, while

7.7% reported they were age appropriate for the Senior Classes (Table 2.3.30). Two teachers left additional comments on the age appropriateness of the resources; *‘The children enjoyed the lessons in both the Junior and Senior classes’* and *‘Resources were very age appropriate’*.

Table 2.3.30. Teachers’ feedback of the age appropriateness of SMS Resources

SMS resources were age appropriate for:	Total N	Agree		Neutral		Not applicable	
		N	%	N	%	N	%
	13						
Junior classes		3	21.1	3	23.1	7	53.8
Senior classes		1	7.7	3	23.1	9	69.2

Interestingly, a lot of teachers (61.5%) were not aware they could receive a complimentary NDC fridge as part of the SMS. Of the five that reported knowing they could receive a fridge, all five of them stated they opted for a fridge as part of the SMS (Table 2.3.31).

Table 2.3.31: Teachers’ awareness of complimentary NDC fridge

Teachers aware of complimentary NDC fridge	Total N	N	%
	13		
Yes		5	38.5
No		8	61.5

Management of Programme

As shown in Table 2.3.32, most teachers felt it was easy to include the milk consumption in their daily routine (84.6%), however, the results for the use of resources were more varied with 36.5% reporting them easy to include in their daily routine. 36.4% of teachers found them difficult to implement daily. However, as so many teachers were not aware of the resources this figure may not be a true reflection of the ease of managing resources throughout the day.

Table 2.3.32: Teacher’s feedback on the management of the Food Dudes Programme

	Daily tasting			Use of resources		
	Total N	N	%	Total N	N	%
	13			11		
Difficult		1	7.7		4	36.4
Manageable		1	7.7		3	27.2
Easy		11	84.6		4	36.4

Deliveries and Quality

Teachers were very happy with the deliveries and temperature of the milk when delivered. All teachers (n=13) reported the milk was a suitable temperature when delivered and 84.6% (n=11) reported the milk deliveries were always on time (Table 3.3.34). Teachers were positive in their feedback about the quality of the milk. One teacher commented how beneficial the SMS is and how it is *“More enjoyable for the children - they enjoy it cold”*, referring to the quality of the temperature of the milk provided. Another teacher also complimented the quality of the milk and noted how much the children enjoyed receiving it, *“The quality of the milk was always fantastic. It was delivered on time each week. The students really enjoy their milk”*.

Table 2.3.33: Teachers feedback on milk deliveries and temperature

Statement	Total N	N	%	N	%	N	%
	13						
Milk deliveries were on time		11	84.6	1	7.7	1	7.7
Milk was delivered at a suitable temperature		13	100	0	0	0	0

The overall feedback on the maintenance of the milk temperature was positive with most teachers finding it very easy (38.5%) or easy (15.4%) to maintain. An additional 46.2% found it manageable (Table 2.3.34).

Table 3.3.34: Teachers' feedback on maintenance of milk temperature

Response	Total N	N	%
	13		
Very easy		5	38.5
Easy		2	15.4
Manageable		6	46.2

Healthy eating, curriculum planning

As shown in Table 2.3.35, there were mixed responses to whether the SMS improved children's healthy eating behaviour, attitudes, knowledge and liking of milk. Most teachers neither 'agree' nor 'disagree' that drinking milk improved children's healthy eating behaviour (53.8%). 46.2% felt drinking milk was linked to an improvement in children's healthy eating attitudes and knowledge of milk, milk origins, and benefits of milk. Over half of the teachers (53.8%) reported the SMS resulted in an improvement of children's liking of milk.

Table 2.3.35: Teachers' feedback of improvements in healthy eating attitudes and behaviour following SMS

Statement	Total N	Agree		Neutral		Disagree	
		N	%	N	%	N	%
	13						
Improvements in children's healthy eating behaviour	4	30.8	7	53.8	2	15.4	
Improvements in children's healthy eating attitude	6	46.2	5	38.5	2	15.4	
Improvements in children's knowledge of milk and origins	6	46.2	5	38.5	2	15.4	
Improvements in children's liking of milk	7	53.8	4	30.8	2	15.4	

Table 2.3.36 refers to the initiatives used in the schools to promote healthy eating in different classes. 81.8% of teachers (n=9) reported not using any initiatives in 1st class, while 77.8% reported not using any health promoting initiatives in 3rd or 5th classes. Overall, there was a clear lack of healthy eating initiatives across the three classes.

All teachers (n=13) said they had a healthy eating policy implemented in the school of which 84.6% (n=11) mentioned using nutrition lessons in the curriculum. Only 15.4% (n=2) reported using Moo Crew resources to inform their teaching, however this could be attributed to the lack of awareness of the teachers on the availability of these resources, as mentioned in table 59.

Table 2.3.36: Initiatives in school to promote Healthy Eating in different classes

	1st Class			3rd Class			5th Class		
	Total N	N	%	Total N	N	%	Total N	N	%
	11			9			9		
Yes		2	18.2		2	22.2		2	22.2
No		9	81.8		7	77.8		7	77.8

2.3.2.5. Process evaluation findings: Observations

School characteristics

Eight schools that were demographically diverse were selected for observation as a representative of the total population. The schools were chosen from a range of regions of Ireland including Dublin (n=4), Wicklow (n=1), Cork (n=1) and Kerry (n=2). Of the eight-schools observed, 3 can be classified as small (<100 pupils) and the majority (n=5) as medium (100 to 499 pupils). Three of the schools being observed were classed as DEIS.

The chosen schools were contacted between the 24th of February and the 12th of May 2022. An explanation was given to the school principal or point of contact in the school on what the observation visit would entail. The class to be observed and date of the observation was agreed upon. It was agreed that the researchers would arrive 10 minutes before the time at which the milk is distributed in the class. A meeting location was decided upon, and any specific COVID protocols in the individual schools were taken into account.

The number of children in the class participating in the SMS varied from 27-94%. The highest proportion of children participating in the scheme was in DEIS schools.

School and class environment

The moo crew posters were placed prominently near the entrance of the schools, easily visible to both children and parents. No SMS information was observed in the classrooms visited. Activities relating to dairy, healthy eating, farming, the environment, or physical activity were observed in half of schools and in some of the classrooms visited. This included Healthy Ireland posters addressing physical activity, Green Schools' information, Sustainable Development Goals and The Big Grow growing kits. Although not observed, a few teachers recalled various activities carried out by the class and how they have related the SMS to these activities. For example, class trips to local dairy farms, exercise and physical activity and dental health. These appeared to be in the few schools with teachers especially interested and enthusiastic about the programme.

Organisation and distribution

The milk cartons arrived on time for all observation visits however upon speaking to the teachers in the schools, comments were made about issues with delivery on occasion. These issues included, late or missed deliveries, double quantities of milk being delivered resulting in storage problems for the schools. Only one school reported late deliveries of milk, and another school reported missed deliveries causing disruption to the scheme in the school. Milk products delivered were 189ml Avonmore milk cartons and 250ml Lee Strand screw top cartons. Teachers commented on the benefit of the screw top lids in the schools we observed them in, noting they prevented waste and were potentially more environmentally friendly than the cartons with straws. The milk was given out during mealtime, at either small break or big break, in almost all of the schools allowing students to drink the milk alongside their lunch or snack. In one school we did not observe the milk being given out as the students were free to take the milk at any point during the day. During the observations the milk was not distributed during class time in any of the schools and therefore it was not used as an educational opportunity.

