Year 7 and 8 New Zealand Food Survey

Massey Dietetic Students:
January 2017

Zakiya Bi-hussein
Rachel Blair
Lisa Henderson
Ashleigh Jackson
Alex Lawn
Saskia Stachyshyn
Emily Sycamore
Amanda Whitford
Vicki Williams

MASSEY UNIVERSITY

vegetables.co.nz

Heart Foundation

Executive Summary

Developing the life skills to prepare healthy meals will empower our children to be able to access and enjoy a nutritious diet within their own budgetary, cultural, social and time constraints over a lifetime. The school curriculum is the most appropriate place to teach and develop cooking literacy skills as it reaches all children and provides cross curricular learning. The curriculum states; 'it is expected all children will have had the opportunity to learn practical cooking skills by the end of year 8'. The current education curriculum provides for this to occur, ***but does it***?

Vegetables.co.nz and the Heart Foundation partnered with the Massey University Dietetic programme, to investigate the current food programmes being run in New Zealand schools. The purpose of this study was to investigate the teaching of food programmes taught to Year 7 and 8 students in New Zealand intermediate and composite schools by developing a survey (suited to multiple forms of delivery) that outlined current practice and identified gaps and challenges. Secondly, based on these findings provide recommendations for strengthening the 'Health and physical education' and 'Food technology' curricula.

Nationwide, 102 teachers from 101 schools participated in this study. Surveys were completed via 20 face-to-face interviews, 28 telephone interviews and 54 online surveys. The participating schools ranged from decile one to ten. Almost half of the schools (44%) had a decile rating of less than five. The majority of the teachers (83%) surveyed had a 'technology' based role.

The study identified a disparity between schools in what is being taught. There was a general move towards a food technology focus, utilising the 'brief, design, produce and evaluate' model. Although this shift promotes a better transition into vocational training, it may be at the expense of students learning necessary life skills. It highlighted the need for Year 7 and 8 food teachers to be supported in integrating current curriculum requirements with key aspects of meal planning, preparation and health to ensure this age group has an acceptable level of food literacy.

Several recommendations were made based on the results of the present study. Firstly, there is a need to identify and define 'best practice' guidelines for teaching Year 7 and 8 students' food literacy and skills. 'Best practice' guidelines should clarify the overall aim of providing a food

programme to this age group. Where possible, guidelines should work within the current food programmes being held for Year 7 and 8 students in New Zealand schools.

Additional recommendations were made for the provision of resources and the professional development of food teachers. Development of resources should consider challenges identified by teachers, including budget and time constraints. They should also incorporate key themes from the 'Food technology' and 'Health and physical education' curriculums to allow for better integration into the lesson plan. Teachers indicated they would benefit from a platform to promote sharing of knowledge, activities and the ability to compare lesson plans.

Contents

1.0 Introduction

Cooking literacy is defined as the ability to prepare and cook a healthy and culturally appropriate meal (1). Establishing cooking literacy during childhood or adolescence supports both immediate and long-term health. This is extremely important as New Zealand has the third largest percentage of overweight or obese children worldwide (2). Obesity not only increases the risk of diabetes, high blood pressure and cardiovascular disease; but has also been known to affect self-esteem, academic accomplishment and future earning potential (1).

The two main environments for developing cooking literacy in children and adolescents are at home (from family), and at school. Research has shown that involving children in preparing family meals aids in bringing the family together, preventing behavioural problems and leading to achieving better grades in school (1). The creation of a meal teaches children important skills about linking processes together. Children can take pride in producing a meal, creating memorable family moments and increasing self-confidence. Changes in family structure, longer hours, tighter budgets and solo parenting can result in children having fewer opportunities to acquire cooking literacy at home. As these children transition into adulthood, not having adequate cooking literacy can result in resorting to consuming convenient and readily available, energy-dense and nutrient poor foods (1).

Regardless of socio-economic status, ethnicity, or gender, all children spend a significant amount of time at school, therefore making it an opportune environment to learn cooking literacy, which is a basic life skill (1). Research on food literacy programs in schools highlighted several benefits for children including improved nutrition-related knowledge; increased practical cooking skills; increased confidence in the kitchen and altered food preferences (1). These benefits resulted in positive dietary changes, such as an increased consumption of fruit and vegetables. A study also found that children who received an 8-week nutrition and cooking programme were more willing to help prepare food at home and were having a positive influence on their parents, encouraging them to adopt healthier cooking methods and prepare healthier meals (3).

Current curriculum

New Zealand students are expected to receive some food education by the end of their intermediate years. Currently the New Zealand curriculum addresses food literacy in the following ways. The Ministry of Education's Health and Physical Education Curriculum (HPE) has seven key learning areas, one of which is 'Food and Nutrition Education' (4). Within this learning area, it states "it is expected that all students are given the opportunity to learn practical cooking skills by the end of Year 8" (4). It also states that students are given opportunities to gain the following (5):

- Knowledge and understanding of the nutrition, people across all age groups require for growth and development.
- Understanding of how nutrition, exercise and well-being are related.
- Knowledge and understandings of the cultural significance of food and of rituals associated with food and nutrition.
- Knowledge, understandings, and skills for selecting and preparing food and eating patterns that reflect health-enhancing attitudes towards nutrition.
- Knowledge of the costs associated with buying and preparing food and the skills necessary to meet nutritional needs on a limited budget.
- The skills needed to prepare food successfully and safely at a personal level and as a shared responsibility.

Although this provides teachers with flexibility within the classroom, these guidelines can be interpreted in various ways and could lead to students not being taught the specific skills required to achieve adequate food and cooking literacy.

