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- 1 Nutrition Education in the Australian New South Wales primary school
- 2 curriculum: an exploration of time-allocation, translation and attitudes in a
- 3 sample of teachers.

### 4 Abstract

- 5 Issue addressed: The dietary intakes of Australian children are not optimal, with few meeting
- 6 recommended vegetable and fruit intake targets. Nutrition education in childhood is important for
- 7 developing healthy eating patterns, with schools an ideal setting for a wide reach. The aims of this
- 8 study were to examine nutrition education within the NSW primary school syllabus; explore how
- 9 much time teachers spend teaching nutrition, what is taught, what materials are used, and to identify
- 10 attitudes towards nutrition education.
- 11 Method: An online survey consisting of 29 closed questions (with options for comments) was
- specifically developed for the purpose of this study. Teachers currently teaching at a NSW primary
- school were eligible to participate.
- 14 Results: 33 NSW primary school teachers completed the survey. Results indicate that limited time is
- spent on teaching nutrition with some important nutrition education components currently missed,
- resources perceived to be inadequate, and lack of time reported as the largest barrier to teaching
- 17 nutrition.
- 18 Conclusions: In order to improve the quality of nutrition education in NSW primary schools, several
- important topics need be integrated into the curriculum and time constraints of teachers should be
- 20 taken into account.
- 21 So what? Findings from the current survey will inform the development of future nutrition education
- 22 programs and resources with the aim of integrating nutrition education within the primary school
- 23 curriculum.

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# Summary

- Nutrition education is an important part of helping children develop healthy eating patterns. This
- survey of 33 NSW primary school teachers examined how nutrition education is currently taught.
- 28 Results highlight that nutrition education content is limited, mostly due to time-constraints in class.

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# Keywords

31 Nutrition, education, NSW, k-6, teachers, survey, schools

# Introduction

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36	The benefits of a healthy diet for children are widely recognised and include improved well-
37	being and learning abilities, which in turn may contribute to better school performance. <sup>1,2</sup>
38	Poor dietary patterns contribute to the high prevalence of childhood obesity in Australia, and
39	calls have been made for intervention programs and policies to improve dietary patterns at
40	family, school, and community levels. <sup>3,4</sup> The 2015 New South Wales (NSW) Schools
41	Physical Activity and Nutrition Survey found that 78% of NSW primary school students
42	consume the recommended two serves of fruit a day, while only 5% achieved the daily
43	recommendation of five serves of vegetables. <sup>4</sup> Another Australian study found that only half
44	of the children met the Nutrient Reference Values for key macro and micronutrient intakes. <sup>5</sup>
45	In addition, Australian children aged 5-16 years frequently consume discretionary foods and
46	drinks that are energy-dense and nutrient poor (e.g. soda, biscuits, doughnuts and cakes). <sup>4</sup> For
47	this group, about 41% of energy intake comes from discretionary foods that provide little to
48	no nutrients. <sup>4</sup>
49	To prevent poor dietary habits and excessive weight gain throughout childhood, targeting
50	nutrition knowledge is recommended to establish healthy eating habits before adolescence. <sup>6–8</sup>
51	A review of 39 papers on obesity-related behaviours found that eating behaviours established
52	during childhood years are likely to be carried through into adulthood. However, dietary
53	behaviour is complex and challenging to measure and could be subject to many other
54	influences later in life such as life-course transitions. 9 Nevertheless, ensuring children have
55	healthy eating behaviours will promote optimal growth and development and possibly help
56	protect against developing diet-related comorbidities later in life. <sup>4</sup>
57	Interventions at a school level play a key role in the promotion of healthy lifestyle behaviours
58	and healthy weight for school-age children, as they have great potential in reaching a large
59	part of the population. <sup>6,10</sup> Schools offer access to almost all children, involve skilled
60	professionals (i.e. teachers), and allow opportunities to practice healthy eating. <sup>11</sup> Worsley et
61	al. 12 reported clear relationships between nutrition education of school children and changes
62	in dietary behaviours in their systematic review of children's healthy eating literature. 13-21
63	Several studies employing curriculum based approaches 13,14 have demonstrated significant
64	changes in fruit and vegetable consumption <sup>14</sup> and total energy intake reduction. <sup>13</sup>
65	While nutrition education at a young age has been found to be important for children to
66	develop a healthy dietary pattern, the current level and interpretation of nutrition education in