On one occasion the research assistants attended the school for the scheduled observation visit to find the milk had not arrived. It was decided with the school that the visit would be rescheduled for the following day. However, the same problem arose the next day when no milk was delivered. Three attempts were made to visit this school before a successful observation could be conducted due to issues with milk delivery.

Quality

There were no quality issues observed during the observation visits. However, teachers in two of the observed schools noted quality issues in the past recalling milk cartons out of date and/or milk tasting “off”. The cases of the milk tasting “off” may have related to the way in which the milk was stored in the individual schools. For example, it was observed in some of the schools that the milk cartons were stored in the classroom with no refrigeration. Similarly, a school recalled quality issues relating to the milk delivery company regularly leaving milk products outside the school in direct sunlight in the morning before the school had opened. This resulted in warm products and change in the milk freshness.

Tasting

During the observations, in some of the schools, all children in the class tried the milk products. In one of the schools, approximately 50% of the children tried the milk product.

It was observed that if milk was distributed during small break, some students chose to not drink their milk immediately and instead saved it for a big break or to take home.

Children's reactions and behaviours shown in relation to the milk

The SMS students in the majority of schools showed no visible reaction to the milk products being distributed. The distribution of the milk was observed to be a normal part of the children's day and therefore there was little excitement shown by the students. Those that received the milk seemed to enjoy it and drank the milk easily alongside their own lunch or break time snack.

Teacher's reactions and behaviours shown in relation to the milk

Some of the teachers showed very little reaction or enthusiasm when it came to distributing the milk. The process seemed to be a typical part of the day and therefore there was little thought about it. It was observed in a school participating in both Food Dudes and the School Milk that the teacher prioritised the Food Dudes programme and did not spend any time on the SMS. No teachers in the observed schools tasted the milk with their class.

It was observed that the level of interest the teacher had in the areas of dairy or nutrition affected the level of conversation or emphasis placed on the scheme. For example, teachers relating the milk the children were receiving with class trips to dairy farms, exercise, and dental health.

Waste management

The empty milk cartons were sent home with the students in some of the observed schools. The packaging waste was dealt with in an environmentally friendly manner in half of the schools, with the children being given the responsibility of washing out their cartons prior to placing them in the recycle bin. There was leftover (unopened) milk in half of the schools. In the event of milk being leftover, some schools send the milk home with the children. Half of the schools offer the excess dairy products to all students in the class (both those in the SMS and not). In one school the left-over milk was sent into another larger classroom to be offered to students.



Supporting material

Support material was not used in any of the observed schools. When asked, teachers in the majority of the observed schools were unaware of the Moo Crew resources. The remaining schools recalled using Moo Crew resources in the past including the use of the Moo Crew toothbrushes, pencils, conversations around Farm to Fork and Grass to Glass and participating in the Moo Crew colouring competitions.

2.3.3. Conclusions

COVID-19 heavily impacted on how this evaluation was conducted. Due to this study being carried out during the COVID-19 pandemic and the low response rate in the follow-up questionnaires, the interpretation of the data is limited.

The results of the parent questionnaires indicate that parents whose children participated in the school milk scheme programme did not observe a change in their children's milk consumption of children when compared to parents reports of children in the control group, with over 40% in both groups consuming milk less than daily or never. However, when looking at milk consumption as a drink, There was a significant difference between the groups, with more in the SMS consuming milk as a drink daily at follow-up compared to the control group. Additionally, there was a significant difference in children's attitudes at follow up, with more children in the SMS group reporting liking the taste of milk and agreeing it was good for health than those in the control, thus highlighting some positive change as a result of SMS. Moreover, when consumption was analysed by child level participation, there was a significant difference, and a higher proportion of those participating in the programme (as reported by parents) were consuming milk daily compared to those who were not participating, indicating a potential positive effect of the SMS on children's milk consumption. It is also important to note, that at the time of the baseline questionnaire, the children may have already been receiving the milk and therefore could have impacted the results, and may not represent the through effects of the school milk scheme on consumption.

Despite the results of the pre-post analysis not indicating a significant difference/increase in milk consumption before and after the school milk scheme, some increase in milk consumption was reported and some improvements in children's attitudes were reported by children, parents, and teachers, which may indicate some degree of success of the programme. There was also a slight reduction in the consumption of flavoured milks and fizzy drinks, and a slight increase in consumption of water. These changes were not significant, but still highlight change in the right direction. There was a slight change in parents' attitudes in the pre-post analysis, with an increase in opinion on the importance of milk, an increase in agreement that milk is needed for vitamins

and minerals, and an increase in child liking of milk, thus further highlighting some positive changes as a result of the SMS.

The attitudes towards the SMS were largely positive, with most children liking receiving the milk, some parents reporting an increase in child's liking of milk, consumption of milk, and change in healthy eating attitudes. However, the sample size for the parents' attitudes was relatively small, therefore may not represent the true population. Feedback from teachers also indicate that the majority of children enjoyed the programme, and over half the sample agreed that children drink more milk as a result of the intervention.

Moreover, A re-evaluation of the layout and delivery of the programme may improve the impact of it on milk consumption and attitudes towards milk. The observation visits and teacher questionnaires indicate a need for the programme to be updated due to a low uptake of milk in the schools, and suggest a need for increased education of teachers about the available resources. Many aspects of the School Milk Scheme are left unused by schools e.g. lesson plans etc. due to a lack of awareness, which may have impacted the success of the programme.

2.3.4. Recommendations

Based on the results of this evaluation, numerous recommendations can be drawn.

1. Based on the findings this evaluation, a restructuring of the school milk scheme should be considered. The lack of enthusiasm by both teachers and students may be due to the fact that the milk is provided at schools daily all year around. The programme may benefit from an intervention programme design similar to that of Food Dudes, as it may create more of a focus on the milk at the time of delivery and generate more excitement and enthusiasm amongst the children. The intervention design of Food Dudes has been previously evaluated and shown to be effective in increasing children's consumption of fruit and vegetables (5), which could be attributed to the study design and the use of resources such as episodes/letters, charts and rewards, which is an incentive for the behaviour change amongst the children. These rewards were seen to be popular amongst the children in the current evaluation of the FDHEP, as mentioned above. If the SMS utilised an intervention design, incorporated rewards and placed greater emphasis on the resources provided, it may be more beneficial for increasing consumption and promoting healthy eating behaviours of the children involved. Incorporating activity with the SMS may help to give the programme a focus. Providing milk specifically for after PE classes or other active lessons will teach the students the importance of milk and growth through practical experiences.