Food is also incorporated as a component of the technology curriculum (4). A supplementary document, called the "Food Technology Toolbox" can be used when planning food technology programmes (see appendix document) (6). The toolbox outlines the five key components of food technology including:

- Food formulation
- Food safety and legislation

- Food packaging and labeling
- Food product testing
- Food production and preservation

Under 'Food Formulation' is a sub heading titled 'manipulation of ingredients' which states 'Basic cooking skills are to be built on and reinforced at each year' (6). However, the toolbox is only a guide and does not specify what the basic cooking skills are. Again, this is left to teacher interpretation. There is speculation that the flexibility, level of interpretation and integration of these two curriculums into a single food programme could result in inconsistent levels of food and cooking literacy being taught to children throughout New Zealand (1).

Resources

A substantial number of 'healthy eating' resources have been developed for use within the school environment, however it is unknown how many of these are appropriate for use within food programmes. Several organizations have produced resources and programmes aimed at improving food literacy including 'Just cook', 'Cook for life', the Nutrition Foundation, the Heart Foundation, 5+ A Day and Vegetables.co.nz. Schools can also help to strengthen food literacy by providing an environment that encourages healthy eating (5). 'Fuelled4life' is an initiative which supports implementing a school tuck-shop policy for healthy foods using the "Food and Beverage Classification System" (7).

1.1 Year 7 and 8 New Zealand food programme survey

Further research is required to understand the content of food programmes being implemented at a Year 7 and 8 level. Additionally, to investigate what resources are currently available to support these programmes and what else may be required to ensure an adequate level of food literacy is achieved in this age group. Vegetables.co.nz and the Heart Foundation partnered with the Massey University Dietetic programme, to investigate the current food programmes being run in New Zealand schools.

The purpose of this study was to investigate the teaching of food programmes taught to Year 7 and 8 students in New Zealand intermediate and composite schools by developing a survey (suited to multiple forms of delivery) that outlined current practice and identified gaps and

challenges. Secondly, based on these findings provide recommendations for strengthening the 'Health and physical education' and 'Food technology' curriculums.

2.0 Methods

2.1 Participants

Respondents were 102 teachers, from 101 schools which provided a food programme to Year 7 and 8 students. An additional ten schools (8.9%) responded and were found to not offer a food programme to this age group. Verbal and face-to-face interviews were conducted over three weeks and the online survey collected responses over eight weeks.

2.2 Recruitment

Teachers included in the project were recruited from July to September, by the Heart Foundation, Vegetables.co.nz and Massey University Dietetic students. Recruitment was via established contacts or by directly approaching those schools identified as teaching Year 7 and 8 students. It was requested that teachers who were interviewed/surveyed be actively involved in running the food programme.

2.3 Study design and procedures

Survey development

Recent literature was used, in conjunction with the aims and objectives outlined by the stakeholders, to guide the development of a survey to investigate the content of cooking classes delivered to Year 7 and 8 students throughout New Zealand (1). The process of survey development is outlined in Figure 1.

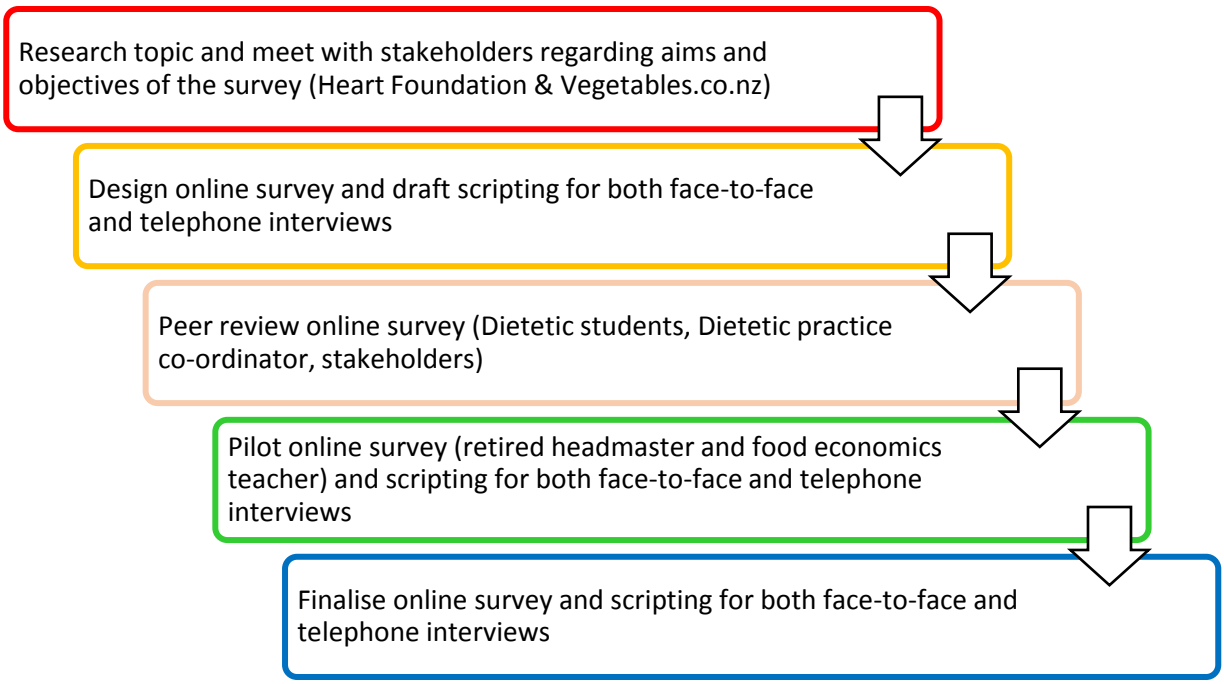

Figure 1. Outline of survey development

Survey questions were kept consistant, regardless of the method of delivery, to ensure results could be compared across the full subject group. Questions were grouped into five key areas of investigation outlined below:

