

5 Primary schools

In Victoria, there are over two thousand state, Catholic and independent primary schools. These schools are an important setting for the promotion of children's healthy eating because ~~the vast majority~~ of children aged 5–12 years attend them. Not only can children's eating be influenced, but school-based programs have potential to influence the food consumption of the children's parents and other family members too.

The Review of Children's Healthy Eating Interventions suggested interventions that directly involve parents or that change the food school supply are probably more effective than those based solely on classroom activities. There is a lot of evidence that the use of group-based experiential learning techniques within well designed curricula can have profound effects on children's attitudes to food and their knowledge of it (Johnson and Johnson 1985).

In Australia, several initiatives are pertinent to primary (and secondary) schoolchildren's eating habits, as discussed in the following subsections.

The model national nutrition education curriculum (Reynolds 2000a, b, c)

The Victorian curriculum standards framework (VCAA 2002) incorporates aspects of the national curriculum, which recommends the content and pedagogy regarding food and nutrition. The framework encompasses substantial education efforts that are likely to influence children's and families eating behaviours. However, its effects on children's knowledge and food habits have not been evaluated. The amount of educational effort spent on nutrition education varies from teacher to teacher and from school to school, as does the extent to which children's experience of food preparation and tasting is fostered.

The Health Promoting School Network

Schools are special communities in which children, teachers and other members of the community spend time. They are sources of social capital in the local community: in addition to their teaching roles, schools have other functions, such as fostering interactions among members of the community and fostering the health of the children who attend school. The 'health promoting schools' movement has developed in Australia over the past two decades; it emphasises the community and health building roles of schools (Nutbeam and St Ledger 1997).

The Health Promoting Schools Framework underscores key relationships between:

- curriculum, teaching and learning—that is, food services are consistent with ongoing teaching in the school;
- school organisation, ethos and environment—that is, school staff, parents and students are involved in ‘whole’ of school nutrition policy and program development, and the food service reflects the sociocultural backgrounds of the students; and
- community links and partnerships—that is, schools develop links with community health organisations, food markets, farming and environmental groups.

The World Health Organisation originally endorsed the ‘health promoting schools’ concept in the 1990s. The concept has now evolved, internationally, into the FRESH framework (focus on resources for education in school health), which recommends the provision of portable water, sanitation, hygiene and food and nutrition services in all schools around the world. Several international organisations (including the World Health Organisation, the Food and Agricultural Organisation, UNESCO and the World Bank) endorse the FRESH framework.

Useful resources in this area include:

www.hlth.qut.edu/ph/ahpsa

www.softweb.vic.edu.au/hps

www.worldbank.org

www.sahps.net (South Australian health promoting schools network)

www.cdhf.org.au.

School fruit and vegetable programs

Various fruit and vegetable awareness raising programs are occasionally conducted in several states, whereby children are encouraged to taste and prepare fruit and vegetables. Victoria’s Department of Human Services recently adopted the Western Australian program in trials conducted (with the Victorian Home Economics and Textile Teachers’ Association) in the northern suburbs of Melbourne. Preliminary evaluations suggested children, teachers and parents responded positively to this program, which encourages classroom consumption of fruit and vegetables. One aim of the Western Australian program during the past decade has been to increase children’s expectations about the number of servings of fruit and vegetables that should be consumed each day. Surveys conducted by the Western Australian Department of Health showed these expectations have been increased (C Pollard, pers. comm., 2002). Similar findings have been found for the Coles–Dietitians Association of Australia ‘7 a day’ program (Reeve 2001), which aims to increase the population’s consumption of fruit and vegetables.

Two straightforward innovations that have been trialled in several Victorian primary schools are scheduled fruit breaks and the introduction of water bottles (Muller 2003). The Fresh Kids program, coordinated by the Western Region Health Centre, in partnership with nine local primary schools in Melbourne's inner west, has demonstrated remarkable changes in children's eating patterns. At two pilot schools, the percentage of children eating fruit rose from 20% per cent to over 70% when scheduled fruit breaks were introduced during class time. By taking a whole-of-school approach to nutrition promotion, underpinned by the development of school policy, a culture of eating fruit has been sustained for over three years (figures 9 & 10). Similar increases in the consumption of water were observed when children were allowed to drink in class from their own water bottles.

Figure 9: Change in percentage of children with fruit to eat at Footscray Primary School from 2001-2004