Consideration should also be given as to whether the school milk scheme is being introduced too late in the development of the child. Children develop taste preferences from early life therefore greater investment could be made in promoting the continuation from breast or infant milks to cows milk as a main drink during weaning and in early childhood. In Ireland a pilot was conducted on the feasibility of adapting the primary school milk scheme to the preschool setting. The findings, which are being prepared for publication, (unpublished findings) highlight a more interactive programme feasible in the younger ages where the workload is lighter and also gives the opportunity for healthy habits to be developed as young as possible. In theory, the preschool milk scheme had a more flexible design in which the teaching staff input was utilised and had more of a children focused approach, incorporating elements such as 'messy play', language development and songs. However, the pre-school curriculum is considered more flexible than

primary school, therefore the teachers may have had more time to incorporate the scheme into their teaching routine. In addition, the regular contact with parents during early education enabled for smoother extension of the preschool programme to the home environment. The preschools also placed a greater emphasis on the use of resources which may be associated with the success of the programme, compared to the primary-school milk scheme, in which a lot of the teachers were not aware of these resources. Modelling aspects of the pre-school pilot for the primary school scheme may improve the impact of the school milk scheme for the younger children involved, however it may not be feasible with the curriculum in primary schools.

Also, greater enthusiasm from the teachers may benefit the programme, for instance, the teachers sampling the milk with the children and utilising the milk as an educational opportunity through the use of resources may create a greater emphasis on the milk and its benefits and encourage the children to consume the milk.

2. Based on the results of the teacher's post intervention questionnaires, numerous recommendations have been made. It is recommended that all schools are explicitly informed about the accompanying measures and resources linked to the SMS.

Additionally, to tackle the issue of warm milk, it would be recommended that all schools are explicitly informed of the availability of fridges provided by the NDC. Other options should also be considered regarding keeping the milk products cool in the school/classrooms. For example, the use of cooler boxes/bags.

The lack of Moo Crew lesson plans and educational material currently being used in schools suggests a need for a new approach for the SMS. A new design would hope to put a greater focus on the milk and provide the opportunity to use the scheme as a healthy eating educational opportunity through the utilisation of the resources provided.

3. In addition, it is recommended that all resources used in the program are re-evaluated for their use and purpose in promoting milk in the school environment. Certain resources may need to be completely changed and redesigned to promote and encourage milk consumption in primary schools more effectively.

2.4 References

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Section 3 Evaluation of the European Union School Fruit, Vegetables and Milk Scheme in Ireland: Post-Maintenance Phase 2022-23

3.1 Introduction

This section of the report evaluates the effectiveness of the European Union (EU) School Fruit, Vegetable Scheme, in primary schools in Ireland for the period 2022/2023 following the maintenance phase of the programme. The original design of the evaluation was to conduct a repeat survey with parents and children to measure whether children's fruit, vegetable and milk consumption changed over a longer time period and the impact of the maintenance intervention in sustaining consumption patterns. However, as there was insufficient time to conduct a repeat survey with parents and children, it was decided to change the assessment approach, and focus on the children's experience and perceptions of Food Dudes following the maintenance phase of the programme.

Capturing the voice of the child has been given increasing priority in development of interventions, policies and other matters that pertain to children since the introduction of the United Nation Convention on the Rights of the Child (2010). Engaging with children as participants of an intervention programme that is designed to change their behaviour is critical to understand whether the programme is acceptable to their needs and to inform improvements to the programme.

Two qualitative studies were conducted to elicit the views of children who participated in the Food Dudes Healthy Eating Programme following the 'Food Dudes Week'. This phase of the programme is an extension of the main intervention and aims to maintain long-term programme engagement and increase consumption through the entire school year. This shorter intervention includes short video clips with actors or sports figures who model trying different fruit and vegetables and deliver healthy eating messages. The week also includes delivery of fruit and vegetables during the week for children to try.

The first study was conducted following the Food Dudes week (maintenance programme) and the aim was to explore the perceptions of younger and older children who had participated in the programme. This study used a qualitative focus group approach. The aim of the second study was to gain children's insights into children's perceptions of the Food Dudes week and seek more broadly, their insights into what they would recommend to improve the programme. This second study also used a focus group approach but with a specific tool designed, given the children's experience of Food Dudes, to consider what other approaches could be taken to improving fruit and vegetable intake in school children. This study invited children aged between 11 and 12 years only as they have greater cognitive ability to be able to work with the tool provided.

3.2 Study 1: Children's perceptions of the Food Dudes Healthy Eating following the Maintenance Programme (FDHEP)

To achieve the aim of gaining children's perceptions of the Food Dudes Programme a qualitative research design was undertaken. Semi-structured group interviews were conducted with a sample of children from different schools that had participated in the Food Dudes Programme. The sample was not designed to be representative of all children living in Ireland but does include a mix of different school types to ensure that voices from different perspectives are captured.

Ethical Approval

The UCD Human Research Ethics Committee - Sciences granted ethical approval for this research on 20th December 2019 (Reference LS-19-93-Heinen-Murrin with amendments in July, November 2020 and a request to extend to 2023 granted in March 2021).

School recruitment

During the 2021/22 school year, a total of 344 schools were recruited by Real Nation to participate in the Food Dudes Healthy Eating Programme. The group of schools (n=116) proposed to be evaluated were assigned to Block 33 by Real Nation. As a result of COVID 19, significant delays impacted the implementation of the programme and, once the programme was re-established, a

list of 91 schools agreed to participate. The research team sent invitations to schools to participate in the evaluation via email (n=91) and then telephone (n=60). Between November 2021 and January 2022, 25 intervention schools (23 FDHEP schools & 2 FDHEP/School Milk Scheme schools) consented to participate in the longitudinal evaluation study via electronic or paper consent forms. Following completion of the quantitative (survey) arm of the longitudinal study, the participating schools were contacted again in September 2022 to invite them to participate in the children's evaluation of the programme. Five schools consented to participate: two schools in Co. Cavan (1 urban and 1 rural), two in Co. Cork (1 urban and 1 rural), and one in Dublin (urban).

Sample selection

Consenting schools were provided with detailed information about the study, including the focus group protocol, child and parent information leaflets. Schools were asked to invite children from 2nd and 5th or 6th class to participate to provide perceptions of children who initially received the main intervention and older children who would have received the shorter intervention; both classes participated in the maintenance intervention in Sept/October 2022. Two separate focus groups were conducted in each school, one with 2nd class children (7 to 8 years) and one with 5th/6th class children (10 to 12 years). Once a date and time was agreed between the school and the research team, the information leaflets and consent forms for parents and children were sent via email to the schools to distribute to the participating classes. Children were asked to return the completed consent forms in advance of the focus group date. If teachers received a high number of consenting children and parents, they were asked to randomly select eight children to participate in the focus groups.

3.2.1 Methods

Topic guide

The focus group topic guide was semi-structured to allow for key questions to be addressed while also allowing participants the opportunity to share their thoughts and for researchers to further explore participant responses. The key questions focused on the children's knowledge and

perceptions of the FDHEP; their understanding of how the programme worked ; insights on how the programme could be improved.

Focus group

The focus groups were held in areas/rooms separate from the main class rooms to help minimise distractions for the children. The focus groups were conducted by three garda-vetted researchers who had completed Children First Training. One researcher (the facilitator) led the discussion while the second researcher observed and maintained field notes (the moderator). Teachers remained present for some of the focus groups. Before the focus groups began, written parental consent was confirmed with the participating children and written consent was obtained from the children. The focus groups were recorded using two voice recorders and the audio files were transcribed verbatim into Microsoft Word documents. The transcribed data was coded for the school, focus group and participant and any potentially identifiable data from the transcriptions was deleted. Once the transcriptions were anonymised, the audio files were deleted. A process of descriptive data analysis was used, guided by the questions within the topic guide. Relevant quotations were used to illustrate themes that reoccurred across the different participant groups.