67	NSW primary schools is unclear. Nutrition education in NSW primary schools is one of six
68	possible topics within the Personal Health Choices strand of the Personal Development,
69	Health and Physical Education (PDHPE) curriculum. <sup>22</sup> A new curriculum has recently been
70	released and will be implemented in 2020. Nevertheless, nutrition is only described in the
71	PDHPE syllabus as one of 14 topics to choose from. <sup>23</sup> The NSW Education Standards
72	Authority <sup>24</sup> recommends time allocations to the primary syllabi and allows schools and
73	teachers to decide how much time is spend per strand within the PDHPE syllabus. As there
74	are eight strands in the current PDHPE syllabus, it may depend on the teacher's affinities and
75	confidence levels with certain topics within the strands what subjects are discussed. A
76	program called 'LiveLifeWell@School has been implemented in NSW primary schools since
77	2008, recognising the need to address lifestyle behaviours that can lead to overweight in
78	primary school aged children. <sup>25</sup> As part of the program teachers can access professional
79	development opportunities relevant to nutrition education via specific modules, learning days
80	and conferences. This program is important as teachers' knowledge about the subject of
81	nutrition might not be sufficient and not meet the professional standards of the NSW
82	Education Standards Authority (NESA). <sup>26</sup>
83	Additional to time and content demands, pre-service teacher education in PDHPE is required
84	to cover theory and practical strands during teacher education programs, and is unlikely to
85	offer adequate instructional time for gaining efficacy in presenting nutritional content.
86	Investigating the requirements for a Bachelor of Education (primary) at one University in
87	NSW as an example (see table 1), indicates that less than 10% of mandatory course content
88	(two mandatory PDHPE courses) addressed components of nutrition and health status, with
89	nutrition education specifically discussed in only one elective course, that could be chosen
90	from 129 other elective courses.
91	Currently, the extent to which the existing nutrition curriculum is taught in NSW Primary
92	schools is not known, nor how confident teachers feel teaching nutrition, or what
93	materials/methods are used and how much time is allocated to teaching it. The current study
94	aimed to explore teacher's attitude, perception, and application of nutrition education in NSW
95	schools.
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Methods

98 Survey

99	The survey was designed specifically to address study aims. It was developed in collaboration
100	with three teachers, each with over 25 years of experience and two researchers experienced in
101	primary school PDHPE education and transferred online using Qualtrics (Qualtrics, Provo,
102	UT).
103	Participants were invited to complete the survey online. It comprised of a total of 29
104	questions, in five domains:
105	1) Socio-demographics (e.g. age, gender) and teaching experience, and in which kind of
106	school they teach (i.e. government school, catholic school, or independent school)
107	2) <b>Teachers time-allocation</b> to the domains within PDHPE, of which Nutrition Education is
108	a part.
109	3) Content covered within nutrition-education to explore what is currently taught in terms
110	of nutrition and the teacher's attitude to nutrition education.
111	4) Access to resources to support the curriculum to teach nutrition and what materials are
112	used in class. Also, how the school and parents are involved and if they see any barriers for
113	teaching nutrition education was assessed.
114	5) Educational games used and if used, perceived usefulness in nutrition education.
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116	Recruitment and participants
117	As this was an exploratory survey only, was to recruit a convenience sample of about 30
118	teachers. This was done via e-mail contacts (i.e. existing university/school contacts) and
119	social media posts which contained a link to the online survey. Invitations to the survey were
120	posted on both general and teacher-specific social media pages. All current NSW primary
121	school teachers were eligible to participate. Consent was acquired at the survey start via a
122	'yes' or 'no' question, where 'no' generated an automatic exit from the survey.
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	Analysis
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# 132 Results