- Participant demographics
- Food programme curriculum
- Recipes and ingredients
- Nutrition theory and resources
- Food related school facilities – Tuck shop/canteen and vegetable and fruit gardens

Data collection

A multi-platform approach was implemented to reach schools nationwide. The platform on which the questionnaire was delivered was dependent on the schools' location, and the teacher's preferred method of survey completion. The three options were face-to-face interview (available to Auckland schools only); phone interview (nationwide) and online survey (nationwide). Face-to-face and phone interviews were conducted by a Massey University Dietetic student using a

scripted survey (see appendix document), taking approximately 30 minutes to complete. The online survey was created using SurveyMonkey.com and took approximately 15-20 minutes to complete. This was distributed, via email, to all teacher members of the Home Economics and Technology Teachers Association of New Zealand (HETTANZ) and those members of the New Zealand Association of Intermediate and Middle Schools (NZAIMS) who had opted to receive contact. Participation was voluntary and teachers were given a collection of resources from the project stakeholders (Heart Foundation and Vegetables.co.nz) in appreciation for their time. Each school was also entered into a draw to win an iPad Mini courtesy of Vegetables.co.nz.

3.0 Results and discussion

3.1 Participant demographics: schools and teachers

One-hundred-and-two teachers from 101 schools participated in this study. An estimated 26,500 Year 7 and 8 students participated in food programmes at the 101 schools accessed. The surveys were completed via 20 face-to-face interviews, 28 telephone interviews and 54 SurveyMonkey online surveys. Participating schools were spread nationwide as shown in Figure 2. However, a large proportion of participants (from 37 schools) were from the Auckland region due to the recruiters being based in Auckland.

The participating schools ranged from decile one to ten. Almost half of the schools (44%) had a decile rating of less than five. The majority of the teachers (83%) surveyed had a 'technology' based role. Other common job titles included home economics teacher and hospitality teacher.

Figure 3. Regional distribution of participating teachers across New Zealand (n=102)

The majority (77%) of the teachers surveyed had a role in teaching food technology, as shown in Figure 4. Job titles included under other were school nurse and table-to-garden coordinator.

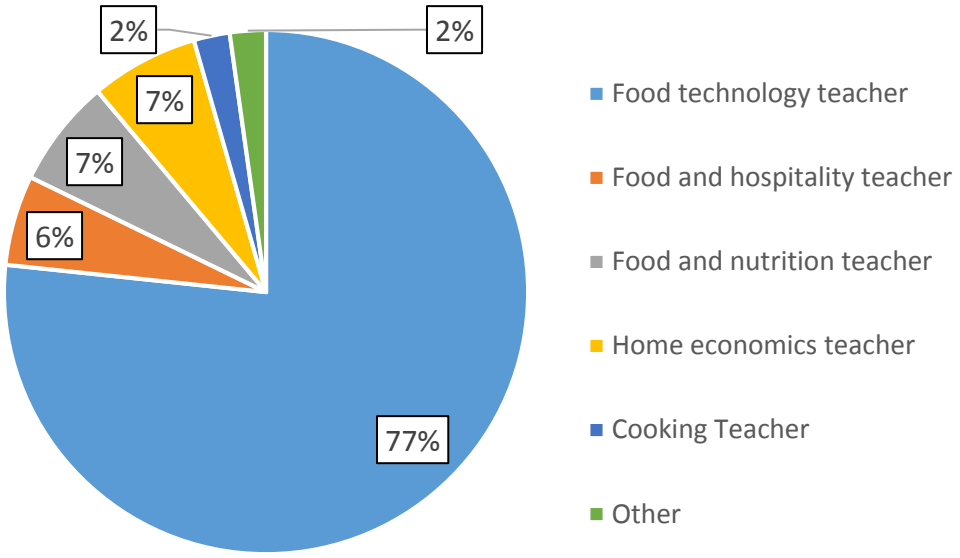

Figure 4. Job titles of surveyed teachers

3.2 Cooking curriculum

The duration and frequency of food programmes varied greatly between the schools. Classes commonly took place 1-2 times per week, over a duration of 6-14 weeks, with 50% of schools running programmes over one term. The differences in frequency meant that some students received a continuous block of teaching, whereas others had a 1-2 week break between classes. Where gaps between classes were extended, teachers reported students had sometimes forgotten concepts/ideas from the previous sessions. The duration of classes ranged from 45 minutes to full school days. However, half of the schools had food classes which were one and a half hours long, with 83% falling between one to two hours.

Curriculum and learning objectives

It was found that learning objectives were often not clearly defined by teachers. However, several key themes emerged as being most commonly focused upon with in the food programmes. It was found that 53% of the surveyed teachers use the food technology curriculum to guide their food programmes. This was described multiple times as following the model of brief, design, produce and evaluate.

Nutrition or healthy eating was another common theme being integrated into food programmes, with over half of the schools including some form of nutrition or healthy eating within the curriculum. However, the included nutrition topics widely varied, ranging from micronutrient intake to the food pyramid. Only 13% of the teachers identified complete meal planning and preparation as one of their objectives. Other recurring themes included: cooking skills and techniques, food safety and hygiene, ingredient interactions, following a recipe, recipe modification and use of fresh seasonal produce.