3.2.2 Results

A total of nine focus groups were conducted across the five participating schools with n=60 participating children between October and November 2022. The sample included a higher proportion of girls (65%) and 40% were in 2nd class.

Initial attitudes and awareness of the aim of Food Dudes

The children in most of the focus groups showed an understanding of the Food Dudes programme and why their school took part in the programme. Most children reported a positive association with the programme and were able to correctly associate the programme with fruit and vegetables. They were aware of the basic educational role of the programme, in addition to the aim of developing longer term healthy eating habits:

“teaching kids, like, veg and fruit”

“...for when you are older that you will be able to eat more fruit and veg”

In addition, some children recognised the impact of the programme on their own food behaviours:

“Every time I eat lettuce, I just think about it”

“When I eat, like, fruit and vegetables, I think of Food Dudes”

“I think it’s good too cause it makes children eat more fruit and vegetables and like they are not like forcing the children to like eat them, they are like doing it in a fun way so it kinda makes the children want to do it more. And then they like it at the end”

There were also, however, some initial negative impressions associated with Food Dudes where the texture of the fruit or vegetables was not to their liking or because they didn’t like the taste. However, this was not the experience of all children.

Not all children were clear on the purpose of Food Dudes as they expected the programme to involve tasting novel fruits and vegetables, not the varieties that they were used to:

“Why do we have the Food Dudes”

“...[don’t] understand why it’s called Food Dudes, because it doesn’t have all the fruit and vegetables”

However, overall, children had a positive response to the programme and valued it as a way of encouraging children to consume more fruit and vegetables:

“think it’s good because they are eating lots of fruit and vegetables that’s like gets them more energy and like stronger and I think it’s because it’s fun that they like eating lots of different fruits and vegetables all the time and it’s not eating sweets or sugar”

Initial recall of what the programme involved

All of the groups recalled watching videos as part of the programme and most remembered the storyline from the original Food Dudes characters in the main intervention rather than the videos from the maintenance programme. The children also remembered the reward aspect of the main intervention programme:

“... kinda evil people and the three people were trying to get all the people to eat healthy”

“.. Food Dudes prizes because when we do Food Dudes we get the prizes”.

Perceptions on programme components

Repeat Tasting

When asked about the repeat tasting, the children understood the reasons for this component of the programme and reported it as a positive aspect:

“ it’s like when you just eat the same food over and over again to get used to it”

“ cause it makes children eat more fruit and vegetables and, like, they are not, like, forcing the children to, like, eat them; they are, like, doing it in a fun way so it kinda makes the children want to do it more, and then they like it at the end”.

The children wanted more variety of fruit and vegetables to try something different but they did understand that repetition can help to build a liking for some foods:

“It’s the same every year”

“....more exotic fruit like pomegranate, maybe something interesting that you’d be interested in try other than a banana you probably see every day”.

“I didn’t try cucumber in a long time and then the Food Dudes, I tried it and then I liked it”.

“It took me several times to like blueberries”.

Some children were conscious of the seasonality of the fruits and vegetables on offer and suggested providing locally sourced produce:

“they should put more, like, cabbage or lettuce, like, we never had it before”

Some participants reported that their peers motivated them to taste the fruit and vegetables, while others didn’t see the need for the programme as they would automatically eat the produce if it was made available.

“Because all of my friends are doing it with me”

“you can have just a bowl of fruit and ask me to try it , not really the Food Dudes making me want to try something”

All the children reported liking fruit and vegetables but prefer fruit to vegetables. Some would prefer just a fruit offering every day while the majority would like a large portion of fruit and a small portion of vegetables daily. Children identified fruit as a snack which is eaten raw, whereas vegetables are typically incorporated into meals and cooked. Therefore, they have not been accustomed to eating vegetables raw:

“well for, like, vegetables, normally my mom would, like, have them all mushed, for instance, like in a lasagna so I can’t see them, but I still get the normal nutrients that I need. That’s the way I kinda prefer it, but not eating it, like, raw and, like, cold and watery”.

Children tended to have a preference for the fruit and vegetables that were offered at home, perceiving that those from home were different to those offered as part of the programme. Some commented on the texture and others believed that the produce tasted differently:

“Yeah, I eat the fruit and vegetables, but I wouldn’t eat it here cause it just doesn’t taste nice”

“... I eat blueberries but I don’t like the blueberries in the programme”

“I like eating vegetables and fruit at home more than the Food Dudes cause it tastes better than the Food Dude food”.

“someone got blueberries, but they were all mushed up so it was just juice in the bag”

“the peppers were sometimes slimy”

“the tomatoes didn’t really have much flavour”.

However, the children also had plenty of positive comments on the produce they received:

“Well the apples were really nice”

“Yeah, I liked the oranges”

“The oranges were really sweet and juicy”

“The cucumbers were nice”

“I like the blueberries”

“The bananas were nice”

Repeat Tasting suggestions

The children suggested that the quality and liking of the fruits and vegetables used in Food Dudes could be improved by delivering whole produce to the school and prepare them for consumption onsite. The preparation could be included as part of a skills training or the teachers could be asked to prepare them:

“...teach children how to prepare vegetables”

“they could be organic, and someone could just cut them up in the morning and serve them the very day rather than keeping them in boxes”

“... think I’d like them more if they weren’t in plastic and boxes, but they were just like fresh, organic fruits and vegetables, freshly cut”.

There was a suggestion about having fruit only as part of Food Dudes because the vegetables appeared to be more affected by the preparation and packaging.

“vegetables are nice, but they never really work out for the Food Dudes, the fruit just kinda works out better and doesn’t go all squishy and stuff or not as squishy they are still kinda squashed but not as bad as the vegetables. “

However, on reflecting this, the children suggested that the fruit could work better pre-cut whereas the vegetables could be prepared on site.

The variety of fruit and vegetables could be improved by a type of ordering system:

“they could, like, get the students make a list of which fruits they want and to then deliver them the ones to the students”.

Children made several suggestions relating to the sustainability of the programme. They were concerned with the use of the single use plastic wrapping; however, they were not aware that compostable packaging had been introduced in November 2022.

They proposed that any leftovers could be brought home in their lunch box or in bags branded with the Food Dudes logo. The children suggested that Food Dudes could be tied in with more with growing and harvesting their own fruit and vegetables, allied to the messaging around sustainability:

“I think the school should also let the children grow their own vegetables and just pick them whenever they want”

“because of global warming, like, there is kinda gonna be shortage of food at some stage and, like, we need to, like, do it ourselves”.