133	A total of 33 teachers completed the online survey within two months; $84.9\%$ (n=28) female,
134	mean age 38.7 (SD 9.8, range from 24 to 61 years). Several teachers indicated teaching
135	combination classes of up to 3 years in the same class. Teachers of children in grades 2-4 and
136	6 were most represented in this study sample. One-third of the participants had 16+ years of
137	teaching experience (n=13), worked at schools with over 400 students (n=10) and indicated
138	they worked for a government school (n=21).
139	On average, the teachers were unsure if the time allocated to the PDHPE curriculum was
140	sufficient (M=3.03, SD 1.33) (on a scale of 1= definitely yes to 5=definitely not). Of the eight
141	strands in the PDHPE curriculum, the most time was spent on 'Games and Sport'. The strand
142	in which the topic 'Nutrition' is a component ('Personal Health Choices'), was ranked 4 <sup>th</sup> on
143	average. Exploring the time allocation within 'Personal Health Choices', the topic 'Nutrition'
144	was ranked 2 <sup>nd</sup> , after 'Making Decisions' (see table 2). Teachers scored a mean of 2.70 (SD
145	1.21) (on a scale of 1=definitely yes to 5=definitely not) when asked about the time spend on
146	'Nutrition'. Within the topic of 'Nutrition', teachers spent most time on 'Food choices for
147	good health' and 'Balanced eating habits' and spent the least amount of time on 'Salt/sugar
148	intake' and 'Saturated fats'. When asked about any other nutrition topics that are not
149	mentioned in the syllabus, most teachers indicate also teaching about 'eating
150	behaviour'(51.5%), 'distinguishing between healthy and unhealthy foods'(75.8%) and having
151	a school garden (60.6%). Topics such as 'portion size' (19%) and 'carbohydrates, fats and
152	protein' (19%) were least discussed in class (see table 3).
153	Out of the 33 teachers, 23 (72%) taught nutrition themselves and the rest indicated they
154	allocate the topic to either a 'relief from face-to-face' (RFF) teacher or a guest speaker comes
155	in. Most teachers (81.8%) use online information such as websites and games as resource
156	materials to teach nutrition. Other popular materials are real foods (66.7%), a school garden
157	(60.6%) and PowerPoint slides (48.5%). On average, the participants feel that the nutrition
158	education materials are not up-to-date or sufficient (M=3.58, SD 1.2) (see table 4).
159	The mean interest in nutrition among the teachers in the study sample was 1.81 (SD 0.74) (on
160	a scale of 1=very interested to 6=not at all interested), suggesting a strong interest overall. On
161	average, 40 percent of the teachers who provided nutrition information to parents (60.1%), do
162	so less than once a month via a school newsletter to the parents. On a scale of 1 to 7, where 1
163	is extremely positive and 7 extremely negative, the teachers scored a mean of 2.39 (SD 1.30)

when asked about how they feel about integrating nutrition and health education into the 164 math curriculum (see table 5). A majority of the teachers believe that 'a lack of time' (78.8%) 165 is the greatest barrier to teaching nutrition in primary schools. In addition, 24.2% indicated 166 not knowing enough about nutrition and 33.3% specified not having sufficient materials as a 167 barrier (see table 4). 168 169 **Discussion** Results of the current survey of 33 primary school teachers in NSW highlights that they 170 commonly address nutrition in class when teaching from the 'Personal Health Choices' strand 171 172 in the PDHPE syllabus. Nutrition was second to 'making decisions', indicating the teachers generally value nutrition education. However, the survey respondents reported being unsure 173 174 whether the time allocated to the PDHPE syllabus allowed them enough time to specifically teach nutrition to their students. Lack of time, absence of sufficient resource materials and 175 counteracting parents' food related practices were the three most common barriers reported 176 by the teachers. 177 Among the eight strands in the PDHPE curriculum, the 'Personal Health Choices' strand was 178 the fourth most often strand reportedly addressed in class. The NSW Education Standards 179 Authority<sup>24</sup> recommends spending 1.5-2.5 hours per week on all strands in the PDHPE 180 syllabus, leaving limited time for teaching nutrition specifically. Previous studies have 181 suggested class-room based nutrition education is only successful when taught over at least 182 10-15 hours per year.<sup>27</sup> Considering the 2.5 hours are to be divided over eight strands (20 183 minutes per strand) and six topics within the 'Personal Health Choices' strand, approximately 184 185 three minutes per week, or two hours per year would be spent on the nutrition topic. Importantly, results of the current survey indicated that teachers in this sample value nutrition 186 in primary school education and believe it could be helpful in the prevention of obesity. 187 188

Importantly, results of the current survey indicated that teachers in this sample value nutrition in primary school education and believe it could be helpful in the prevention of obesity.