Both the 'Food Technology' and 'Health and Physical Education' curriculums included a requirement for practical cooking skills to be taught, however, there was no clear literature defining what the practical cooking skills were, or guiding which were applicable to the Year 7 and 8 curriculum. British research, investigating essential food skills for secondary school cooking programmes, identified several components deemed important (8). These included a sequence of meal skills from planning and selecting ingredients, through to cooking and service, having knowledge of cooking methods and knowing when to apply these, and being able to adapt meal components to create variations. This highlighted that cooking was considered a combination of skill-based processes that are not exclusively based in the kitchen. The food technology curriculum model, mentioned above, appeared to encompass this idea well. However, it was concerning that the process may not be applied using desirable food choices in line with healthy eating guidelines.

A number of teachers described additional components that they would like to teach in the nutrition curriculum but found it difficult due to time restraints imposed on classes. This was particularly found in food technology classes, where teachers had mentioned assuming that nutrition was being taught elsewhere.

3.3 Recipes and ingredients

Teachers were asked to identify which foods had been prepared by Year 7 and 8 students from a list provided. They were also asked to recall additional unlisted foods prepared in the past school year. In total, the 102 teachers identified 71 food items prepared by students (see appendix document).

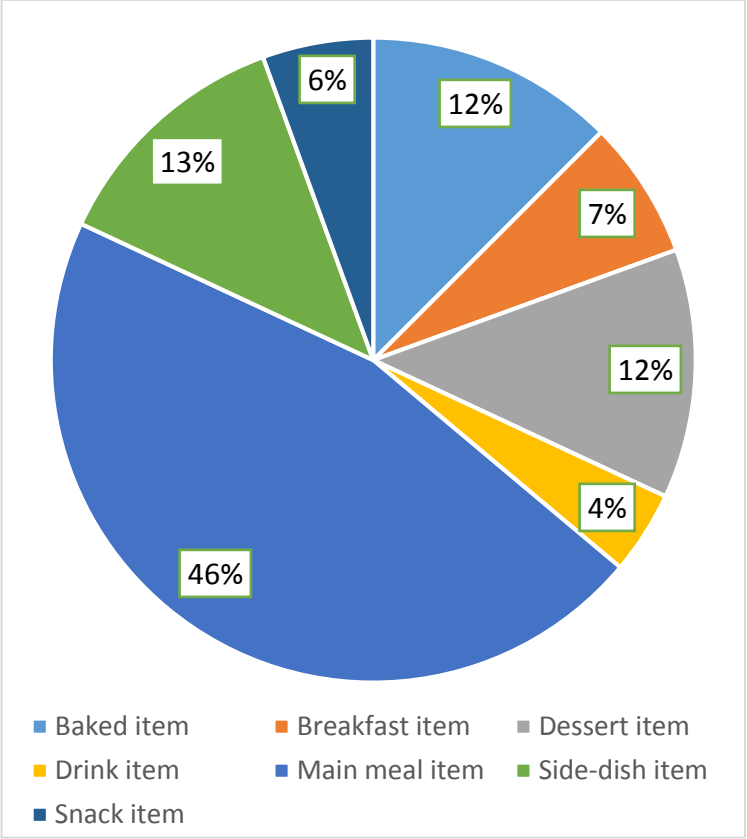

Figure 3. Types of food items made by Year 7 and 8 students categorised by contribution to daily intake of meals and snacks (n=71).

In order to ascertain how the food items would fit into a daily menu, responses were categorised by the following types: main meal items (includes complete main meals and main meal items, e.g. lasagne) baking, side-dishes, desserts, breakfast foods, snacks and drinks (Figure 3). It was found the most commonly prepared foods were main meal items (46%). However the second most commonly prepared group of food items were baked foods (13%) including slices, muffins, scones, etc. Additionally, 12% of the food items were categorised as dessert items. Although it was not possible to analyse the nutritional value of this food group, it should be noted that the majority of both these categories would be considered discretionary foods.

Breakfast foods only represented 7% of food items made in Year 7 and 8 food programmes. Research shows that breakfast consumption (on five or more days a week) declines with age, from 94% of 5-9 year-olds to 61% of 20-24 year-olds (Maddison, 2010). Therefore, there may be an opportunity to educate students on the benefits of eating breakfast, as well as the provision of easy breakfast ideas.

Practical (mechanical) cooking skills

A subjective analysis of the 71 food items was completed to assess how each may contribute to students learning 'practical cooking skills'. There was also an absence of evidence to specify what constituted a 'practical cooking skill' or which skills were expected to be learned at a Year 7 and 8 class. A Canadian study suggested that 'mechanical cooking skills' form one component of practical cooking skills, including techniques such as chopping, mixing and heating (9). The skills listed in Figure 4 were identified as being regularly utilised mechnical skills in the methods/instructions section of recipes. Temperature control (including use of oven and hobs) and measuring accuracy were the two most common skills utilised in the preparing of food items. Of the food items, 87% were assessed as requiring some form of 'cooking' skill (e.g. boiling, baking or frying).