Role models

When children were asked about the videos they predominantly reflected on the videos from the main intervention although there were a few comments made on the videos from the maintenance programme:

“I like the videos because one of them, they were talking about what fruit and vegetables they like”

“I liked the videos because, like, they used to teach you to eat more vegetables and fruit”

“It makes me want to eat more vegetables and I like the videos”

“It’s kinda like sportspeople talking about fruit and stuff, vegetables”

“The people talking about fruit and vegetables,and telling you like what ones you should eat, I didn’t really like those”

Younger children reported liking the Food Dudes videos more than the ‘people talking’ as they had more action and were longer. Younger children were able to perceive the Food Dudes as role models, with several children identifying with a specific character:

“I’d like to be Rocco because he keeps the ball up”

“I just have Tom, he just likes to eat fruit and vegetables that I know, that’s why I eat them a lot”

“I like the girls, if I want to do a flip like Charlie, I just have to eat my fruit and veg”

Others liked the Food Dudes characters in general because they could see them ‘gaining energy’ from eating fruit and vegetables and they were doing the type of activities that the children enjoyed:

“... because they eat healthy and they stay active and I think a lot of people should eat less fast food, be more like them and, like, eat more healthier”.

The children also reported that they would be tempted to eat some of the foods that the Junk Punks ate but they would try not to eat them too often, demonstrating an understanding of the healthy eating messaging.

The Food Dudes characters were not perceived to be role models for the older age group, and they did not refer specifically to the short videos with the sports stars or actors designed to target their age group.

“... a little bit childish for the 5th and 6th class”

“... the videos are good for, like, the juniors and seniors and, like, not so good for older classes”.

“... it’s not really realistic to be fighting bad guys that take peoples vegetables”.

The older children made several comments about the format of the videos commenting on the quality of the food in the videos being different to what they received in school. They also commented on the realistic nature of the videos and the credibility of the people in the videos.

“The food in there doesn’t look the same as in the packaging”

“The food they use in the videos look fresher; they look nicer”

“It’s kinda obvious they are acting....They are like “ oh yes, look there is vegetables””

The children didn’t make many comments on the videos from the maintenance phase and may not perceive it as part of the overall Food Dudes programme. They identify the ‘characters’ of Food Dudes as being inextricably linked to the programme:

“In the videos they don’t really mention the food dudes, they just mention like fruit”

Role model suggestions

Several ideas were proposed on how to improve the role models in the videos including adding more characters and characteristics that might be appealing to a broader audience. They also mentioned that the videos could be longer or there could be a series of videos.

Several children were active on Tiktok and they thought using Tiktok influencers as role models could be a good way to influence them to eat fruit and vegetables. Other suggestions were similarly related to the idea of real-life, unscripted people giving their honest opinions about fruit and vegetables, different ways in which they could be eaten and how they tasted. Children seemed to want to learn more about preparing fruit and vegetables in different ways:

“they could kinda make a cooking show and show you different things that you could make with fruit and vegetables so that then you’ll try it and then you could make those things at home”.

Rewards

The children were generally positive about the reward aspect of the programme and that it was linked with eating fruit and vegetables:

“.. they made you feel nice”

“it made me feel like I’ve eaten every vegetable in the world”

“cause like even if you didn’t really like the fruit and veg at least you’d still eat it because it was something to look forward to at the end of the week”.

The use of the rewards appeared to vary between schools and teachers. In some schools they had to taste the produce to receive the reward whereas in other schools they did not have to try the fruit or vegetables:

“last time we did it, we didn’t get any rewards.....” “.....it wasn’t really much point [eating fruit and vegetables]”.

“you only had to take a bite to get a reward”

“sometimes I didn’t try them, but I still got the reward”.

Reward suggestions

There were some complaints about the quality of the rewards, including the bottles denting easily, pencils that didn’t sharpen, the rubbers didn’t erase well and some of the lunchboxes had broken.

The main proposal for the rewards was to improve the quality of the items and ensure they were long-lasting. The children liked receiving rewards that they could use for daily activities, including sports (football and skipping rope) and school supplies. The recommendations for stationery items were pens rather than pencils, rulers, pencil cases, notebooks, and stickers.

The water bottles had mixed recommendations, with some preferring the metal version as it keeps the water cold. Whereas others thought the metal bottle dented and leaked. For others, a plastic bottle was considered easier to drink from and, as they are transparent, it is easier to see how much water is left. They thought that there should be measurements on the bottle to keep track of how much water they drink. Older and active children would prefer a larger bottle for sports.

Some children thought that the lunch boxes were too small and that they should be deep enough to fit a whole apple and wide enough to fit a whole banana. Others liked the length and width but thought it should be deeper.

While most of the reward items were mentioned in the focus groups without prompting, the seed sticks were not mentioned. However, once prompted they did like receiving them and thought it was a good activity to start planting. They did suggest including better instructions and provide seeds for edible plants/vegetables rather than just flowers. Some children did not have the appropriate tools, including soil and flowerpots, so they weren't able to plant the seeds.

3.2.3 Summary

The Food Dudes Healthy Eating programme has been evaluated on multiple occasions. In previous evaluation studies, teachers and parents were asked for their opinions on the programme and reported on behalf of the child participants. This is the first time that the participating children were asked for their thoughts and perceptions on Food Dudes and whether it is acceptable and appropriate for them.

In the main, children echoed what the adults had previously reported. Children enjoy Food Dudes and are happy to participate in the programme. Some of the key components of the programme are particularly appealing to younger children. The children understood the purpose of the tasting

component but reported that the appearance and texture of some of the produce can be dissuading and may negatively influence some children's perceptions of fruits and vegetables.

The role models of the Food Dudes characters continue to be appealing to the younger children, whereas the older children, were not able to relate to the characters. The maintenance programme was redesigned in 2022 to take on board the comments from previous evaluations and produced videos with more a 'grown-up' communication style including adult actors and sports stars. However, the older children did not seem to identify the newer personalities in the videos as role models for their age group. They would like to see role models that are 'real life' and people that could influence their knowledge and skills on growing, preparing and eating fruits and vegetables. It is possible the full suite of videos from the maintenance programme was not viewed by the children that participated in these focus groups and therefore they may not have seen the videos which addressed some of these perceived needs.

Children do value the rewards and understand that the reward should be given for trying or consuming fruit and vegetables. They had several recommendations on the types of rewards, prioritising items that were durable which could be used in everyday life.

3.3 Study 2: Applying the CO-CREATE Dialogue Form Tool to Evaluate the European Union School Fruit and Vegetable Scheme in Ireland

The second study took a broader approach to understanding how older children perceive the promotion of fruit and vegetables in the school setting and how it could be improved. The Dialogue Forum Tool was developed as part of the Horizon 2020 funded CO-CREATE and EAT Forum (<https://eatforum.org/initiatives/co-create-about/>) to bring together young people, policymakers and businesses to action commitment and policies to enable healthy nutrition and physical activity habits for obesity prevention. Co-creation is a key methodology in the design of the Dialogue Forum Tool, as young people were involved in all stages of the development process.

Ethical approval

The protocol was approved by the UCD Human Research Ethics Committee (Reference LS-23-31-Murrin).

School recruitment

Schools were chosen based on whether they were receiving or had received fruit and vegetables in the recent academic year through the EU School Fruit and Vegetable Scheme. Due to time and transportation constraints, only Dublin-based schools were considered. Additionally, some schools that were approached for the evaluation had not participated in the programme in recent years or only younger classes had taken part and consequently, these schools were deemed unsuitable. Six schools were selected among the total number of schools after considering their location and participation in the programme in recent years. The selected schools were contacted by telephone in September 2023 and invited to participate in the study. When primary schools expressed interest in taking part, the researcher sent a school information sheet and school consent forms to the principal via email. Three schools (DEIS $n=1$, non-DEIS $n=2$) consented to participate in the study.