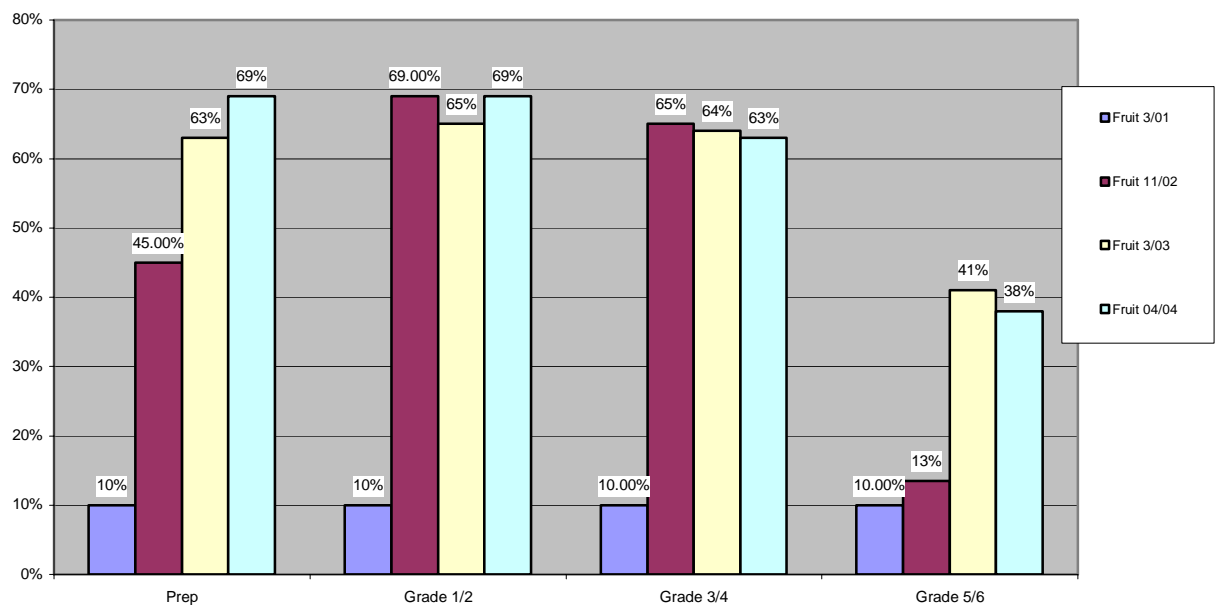
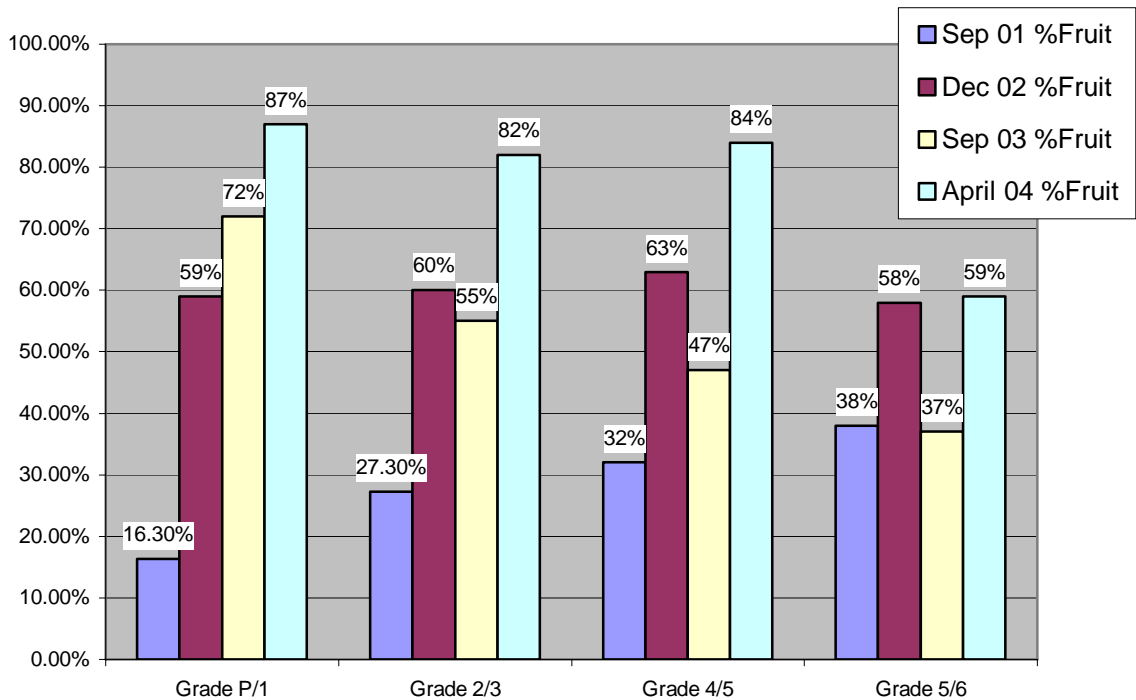


Figure 10: Change in percentage of children with fruit to eat at Christ the King Primary School from 2001-2004



Other Australian examples of the promotion of healthy eating in schools include:

- the promotion of healthier food choices over less healthy foods in primary schools—for example, by renaming salad rolls as ‘cool’ foods eaten by older peers (Loreto College, Adelaide).
- visits to fresh fruit and vegetable markets by preschool and primary children to expose them to new taste and food experiences in vibrant settings (for example, Footscray primary school)
- community garden and school garden schemes, which allow children to acquire skills and knowledge in the production of fresh foods, as well as positive attitudes towards whole foods (for example, Collingwood College’s vegetable garden, the Royal Children’s Hospital roof garden, local government city farms).
- the fruit and vegetable campaigns in Western Australian schools (see www.fruitnvegweek.health.wa.gov.au/home/index.asp). See also newsletters from the Children’s Health Development Foundation in Adelaide: www.chdf.org.au/i-cms_file?page=110/Foodmatters8Carers.pdf
- the ‘Fresh for kids’ campaign in New South Wales (www.freshforkids.com.au)
- the Tooty Fruity Veggie project—a two-year intervention to increase fruit and vegetable consumption among primary children in northern New South Wales (box 11).