Unfortunately, 80% of the participants indicated a lack of time as the greatest barrier to teaching nutrition. The same barrier was reported by Morgan and Hansen<sup>28</sup> when examining the barriers to teaching good quality physical education in school. One teacher reflected how 'Australian children are already slipping down the ranks in English and maths' and how this will take priority every day (see all comments in table 6). A similar conclusion was made by the American Academy of Nutrition and Dietetics<sup>29</sup>, where it was reported that improving the quality and outcomes of traditional core subjects such as mathematics and science put significant pressure on teachers, leaving little time for additional curriculum such as nutrition.

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196 In agreement with this, a participant in the present survey wrote: 'We are already incredibly time poor and with so many distractions and interruptions, things never go to plan'. This 197 reported lack of time is quite concerning for the future, as the topic of nutrition will have to 198 compete for time with other important topics such as English and Mathematics, in an already 199 overcrowded curriculum.<sup>30</sup> 200 It is therefore important that any future initiative or intervention to address nutrition 201 education in primary schools respects the substantial time-constraints teachers already 202 experience. One possible approach is to use a cross-curricular approach.<sup>31</sup> A review of 203 teaching approaches and strategies in primary schools to promote healthy eating concluded 204 that taking a cross-curricular approach was one of the most effective methods.<sup>32</sup> The teachers 205 in the current study had a generally positive attitude towards potential cross-curricular 206 207 integration (e.g. the integration of nutrition and health education into the maths curriculum). However, one teacher commented that if 'such an integration happens, implementers should 208 209 be very careful to maintain the integrity of subject outcomes.' Any future programs aimed at nutrition education and implemented in primary schools will need to ensure high quality 210 within the specific lessons. The NSW program LiveLifeWell@School found paid training 211 days, service training modules and LiveLifeWell@School conferences for teachers appears to 212 be effective in motivating teachers to improve their knowledge on health. 213 Another barrier frequently mentioned was a lack of sufficient materials and they indicated 214 that materials available to them currently are probably not up-to-date nor sufficient. The 215 NSW Education Standards Authority does list some reference materials, the most recent book 216 was published in 1997 and the websites are generic information websites such as the 217 Australian Guide to Healthy Eating website<sup>33</sup>, which would not help the teacher develop an 218 interactive and cross-curricular lesson plan. While there are more helpful website/initiatives 219 available to the teachers<sup>31</sup>, they are not always subject to quality control or linked to syllabus 220 outcomes. In addition, they are not centrally located and not easily accessible for teachers. It 221 was previously reported among 102 Californian (USA) teachers that most of them are 222 unaware of resources available to them.<sup>34</sup> Having easy access to adequate reference materials 223 in one place is important for teachers to teach adequately about nutrition, as it is often a topic 224 they do not know much about. 225 Finally, about 27% of the teachers in the current study also consider that parents may be a 226 barrier to teaching nutrition education successfully and believe that parents should be the 227 228 ones teach their children about nutrition.