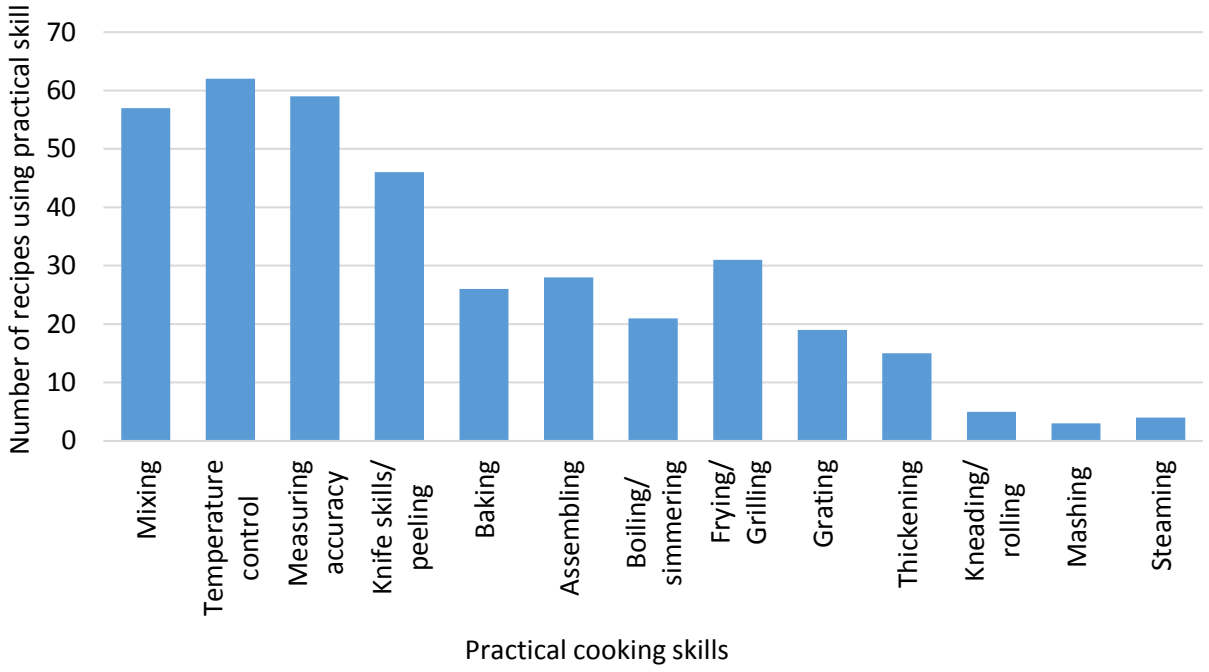

Figure 4. Skills used in Year 7 and 8 cooking classes and number of recipes produced using the practical skill

Recipe sources and choice

Respondents sourced recipes primarily from cookbooks (77%), the internet (76%) and existing school recipes/sources (65%). Celebrity chef cookbooks (e.g. Jamie Oliver, Annabel Langbein and Nadia Lim) and YouTube were also unexpectedly popular for both recipes and demonstrations of specific practical cooking skills.

The two most common themes driving recipe choice was time constraints (59%) and the cost of ingredients (73%) (Table 1). Additionally, 16% of teachers reported that the recipe needed to be appropriate for use at home and fit within the budgetary constraints of the family. Focus was placed on utilising seasonal produce, as greater availability meant reduced cost. Teaching a specific skill or technique and nutritional value of the recipe were other common considerations.

Table 1. Factors considered by teachers when selecting recipes for practical food sessions (n=90)

Factors reported by teachers	Percentage of responses (%)
Cost of ingredients	73%
Time constraints	59%
Teaches skills/techniques	51%
Nutrition	37%
Availability of ingredients	34%
Recipe can be used at home	16%
Cultural variety and appropriateness	13%
Appeals to the age group	12%
Fits current topic	11%
Vegetable or fruit content	10%
Allergies/intolerances	9%
Equipment availability	7%
Student choice	7%
Variety	6%
Other	10%

Protein sources

Meat and meat alternatives, as a protein source, were often viewed as the most expensive part of a meal. Schools used a variety of meat and meat alternatives, the most popular were eggs (also used in baking) (98%), processed meats (such as bacon, sausages and salami) (91%), as well as beef or lamb (79%). Pork and chicken (69%) and legumes (70%) were used less frequently, as were nuts and seeds (60%). A concern for the high use of processed meats is the contribution they make to increasing intake of saturated fat and salt. Nuts and seeds were not often used due to the incidence of allergies and potential for cross-contamination.

Inclusion of vegetables

Of the 102 teachers surveyed, 95% reported including vegetables in their recipe collections. The most common vegetables used were: onion – all types (91%), carrot (77%), potato (74%) and tomato (67%). It was found that defining what was a 'new' vegetable was largely subjective. However, of the schools using vegetables, 72% actively introduced the students to new or different vegetables. The most commonly introduced new vegetable was kale (26%). Kale has grown in popularity through the media and is becoming more of a staple vegetable in New Zealander's diets. As it is easy to grow throughout the year, kale was often grown in the school vegetable gardens. Eggplant (18%), courgettes (18%) and bok choy (16%) were the next most common.

Factors which influenced student familiarity with vegetables included school decile rating, ethnicity of the students and environmental factors such as cost, availability and seasonality. Interestingly, teachers mentioned that some vegetables may not necessarily be completely new to the students, but rather new in terms of a different form, e.g. raw beetroot versus canned beetroot.

3.4 Nutrition theory and resources

Theory-based nutrition education accompanied the food programmes in 85% of schools. Of these schools, the majority incorporated nutrition theory into the cooking sessions (78%). It was estimated the nutrition component used between ten to thirty minutes of the time allocated to each cooking session. Very few teachers had nutrition education as stand alone theory-based sessions, within the food programme. Teachers were not asked whether students received nutrition education from an alternate source. This may be an opportunity for future investigation. The nutrition theory topics most commonly covered were food safety and hygiene, food groups and learning to have five serves of fruits and vegetables per day (Figure 5).