Sample selection

Once school consent was received, the researcher asked the principal or the teacher to select one 5th class in the school to participate. The researcher sent parent and child information sheets and consent forms to the school and requested the study material be distributed to the parents of the chosen 5th-class students. The principal or teacher obtained informed written consent from parents and students in advance of the Forum. The principal or teacher was asked to select six consenting students of any gender to participate in the study. Participants were selected based on having diversity in background and perspectives on the scheme.

3.3.1 Methods: Applying the CO-CREATE Dialogue Forum Tool

The Dialogue Forum Tool (see Figure 1) starts as a blank canvas and gradually becomes populated with a variety of written expressions and sticky notes as the discussion progresses. First, the

moderator introduced themselves to the participants and led an icebreaker activity to help the participants feel comfortable. At the beginning of the dialogue forum, the moderator explained that children are not consuming an adequate amount of fruit and vegetables. They were then presented with a 'policy idea' which serves as the topic of discussion throughout the dialogue forum. The policy idea was introduced by posing a question to the participants about what actions they would take in their school to encourage students to consume more fruits and vegetables, assuming there were no limitations or obstacles. The policy idea was displayed on a laminated sheet so participants could view it throughout the dialogue forum. The main objective of the moderator during the dialogue was to encourage participants to engage with the Dialogue Forum Tool.

The Dialogue Form Tool follows a four-step sequence of activities, where each activity is centred around a question to guide participants. This allowed participants to be engaged in the discussion as well as allowing them to observe the progression of dialogue and the contribution of the other participants. The participants were invited to reflect on what they cared about regarding the policy idea, identify obstacles and opportunities and recognise factors that the idea needs to consider. The final step was for the participants to consider which actions needed to be taken and which actions they could carry out themselves.

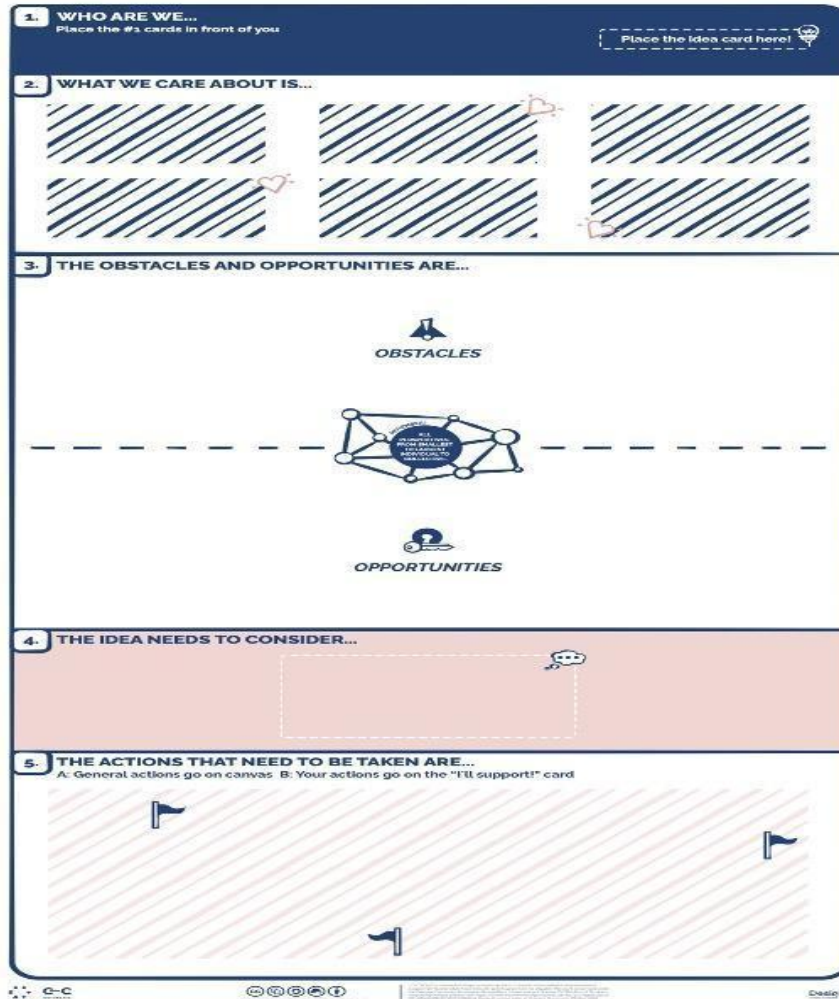


Figure 1. The CO-CREATE Physical Dialogue Forum Tool.

Data collection and analysis

Two garda vetted and Child First Trained researchers (a moderator and a note taker) visited the primary schools and conducted in-person dialogue forums using the physical tool. Before the dialogue forum, the moderator was provided with training in a preparatory meeting to test and familiarise themselves with the physical tool.

The research was conducted separately from the normal class activities and children were brought to a separate room or office by a member of staff. Data collected included the participant's responses to the activities on the canvas and the notes gathered by the notetaker

and the moderator during the dialogue forum. The moderator conducted the analysis manually by identifying themes in the data relating to participants' attitudes toward the programme. The moderator analysed participant quotes independently to identify key quotes to represent each theme identified from the dialogue forum.

3.3.2 Results

Between the 10th and the 25th of October 2023 three dialogue forums were carried out in three schools in Dublin (1 DEIS and 2 non-DEIS). A total of n=17 children participated in the qualitative research (n=8 female and n=9 male).

What we care about?

The moderator asked the participants what they thought was important about the policy idea. They were prompted to identify why they think the programme is important. The moderator also used prompts including 'Why is it important to eat fruits and vegetables?' and 'What do you enjoy about eating fruit and vegetables?'.
Health

Health

Several of the participants emphasised the significance of consuming fruits and vegetables for maintaining good health. One participant pointed out that children generally do not consume enough fruits and vegetables to maintain a balanced diet. Another participant highlighted the importance of fruits and vegetables specifically for young children.

"I think fruit and vegetables are good for you because of what they contain can keep you healthy"

"I think it is important because most kids probably don't have enough fruit or vegetables that they need to have a healthy balanced diet"

The participants were asked about their interpretation of 'healthy', which generated contrasting viewpoints. One participant highlighted the concept of 'balance', where having both a sausage and a pancake was considered balanced. Another participant emphasised that healthy food is

beneficial for mental well-being and helps concentration. The significance of breakfast in improving concentration was also identified. Additionally, one of the participants brought up the importance of fruits and vegetables for mental well-being and linked the current intervention to this health outcome.

“Food Dudes is important because it's good for your mental health”

Influence on younger children

A few participants acknowledged the significance of young children consuming fruits and vegetables, which in turn aids in cultivating a liking for this food group as they grow older.

“The younger kids in the school learning and enjoy eating fruit and vegetables so they can like it when they grow up”

Taste

Some participants expressed they enjoyed the taste of fruit and vegetables. Many of them showed a preference for berries and fruits with sweet flavours rather than vegetables.