One teacher commented that often parents are 'counterproductive by packing unhealthy snacks and foods' and another mentioned parental choices in packed lunch boxes 'having an impact on the success of nutrition teaching'. A lack of nutrition knowledge and positive health attitude from the parents has been shown to be related to child diet quality.<sup>35</sup> It should therefore be emphasized that nutrition education in primary schools would only be one piece of the puzzle and other stakeholders in the child's life, namely parents, should be involved in any nutrition education or intervention study if it is to be successful. A systematic review by Dudley, Cotton and Peralta <sup>32</sup> on teaching strategies to promote healthy eating, concluded that positive impacts on fruit and vegetable consumption among primary school children was observed when parental involvement was imbedded with nutrition education strategies in class. In the current survey, 60% of teachers indicated providing nutrition information to parents, of whom 50% did so at least once a month via newsletter. However, a scoping review by Peralta, Dudley and Cotton<sup>31</sup> on nutrition education resources found that only three out of nine included Australian studies engaged parents in nutrition classes. Furthermore, it is concluded in that review that merely providing information to the parents (i.e. via a newsletter) is not likely to be sufficient. It is therefore recommended that parents are involved actively in any nutrition education that occurs in primary school, for example through cooking classes with their children. In addition to time spent on nutrition education in class, the quality of the education is equally important. About 24% of the teachers in the current survey felt that their lack of knowledge about nutrition is a barrier to them teaching nutrition in class. A lack of knowledge or interest could also lead to inadequate teaching. Studies have previously noted that teachers must be adequately trained, motivated and armed with sufficient knowledge to teach nutrition effectively. 36,37 This will enable teachers to educate nutrition accurately and teach their students interactively. In a nutrition knowledge and self-efficacy survey among 59 primary school teachers in California, US, it was found that the teachers did not have adequate levels of nutrition knowledge nor the skills to adequately teach nutrition to their students.<sup>38</sup> Similar to the finding of the current study, an assessment of nutrition education in New York state classrooms found that teachers consider nutrition education important and they are willing to teach nutrition. However, the authors call for support in integrating nutrition topics, methods of instruction and availability of resources.<sup>39</sup> Instructions and resources have ranged from small group training sessions to extensive teacher courses over several weeks. However, it remains unclear what level of support is appropriate and resources teachers desire and find most useful.

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In order to overcome the teacher's time constraints, cross-curricular approaches to teaching nutrition have been found to be highly effective. Integrating nutrition education into core learning areas such as Mathematics and Science provides an opportunity to make classes more relevant to the students as they will also learn daily life skills. 40 Cross-curricular approaches to instruction have been found to lower children's sugar consumption and increase fruit- and vegetable consumption.<sup>32</sup> This study had some strengths and limitations. To the best of the author's knowledge, the current study is the first to survey teachers about nutrition education in NSW primary schools. However, the sample of teachers in this study was on average very positive toward nutrition education and it is likely only those with a prior interest into health and/or nutrition would have participated, which could have resulted in a biased sample. Furthermore, the study has a small sample size as it was intended as an exploratory study to identify whether there was an interest in the topic and a need for further research. Lastly, the authors recognize that treating Likert scales responses as continuous variables is a limitation. However we feel this usage is appropriate as scales were used to define the sample involved, with no testing of statistical inference or relationships between variables undertaken. In conclusion, in order to be effective, nutrition education must be taught regularly and resources should be adequate. In light of the time pressures in schools, integration across the curriculum is recommended as a method of increasing exposure to nutrition content. The currently available resources for teachers do not allow less knowledgeable teachers to sufficiently and adequately construct nutrition education lessons. More easily accessible, integrated, practical and applicable resources are needed in order to ensure high quality nutrition education is taught at a state-wide equal and adequate level. Professional development aimed at integration strategies and presentation of higher quality nutrition based lessons is also suggested to improve the level of nutrition education in primary schools.

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# 457 Tables

# Table 1: Units to be attainted for a Bachelor of education (primary) at a University in NSW, Australia

	Level	Units*	General health units	PDHPE units	Nutrition specific units
Core courses (all units mandatory)	1000	90	0	10	<1
	2000	80	0	10	<1
	3000	50	0	0	0
	4000	30	0	0	0
Directed courses* (total of 40 units to be	1000	570	0	20	0
chosen)	2000	310	20	40	10
	3000	170	10	0	0
	4000	250	0	40	0

<sup>\* 1</sup> course = 10 units (with the exception of: Introduction to Biology II = 20 units)