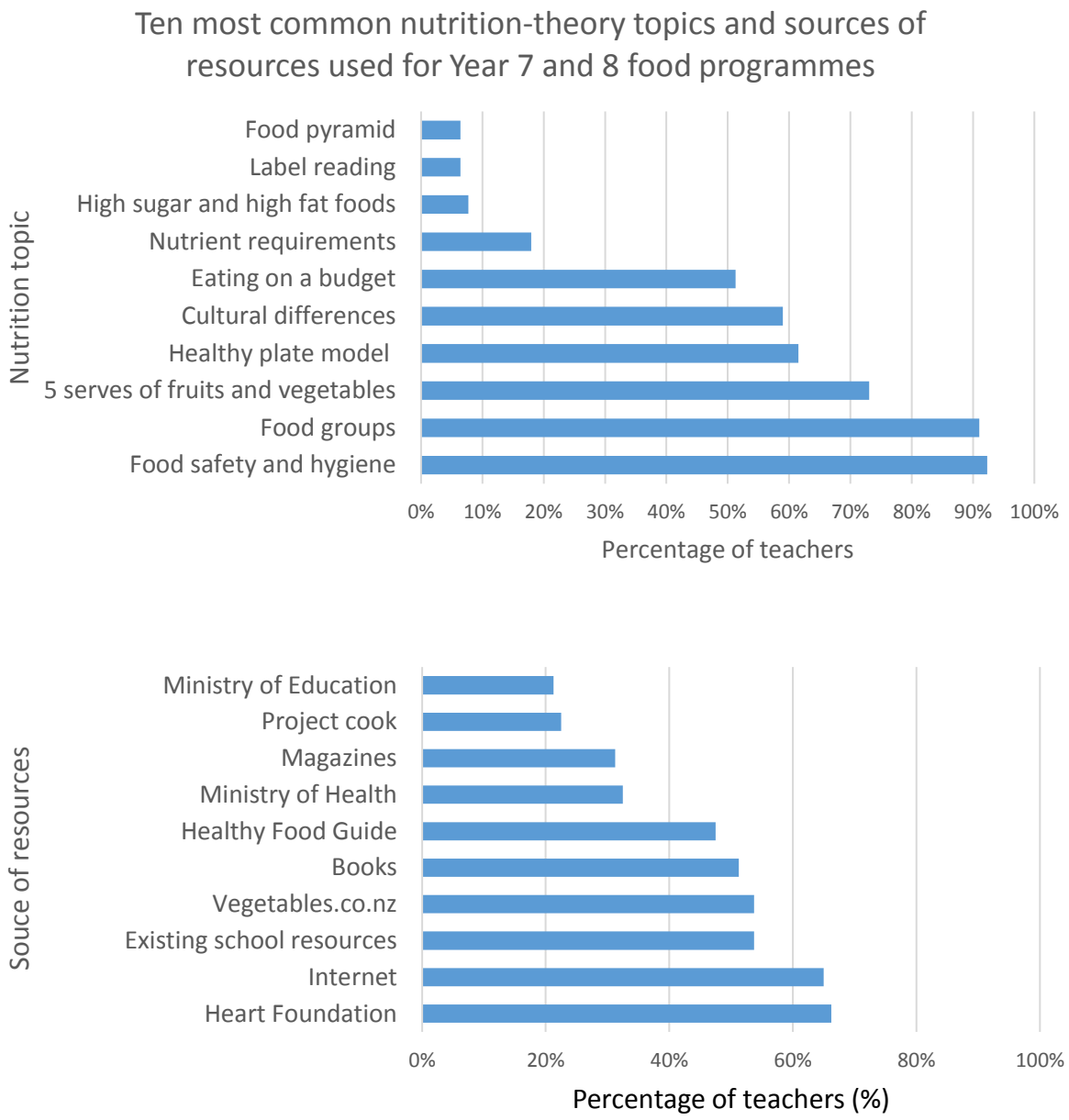

Figure 5. Top 10 nutrition-theory topics covered and sources of nutrition-theory resources in Year 7 and 8 food programmes.

Of the schools which included theory-based nutrition education in their classes, 88% used additional resources to help them with their teaching. More than 30 sources of resources were identified including the Heart Foundation (66%), the internet (65%) and Vegetables.co.nz (54%).

In addition to those included in Figure 5, other less frequently reported sources included 'Just cook', 'Cook for life', Diabetes NZ, 5+ A Day, Pams and Watties. Cumulatively, these alternate sources were used by 36% of teachers.

When questioned about what they found most useful about existing resources, teachers described the following:

- Visually appealing and colourful
- Simple and easy to understand
- At an appropriate level of difficulty for Year 7 and 8 students
- Interactive
- Culturally appropriate with bilingual options
- Posters and videos (YouTube or other)

Some teachers identified a need for more interactive resources, providing the following specific examples:

- Apps, websites or online games
- Planned activities and starter packs (i.e. "Heart Foundation starter pack")
- Visits from food/nutrition professionals
- Recipes which can be easily scaled up or down.
- Resources portraying the same message in different ways.
- Professional development sessions, where teachers are trained on how to use the resources provided and get students involved in activities
- Booklets specifically for vegetables (growing, selecting, storage, preparation)
- Healthy Food Guide magazines

Posters, recipes and videos (online and offline) were said to be the most useful, especially those incorporating nutrition information. Specific suggestions included posters displaying amounts of fat found in popular discretionary foods; resources on how to select, store, prepare and cook vegetables and recipes which could quickly scale quantities up or down, to help with differing sizes of cooking groups and for families, should the students take the recipe home. These

resources needed to be colourful, interactive, culturally appropriate and specifically designed for the target age group. Teachers also indicated that it would be useful to have the same messages portrayed in different ways to maintain student interest.