“I like eating fruit and vegetables because they taste nice and help your body”

“Because they're nice and you can be healthy. Banana and strawberry they're buzzing”

The obstacles

The moderator asked the participants about their challenges with the programme and if they had encountered unfavourable situations. The moderator simplified the question by asking prompts such as ‘What things could make it hard for you to eat fruit and vegetables?’ and ‘Why do some children have trouble eating enough fruits and vegetables?’

Sensory attributes and individual preference

Many participants noted a preference for the taste, texture and appearance of certain types of fruit and vegetables.

“They might think it's yucky or they might not like the colours”

“Because they might not like the food and refuse to eat it”

“Because they look gross”

“Maybe the colour might disgust them”

Another participant noted there can be a lack of interest in trying new foods. They explained some children would prefer to eat their lunch rather than try out new fruits and vegetables in the classroom.

“It's because they have other stuff to eat and they probably don't like them as much as their lunch”

Some participants explained that junk food is more appealing than fruit and vegetables.

“There is no problem just kids don't like them, sweet and fast food are bad but nice”

“Kids don't like fruit because all kids want to have chocolate or fast food and will never try fruit and vegetables”

Fear of unfamiliarity

Apprehension towards trying unfamiliar foods was discussed. Some participants said they would feel nervous trying something new.

“Maybe they never tried it before so they could be nervous”

They also mentioned that younger children don't fully grasp the advantages of eating fruits and vegetables like older children do. Older children are more likely to be motivated to try new fruits and vegetables because they understand the health benefits.

“I think the obstacle is that they are too scared and don't understand how good they are for you”

Storage and quality

Participants explained that the quality of the fruit and vegetables can be an issue. One participant mentioned they are not stored in a refrigerator. Another participant stated that when they receive the fruit and vegetables, they are often warm and mushy.

“The quality of them is not the best and they are not put in a fridge”

“I think the problem is the way they store them and the quality of them”

The opportunities

The participants were initially asked about the benefits of the programme. Many participants mentioned the positive effects on health that come from consuming fruits and vegetables, as mentioned previously. They were also asked how the programme could be improved. The moderator explained to the participants that they could focus on the challenges presented in the earlier activity and generate ideas for potential solutions.

Presentation

The participants identified ways to improve the presentation of the fruit and vegetables which would favour children experimenting with fruits and vegetables they never had before. Some participants came up with the idea of cutting the fruit and vegetables into shapes and adding faces to them to motivate younger children to try them.

“Kids would refuse to eat them so I think they should present them in a certain way to attract kids”

“I’d put a face on an apple and make shapes out of the fruit and vegetables”

“Shapes to trick them and try to ask them to at least try it and make it look better”

Quality

Another participant focused on improving the quality of the fruit and vegetables.

“I think you should you should improve the quality of the fruit and vegetables”

Advertising

Participants pointed out that the programme video campaign included fruits like watermelon and other interesting fruits, however, the participants explained they did not get to try any of these particular fruits. One participant also noted that there is a need to upgrade the overall advertising of the programme.

“I think Food Dudes should improve advertising around the country”

Packaging

One participant suggested that children could use the packaging of fruits and vegetables to create art and win prizes for the best designs.

Rewards and activities

The concept of engaging in games and offering incentives to children and classes who consume the highest amount of fruits and vegetables was mentioned.

“We can do a game in that you close your eyes and eat a vegetable or fruit and then you can ask them what they eat”

“If the whole class eats fruit and vegetables the whole class won’t have homework”

Participants talked about the concept of getting involved in food preparation, cooking and making smoothies.

“You can make, like a fruit salad or even make a dinner, stuff like that”

“I think having smoothies once a week would be nice”

“Should do a thing like a smoothie day, but only if you earn it. So throughout the week, you have to be good then on smoothie day if you are good you get a smoothie”

Sports Influencers and Marketing

One other participant addressed the significance of utilising sports influencers to endorse the programme, while also suggesting popular low-calorie drinks could be used to market the programme.

“I think a lot of athletes could influence children to eat fruit and vegetables”

“Football players inspire me to be healthy”

They also mentioned specific sporting figures.

“Mesi” “Johnny Sexton” “James Talbot”

The idea needs to consider..

The participants were asked to identify the key factors that should be taken into account to help improve the programme.

Influence of peers and family

One participant pointed out that the influence of friends and family plays a significant role in determining whether or not someone will consume fruits and vegetables in the home and school environment. They also explained that when one person dramatically expresses their dislike for fruit and vegetables in their class, others copy this behaviour to blend in and avoid standing out.

“Family and friends or just other people you see have a big impact because you can see someone calling it gross so you think that too. The peers would be very important. Family also helps to make sure you’re eating healthy at home too.”

Packaging

The concept of packaging harming the environment was recognised.

“If the packaging was bad for the community they might say it might be dangerous to carry out”

Strategy

It was suggested to create specific strategies for different age groups. The interventions for younger children should be different from those for older children, and vice versa. They suggested that older children could be more involved in the programme and visit younger classes to promote the programme.

“They should go to other classes and explain why they should eat fruit and vegetables”

The older children also pointed out that the videos in the programme were childish and not tailored for their age group.

The actions that need to be taken are..

The participants were asked to think of new and creative ideas or actions that could improve the programme.

Reward system

The participants suggested the idea of implementing an improved reward system. They mentioned adding prizes like board games, plush toys, and wristbands to the existing reward system. They also mentioned having a draw for people who try a new fruit or vegetable during the week, with a chance to win prizes. Furthermore, they brought up the concept of giving students additional sports or art activities as a reward.

“Say if they eat a vegetable or fruit every day of the week then we get a sport or art”

“If we eat the fruit and vegetables we get half an hour more sport”

Videos

The participants thought it would be a good idea to create videos and songs as a way to encourage others to eat more fruits and vegetables, especially younger children.

“You could do YouTube videos or ads for it”

“To help kids eat fruit is watching videos every day of people eating food to make it look nice”

Talent show/play

A few participants suggested organising a talent show or a play to encourage students, particularly younger children to eat more fruits and vegetables.

“Last year with our old teacher we did acting. Convince little kids they’re as good as chocolate”

“We could participate in a talent show”

Mascot/Character

It was suggested to have a mascot to represent the programme. They said that having a mascot would make it more enjoyable for students to participate in the programme. They talked about other mascots they knew and liked.

“If Kevin the carrot comes to the school, might eat them”

Peer leaders

One participant proposed that introducing student leaders who can encourage their peers to eat more fruits and vegetables might be a great way to motivate students to make healthier food choices.

“Promote healthy eating by peer leaders and teachers”

Student Council

Another participant said that if the student council supports the programme, more students will become aware of it and be encouraged to participate.

“Get the school council to talk about it”

Teachers

Another participant suggested that teachers should be included in the programme. They explained it is essential to observe teachers actively involving themselves in the programme, especially when it comes to younger children.

Support

Lastly, the participants were asked what actions and ideas they would support in their school to help foster student engagement in the programme. They supported the idea of promoting the consumption of fruit and vegetables through the creation of posters. Additionally, some participants agreed to become peer leaders and help raise awareness of the programme.