# Table 2: Rankings of time allocated in the PDHPE syllabus

Rank	PDHPE syllabus strands <sup>A</sup>	Mean (SD) <sup>A</sup>	Personal Health Choices topics <sup>B</sup>	Mean (SD) <sup>B</sup>
1.	Games and Sport	2.52 (1.81)	Making decisions	1.47 (SD 0.84)
2.	Active Lifestyle	3.59 (1.83)	Nutrition	2.75 (SD 1.22)
3.	Interpersonal relationships	3.63 (1.64)	Preventative measures	4.00 (SD 1.44)
4.	Personal Health Choices	3.81 (1.64)	Health services and products	4.28 (SD 1.02)
5.	Growth and development	4.47 (2.16)	Drug use	4.34 (SD 1.75)
6.	Safe living	4.81 (1.64)	Environmental Health	4.16 (SD 1.67)
7.	Dance	6.44 (1.56)		•
8.	Gymnastics	6.78 (1.77)		

A Survey question: Please rank the following Personal Development, Health and Physical Education (PDHPE) strands in order of how much time you usually spend on them in class. Rank 1 being the most time and Rank 8 the least.

<sup>\*\*</sup> Students must attain 40 units from a total of 1300 units (= 129 courses), divided over 11 discipline depth study areas, one of which is Health and Physical Education

<sup>&</sup>lt;sup>B</sup> Survey question: Please rank the following subject matters from the Personal Health Choices (PDHPE) strand in order of how much time you usually spend on them in class? Rank 1 being the most time and Rank 6 the least.

Question in survey		Mean (SD)
Do you feel that the current time allocated to Personal Development, Health and Physical Education (1.5-2.5h/week is recommended by the NSW Education Standards Authority) is sufficient and allows you to spend enough time teaching about nutrition? <sup>A</sup>		3.03 (1.33)
Do you feel the resources available to you (from the NSW Education Standards Authority) are sufficient and up-to-date? A		3.58 (1.20)
Do you believe more nutrition education could help in the prevention of (childhood) obesity? A		1.88 (0.99)
Do you feel that you spend sufficient time on all subject matters in the Personal Health Choices strand? <sup>A</sup>	Making decisions Nutrition Preventative measures Health services and products Drug use Environmental health	2.21 (1.17) 2.70 (1.21) 2.42 (1.06) 2.85 (1.06) 2.58 (1.25) 2.76 (1.23)
How important do you think it is to teach about nutrition in Primary School? <sup>B</sup>		82.60 (15.50)
Statement: I am interested in nutrition <sup>C</sup>		1.79 (0.74)
Statement: I model healthy eating in class (e.g. by eating healthy snacks)		1.91 (1.21)
When teaching about nutrition, how much time do you spent during the school year on the following Nutrition subject matter topics in your	Food choices and good health	2.61 (0.97)
class? D	Balanced eating habits	2.88 (1.02)
	Variety of food choices Effects of nutrients on the body	2.94 (0.89) 2.97 (0.92)
	Fast food	3.24 (0.83)
	Energy	3.24 (1.00)
	intake/expenditure	, ,
	Lifestyle risk factors	3.27 (0.84)
	Salt/sugar intake	3.61 (1.03)
	Saturated fats	3.76 (0.90)
How important do you think it is to add the following Nutrition Education topics to the Primary School curriculum? <sup>E</sup>	Nutrition label reading skills	2.45 (1.06)
	Eating behaviour	1.88 (0.86)
	Portion sizes	2.18 (0.81)
	Carbohydrates, proteins and fats	2.67 (0.67)
	Distinguish between healthy vs unhealthy foods	1.45 (0.67)
	Cooking skills	2.76 (1.12)
	Ability to recognize different foods	2.21 (1.12)
	School garden	2.52 (1.03)
Spalar 1-Definitely year 2-Drobobly year 2-Might on might not 4-Drobobly not	AGHE	2.42 (1.00)

A Scale: 1=Definitely yes; 2=Probably yes; 3=Might or might not; 4=Probably not; 5=Definitely not

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<sup>&</sup>lt;sup>B</sup> Scale: 0-100, where 0= not important at all; 100= very important

<sup>&</sup>lt;sup>C</sup> Scale: 1=Strongly agree; 2=Agree; 3=Somewhat agree; 4=Neither agree nor disagree; 5=Somewhat disagree; 6=Disagree; 7=Strongly disagree