Mobile phone applications were frequently suggested. Ideas included an app which altered recipes to be healthier or compared the nutritional value of takeaway foods to homemade versions. Some teachers also suggested an app allowing students to construct food pyramids suiting different diets, such as vegan and vegetarian. Similarly, there was a request for resources designed for students with special dietary requirements such as gluten sensitivity and coeliac disease. Using applications was seen by teachers to have a wide appeal to the target student demographic.

Regular provision of updates and new resources was a common request. Many teachers commented that they were unsure whether the resources they had were up-to-date with the current recommendations and latest scientific findings.

Finally, there was a significant demand for a forum to provide networking opportunities with other Year 7 and 8 teachers in this field. Suggestions included a website with shared units, recipes, ideas and videos of cooking demonstrations, as well as having the opportunity to go into other schools to observe food programmes in action.

3.5 Food-related school facilities

Most of the schools participating in this study had a tuckshop/canteen onsite (80%). However, only 60% of those had a policy in place (or pending) that outlined which food items could be sold. In 2003, the Labour Government launched HEHA (Healthy Eating – Healthy Action: Oranga Kai – Oranga Pumau). The HEHA strategy was developed with the intention of changing New Zealand environments to promote nutrition and physical activity (Ministry of Health, 2004). It contained policies outlining the foods acceptable in schools, with guidelines on appropriate modification of tuck-shop meals. In February 2008, funding for HEHA ceased (Hinkle, 2010). Some schools still prohibit the sale of items such as fizzy drinks and lollies. However, strict policies were often rejected by contract holders because of the higher profits made from selling discretionary food and drinks. One school reported that although they had previously won an award from the Heart

Foundation for making healthy changes to their tuck-shop/canteen, the changes were not sustainable due to a rapid decline in sales.

Of the schools surveyed, 63% had a vegetable and fruit garden. Most of these schools (85%) used the produce in their food programmes. The garden-to-table concept was a well-recognised theme by the schools. However, the "Garden to Table" organisation was only involved with two of the schools surveyed, and this was for students below Year 7 and 8. The majority of schools with gardens taught a similar concept using their onsite gardens to provide ingredients for cooking sessions.

3.6 Practical observation

Two Massey University Dietetic students had the opportunity to observe a Year 8 practical food class with a technology focus. A total of 16 Year 8 students were participating in this class making homemade ginger beer. Throughout, the teacher was interviewed and students were also asked about their cooking experiences both in school and at home. It was found that:

- Many students assisted with cooking at home, with some students having sole responsibility for cooking one evening meal per week.
- Students enjoyed the variety of recipes taught in the food programme and would recreate these at home.
- The majority of evening meals at home contained a range of vegetables. The most common included potato, kumara, carrot, and broccoli.
- Vegetables were not used in all food classes. Furthermore, the only vegetables reportedly used were potato and kumara.
- New vegetables were not introduced as the focus was predominantly technology vs food and nutrition.

4.0 Strengths, limitations and conclusions

The present study had several strengths and limitations which may have had an impact on the findings. A key strength of this study was the number of teachers and schools recruited across

the full range of deciles. There was good representation from composite schools, intermediate only schools and technology hubs. Additionally, the target group was extended to include Year 7 students following the first six interviews, as it was found that isolating Year 8 students was not practical. This increased the number of students being accessed through schools who participated in this survey. Finally, the use of open-ended questions within the survey design produced a greater range and quality of response from the teachers.

There were also a few limitations which may have negatively impacted the generalizability of the findings. The use of three platforms for survey delivery may have resulted in inconsistencies in data collection due to variations in participant burden and question interpretation. Although verbal interviews were conducted by nine nutritionally-trained interviewers, there was still potential for interviewer bias. The present study was conducted during a holiday break and the first two weeks of term three resulting in several teachers being unavailable or unable to answer curriculum-based questions. Future research should aim to collect data later in the term to avoid holidays and allow for staff turnover. Lastly, the recognition of stakeholders during the introductory section of the survey may have unintentionally biased some of the teacher's responses, especially with regards to the quantity and variety of vegetables used in cooking classes, recipe origins, and resources used.

4.1 Conclusions

This investigation provided a snapshot of the current school-based food programmes in New Zealand. It identified strong, emerging trends in both Year 7 and 8 food curriculums. Such trends include a wide disparity in what is taught between schools and the general move towards a food technology focus, utilising the 'brief, design, produce and evaluate' model. Although this shift promotes a better transition into vocational training, it may be at the expense of students learning necessary life skills. The present study highlighted the need for Year 7 and 8 food teachers to be supported in integrating current curriculum requirements with key aspects of meal planning, preparation and health to ensure this age group has an acceptable level of food literacy.

5.0 Recommendations

Recommendations were made to Vegetables.co.nz and the Heart Foundation, based on an investigation of food programmes for Year 7 and 8 students in New Zealand. These recommendations are as follows:

Curriculum

Recommendations for the curriculum should work within current practical food programmes being held for Year 7 and 8 students in New Zealand schools. The present investigation observed the following:

- Classes typically ran for between 1-2 hours, with 50% being 90 minutes long.
- The most common practical food programme duration was one term, with 1-2 sessions per week (total ~10-20 hours).
- Most educators followed the food technology model (53%) including the process of brief, design, produce and evaluate.