“Maybe we can make colourful posters about eating vegetables and fruit and put the posters all-round the school”

“I would love to be a peer leader and tell kids about fruits and vegetables. I’d also make posters”

Other participants mentioned that they would be in favour of the concept of creating smoothies and preparing and shaping fruits and vegetables.

“The shapes and making smoothies and fruit salad. I love doing this. I think other kids could eat their fruit and vegetables”

3.3.3 Summary

The findings from this study provided insight into the children’s experience of the Food Dudes Programme which had previously been reported on by parents and teachers. This group of older children reported on the importance on the quality of the fruit and vegetables and how good quality produce enhances the experience of the programme. The sensory properties, and particularly the visual aspect and how they are presented, can greatly impact a child’s motivation to eat the fruit or vegetable. The participants shared suggestions for improving the visual appeal such as shaping the fruits and vegetables or adding facial features. These ideas would be particularly beneficial for younger children.

The children explained that peers have a very important role to play on the success of the programme. As children’s attitudes are shaped by their peer’s perspectives, if one or two children portray a positive experience, there can be a ripple effect, which can lead to a group of peers conforming to the same positive attitude about the programme; however, the same is true of a negative experience. Therefore the children model their behaviour on their peers. However, the participants highlighted that their peers are not the only ones who can impact their engagement with the programme. They explained the idea of their teachers taking part would motivate them to also participate, especially the younger children. They believed the idea would foster a sense of equality if all individuals in the classroom engaged with the programme.

With regards to factors outside the school setting, participants acknowledged that the influence of family greatly affects a child’s willingness to participate in the programme. Participants explained that if children have access to fruits and vegetables at home and if parents include them in their child’s packed lunch, those children would be more likely to take part.

The children pointed out that several external factors play a role in their decision to participate in the programme. There was an expressed interest in consuming fruit and vegetables if endorsed by sports figures, with specific emphasis on rugby and football players. The children participating in these focus groups did not refer to the sports figures in the Food Dudes videos. The idea of having a mascot to represent the programme was also suggested during the dialogue forums. Further development of such concepts could be explored and integrated to increase the popularity of the programme.

The concept of using digital media to promote the programme was discussed. YouTube has the potential to serve as an advantageous platform for educating children about the programme and boosting its popularity. It could be used to encourage children to participate and create videos of their own to help support the programme which also enhances their creative abilities and allows them to feel valued. Moreover, the concept of choreographing dances featuring Food Dudes and introducing a talent show might serve as an enjoyable and interactive approach for children to perceive Food Dudes positively.

The children explained that the videos promoting the programme are outdated and targeted at a younger audience. However, the maintenance programme has been redesigned and taken on board the feedback given on the Food Dudes programme, particularly in relation to the different communication approaches that are necessary for younger and older children.. Updating the videos to mimick the communication style used by social media influencers may appeal appeal to this pre-teenage audience and may have a positive effect. In addition, to supporting the programme, older children could take on a more active role in advertising the programme in their school, especially through the use of posters and the introduction of peer leaders, as younger children often look up to older children as their role models.

A reward system was recognised as an effective approach to encouraging engagement in the programme. Although the programme already offers rewards such as pencils, erasers and rulers, children expressed that they would appreciate more desirable incentives like board games, plush toys, and wristbands. Other, non-material rewards were discussed including extracurricular activities such as sports and arts activities, while others preferred the reward of no homework.



The children expressed their interest in engaging in activities related to food preparation and cooking, such as making smoothies or participating in cooking classes to create meals that include fruits and vegetables. The children displayed great enthusiasm towards making smoothies and proposed using them as a reward for active engagement in the programme. Incorporating some form of practical cooking or a food preparation component could potentially improve the programme.

Section 4 Overall summary and recommendations

The EU School Fruit, Vegetable and Milk Scheme provides a significant opportunity to promote the consumption of these core food items that are fundamental to the healthy eating habits of school children in Ireland.

The Food Dudes Healthy Eating programme is an effective intervention to increasing liking of fruits and more particularly vegetables. Following the main intervention the proportion of parents reporting that their child was consuming 3 or more servings of fruit and vegetables had increased, although the difference wasn't statistically significant. The programme, in its current format, appears to be more acceptable to younger children who can be encouraged children to try different foods, if variety is provided. Children enjoy receiving fruit in schools and, to a lesser extent, vegetables but overall they enjoy being part of the programme. The accompanying measures, and in particular, the rewards, are valued by children and provide an important incentive for children to try something different. The School Milk Scheme provides an important source of milk for children during their school day. For those children that participate in the scheme, they enjoying receiving milk in school and are more likely to achieve the recommended servings of dairy per day. The difficulty with the milk scheme is the level of participation both at child level and school level. Both parents and teachers have strong attitudes towards the scheme, possibly through personal experience, and their decision not to participate in the scheme prevents children being able to taste milk or to access milk on a regular basis.

The schools reported, in the main, that they were satisfied with the quality of the produce and the delivery of the items to their schools.

The issue of access was a dominant theme that arose from the evaluation work conducted during the COVID-19 restrictions. Children and their families experiencing disadvantage were very positively receptive to their access to fresh fruit, vegetables and milk during this difficult time. Going forward, these vulnerable children may require a different approach to support fruit, vegetable and milk consumption within the school food schemes, as while they may have an opportunity to access these foods in school, there may not be the same opportunity to 'practice' these behaviours in the home. Overall, the children and their parents sampled for this evaluation,

have a positive attitude towards fruit, vegetable and milk consumption and the benefits it has for their health. The messaging around the health benefits of these food items appears to be already known to the parents and children in these schools, possibly through general knowledge or other food and health activities taking place in schools. Therefore, the schemes should look to build on the current determinants allied to a socio-cognitive and ecological approach (including modelling, peer influence, and skills including tasting) rather than a knowledge-deficit approach.

One consistent observation as a determinant of the implementation of the scheme was the importance of role models. Firstly, children model their food behaviours on their peers. They recognise the potential for children in older classes to have a positive influence on the younger classes. Therefore, having appropriate role models for older children is critical if they are to engage effectively with the programme and, in turn, influence the younger children. Equally, the children see their teachers as role models and the influence of their positive attitudes towards the programmes. If teachers were supported to engage with the schemes and recognise their roles in promoting positive food behaviours this is likely to have a significant impact on the effective implementation of the programmes. Allied to this is the potential to foster a more positive culture within the school environment that physically and socially supports fruit, vegetables and milk consumption.

While the current focus of the SFVMS is on healthy eating behaviours, the issue of sustainability and food waste was a recurring theme that was reported from children, parents and schools. Integrating messages and activities on ‘sustainable healthy eating’ into future strategies of the scheme would ensure that children not only recognise the importance of these food items for health but also form an appreciation of their value from a ‘grass to glass’ perspective.

Children have agency in expressing what is suitable for their needs and therefore, recognising and acting on these needs is fundamental to effective intervention design. Therefore, as the target group for the EU School Food Schemes, children should be a core partner in the design and delivery of future school food programmes.



Evaluation of the EU School Fruit, Vegetables, and Milk Scheme in Ireland:
Interim Report



An Roinn Talmhaíochta,
Bia agus Mara
Department of Agriculture,
Food and the Marine



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