<sup>&</sup>lt;sup>D</sup> Scale: 1=A great deal; 2=A lot; 3=A moderate amount; 4=A little; 5=None at all

<sup>&</sup>lt;sup>E</sup> Scale: 1=Extremely important; 2=Very important; 3=Moderately important; 4=Slightly important; 5=Not at all important

Survey question	Question options	n (% of study sample)
Who usually teaches about	I always do it myself	23 (69.7%)
nutrition in your school/class?	RFF teacher	3 (9.1%)
	Guest speakers	1 (3.0%)
	Other/unknown	6 (18.2%)
What materials do you usually use	School garden	20 (60.6%)
to teach about nutrition?	Video/film	16 (48.5%)
	PowerPoint slides	16 (48.5%)
	Books/magazines	11 (33.3%)
	Websites/online games	27 (81.8%)
	Presentations by students	5 (15.2%)
	Real foods	22 (66.7%)
	Excursions	4 (12.1%)
	Food diary	7 (21.2%)
Do you or your school provide the	Yes, I do	2 (6.1%)
parents with nutrition	Yes, the school does	17 (51.5%)
information?	Yes, both the school and I do	1 (3.0%)
	No	13 (39.4%)
On average, how often is nutrition	About once a week	2 (10.0%)
information provided to the	About 2-3 a month	5 (25.0%)
parents?	About once a month	3 (15.0%)
•	Less than once a month	8 (40.0%)
	I am not sure	2 (10.0%)
How is the nutrition information	On information days	4 (20%)
provided to the parents?	Via the newsletter	20 (100%)
provided to the parents:	via the newsietter	20 (10070)
What do you think could be the	Lack of time	26 (78.8%)
greatest barriers to teaching	I don't know enough about	8 (24.2%)
Nutrition adequately and	nutrition	
sufficiently in primary school?	I don't have sufficient materials	11 (33.3%)
J 1 J	Children are not interested in	3 (9.1%)
	nutrition	, ,
	My school is not supportive	2 (9.1%)
	I believe it is the role of the	9 (27.3%)
	parents to teach children about	
	nutrition	

# Table 5: Educational games (ordinal questions)

Question in survey	Mean (SD)	
How useful do you think educational games are to teach <sup>A</sup>	Numeracy in general	1.56 (0.62)
	Number and algebra	1.63 (0.71)
	Statistics and probability	1.72 (0.74)
	Health	1.94 (0.88)
	Nutrition	1.97 (0.85)
	Volumes and shapes	1.88 (0.74)
Do you think educational games are in general <sup>B</sup>	Useful	1.70 (0.81)
	Distractive	4.58 (1.56)
	Evidence based	2.67 (1.05)
	Effective	2.03 (0.82)
	Easily available	2.97 (1.31)

Scale: 1=Extremely useful; 2=Moderately useful; 3=Slightly useful; 4=Neither useful nor useless; 5=Slightly useless; 6=Moderately useless; 7=Extremely useless

#### Table 2: Selected teacher's Comments

Parental choices in lunch boxes have an impact on the success of nutrition teaching

Sometimes parents are counter productive - packing unhealthy snacks and foods even though they are aware of good nutrition

There is not enough time in the day, especially dealing with more social and emotional issues than ever before. We are also expected to do more and more jobs that parents should be taking responsibility for.

We are already incredibly time poor and with so many distractions and interruptions, things never go to plan. I only had my class for 2 hrs today, 2 hrs yesterday and 3 hrs on Tuesday. What isn't accounted in these times (recommended teaching time) are practices for presentations, assemblies, things like swim school, scripture, behaviour management, social situations, PBL, Kids Matter, Library etc.

I think teachers want to teach more about nutrition but we simply don't have enough time in the day to properly cover it. We're constantly told Australia is slipping down the ranks in English and Maths and so this takes priority every day.

<sup>&</sup>lt;sup>B</sup> Scale: 1=Strongly agree; 2=Agree; 3=Somewhat agree; 4=Neither agree nor disagree; 5=Somewhat disagree; 6=Disagree; 7=Strongly disagree