Consider how to identify and define 'best practice' guidelines for teaching Year 7 and 8 students' food literacy and skills. 'Best practice' guidelines should clarify the overall aim of providing a food programme to this age group. Specific recommendations should address the following:

- Define 'practical cooking skills' within the current 'Health and physical education' and 'Food technology' curriculums. This should include a list of the food skills required to have a basic foundation of competency with food and food preparation.
- Improve the balance and variety of food items being taught within practical food programmes. Priority should be given to components of a balanced meal schedule (i.e. breakfast, lunch, dinner and snacks). Discretionary food items should contribute no more than 10-20% of food items prepared in a programme.
- Encourage lesson plans to follow a format of planning, preparation, cooking, meal-sharing and cleaning up. Ultimately ensuring each child is skilled in the process of making a complete meal.

- Recommendations need to consider challenges identified by teachers in the present study (e.g. cost, time and food accessibility) to ensure 'best practice guidelines and resources' support adherence to budget and time constraints.

Resources

Teachers reported accessing resources from more than 30 different sources, however 81% reported needing additional resources. Development of future resources should consider the following:

- Include aspects of the food technology model of brief, design, produce and evaluate. Also, be designed in a way which allows integration with the lesson plan to reinforce key messages and reduce time expenditure.
- Delivered using a range of mediums including print, online and mobile applications.
- Resource design should consider how to promote acceptance and continued use and at home with the family unit.
- Regular updates, or alternative versions produced, to ensure student interest is maintained. This should include using imaging of children of an appropriate age and culture.

The present study also identified that more opportunities were needed for the professional development of teachers involved in teaching food programmes:

- Year 7 and 8 teachers would benefit from a platform for sharing ideas and information about their programmes with people from other schools. They expressed strong interest in sharing knowledge, activities and being able to compare lesson plans.
- Teachers expressed interest in receiving regular contact about up-to-date resources and evidence-based information as it became available. Updates should include guidance around topical 'trends', for example, coconut oil and paleo dietary patterns.

Challenges

Several challenges were identified as having an effect on recipe selection, lesson planning and use of resources. The challenges described below present an opportunity to develop guidelines and resources which will support the teaching of food programmes using 'best practice'.

- Budget constraints was the predominant reason for recipe selection. Ideally resources should be developed using economical recipes or include methods for reducing the cost of food production and ingredients (e.g. reducing waste or buying seasonally).
- Additionally, of those who identified budget as a factor, 21% also indicated that they chose recipes based on whether families would be likely to be able to afford the ingredients. Therefore, resources should also be appropriate for use in a low socio-economic household.
- Time constraints were also identified by a number of teachers, especially in regards to use of resources. Where possible resources should be designed in a way which allows better integration with the lesson plan, as opposed to independent use.

Tuck shops

Tuck-shops were present at 80% of surveyed schools, only 60% of which had food policies regarding the types of food able to be sold. A barrier to maintaining a healthy food policy was the effect on profitability. Further options for managing school concerns around profit gain at the expense of nutrition and health need to be explored.

Acknowledgements

Firstly, we would like to acknowledge all the teachers who participated in this survey, we are very grateful to them for volunteering their time and sharing their invaluable insights.

We would also like to thank the Heart Foundation and Vegetables.co.nz, for inviting us to work collaboratively with them on this project. We are all grateful for their support and guidance throughout our time with them.

Finally, we would like to thank Massey University for creating this opportunity for us to experience Dietetics in the wider public health setting. We have gained valuable knowledge and look forward to contributing to this field in the future.

It is acknowledged that the final report was condensed and edited by Massey University dietetic student Lisa Henderson.

References

1. Gorton D. Cooking literacy: the role of the school curriculum. Auckland: Vegetables.co.nz; 2016.
2. Kelly S, Swinburn B. Childhood obesity in New Zealand. New Zealand Medical Journal. 2015;128(1417):6-7.
3. Drummond C. Using nutriton education and cooking classes in primary schools to encourage healthy eating. Journal of Student Wellbeing. 2010;4(2):43-54.
4. Ministry of Education. The New Zealand Curriculum. In: Education Mo, editor. Wellington, New Zealand: Learning Media Limited; 2007.
5. Ministry of Education. Health and physical education in the New Zealand curriculum. In: Education Mo, editor. Wellington, New Zealand: Learning Media Ltd; 1999. p. 1-64.
6. Eagle D, Pound C. Food technology toolbox Wellington, New Zealand: Ministry of Education; 2016 [Available from: http://technology.tki.org.nz/Resources/Case-studies/Classroom-practice-case-studies/Teaching-practice/Food-Technology-Toolbox.
7. Heart Foundation. Fuelled4life school canteen catering guide Greenlane, Auckland: Heart Foundation; 2017 [Available from: http://s3-ap-southeast-2.amazonaws.com/hfweb-fuelled-for-life/uploads/documents/School_Catering_Guide.pdf?mtime=1464168002.
8. Fordyce-Voorham S. Identification of essential food skills for skill-based healthful eating programs in secondary schools. Journal of Nutrition Education and Behavior. 2011;43(2):116-22.
9. Chenhall C. Improving cooking and food preparation skills: a synthesis of the evidence to inform program and policy development In: Canada Go, editor. Ottawa, Canada: Government of Canada; 2010.