Further examples of interventions in schools can be found in the listing of National Child Nutrition projects at www.health.gov.au/pubhlth/strateg/childnutrition.htm. Information about health promoting schools can be accessed at www.sofweb.vic.edu.au/hps/ and www.hlth.qut.edu.au/ahpsa.


The World Health Organisation website has a detailed description of its fruit and vegetable promotion initiative (www.who.int/entity/dietphysicalactivity/media/en/gv_report.pdf), and the Report of the Fourth International 5aday Symposium held in Christchurch in 2004 also provides practical updates on fruit and vegetable promotion (www.5aday.co.nz/symposium/).

Other electronic resources

The www.human-race.org.au system allows children to record their performance in physical activity tasks and in some aspects of food preparation. These recordings can provide teachers with feedback. Such programs need to be further developed, perhaps to evaluate the effects of self-monitoring of food intake, for example. A similar website that can be used to promote children's healthy eating is www.kidsfoodclub.org.

Setter, Kouris-Blazos and Wahlqvist (2000) developed a useful set of recommendations for the conduct of school-based healthy eating interventions in Australia. Huon, Wardle and Szabo's (1996) guide to the design of school-based nutrition programs is also useful.

Figure 11: Example 1 of a canteen food policy



Fact Sheet

Canteen Policy of _____ School

PROMOTING CHILDRENS HEALTH

Why have healthy foods in canteens?


The school's canteen reflects the value the school puts on healthy eating practices. The canteen is an integral part of the school and as such illustrates and complements classroom programs. As well as an educational role, it has important service, social and cultural role in our multicultural society.

For many students who use the canteen regularly the food purchased there makes a significant contribution to total food intake and nutrition. Nutrition is important to health throughout life. It is particularly important at times of rapid growth and development, which include the school years.

The school canteen will aim to:

- Encourage the development of good eating habits consistent with the *Australian Dietary Guidelines for Children and Adolescents*
- Provide a variety of food and drinks recommended by the NSW School Canteen Association and in line with the NSW Government's *Fresh Tastes @ School Canteen Menu Planner*.
- Develop an appreciation of the social, ethnic and cultural aspects of foods, as well as the nutritional aspects.
- Provide students with practical learning experiences about making healthy food choices that reinforce classroom teaching on nutrition.
- Function as an efficient business enterprise.
- Demonstrate high standards of food safety and hygiene in relation to the preparation, storage and serving of food at the canteen consistent with the national Food Safety Standard.

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New South Wales School Canteen Association 3 Carlingford Road Epping NSW 2121 Phone: 02 9876 1300
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- g. Provide an opportunity for the school community to participate in decisions concerning the operation of the school canteen through the canteen committee.
- h. Encourage courtesy and consideration among all personnel using canteen facilities.
- i. Provide an opportunity for parent and community involvement in children's education environment.
- j. Provide a financial contribution towards resources for all students in the school

Distribution of the Policy Document

- a. A current copy of this policy and supporting documents will be on permanent display in the school canteen.
- b. A copy of the current canteen policy that has been signed and dated will be given to all canteen committee members at the first canteen committee meeting following the parent body annual general meeting.

Administration

- a. The "sponsoring body" shall be the-
 - Parent Body Committee
 - Principal
- b. The sponsoring body will manage the school canteen through a canteen committee.
- c. The canteen committee will be responsible for operating the canteen in accordance with this policy and its supporting documents.
- d. The canteen committee will present a report to each general meeting of the sponsoring body.
- e. The committee chairperson shall present a written report and the auditor's report to the annual general meeting of the sponsoring body.
- f. The sponsoring body must approve all canteen capital purchases exceeding \$500 by a majority vote at a general meeting, prior to purchase.

The sponsoring body shall have the right to reorganise, disband or close the committee. Such decisions are to be supported by majority vote at a general or special meeting. The school community must be given at least seven days notice in writing. Notice of motion for action must be given in writing, to the secretary of the sponsoring body, and must be signed by 5 financial members of the sponsoring body. ..page 2

Figure 12: Example 2 of a canteen food policy



Fact Sheet

Principal Managed Canteen

In cases where a change in the method of control is proposed by the principal, the principal shall inform the parent body of their intention and afford its members an opportunity for full discussion with him/her. Where agreement cannot be reached by this means, the parties concerned shall have the right to present their case to the next highest authority.

Leased Managed Canteen

The school canteen agreement entered into between the lease holder and the school is to be consistent with the principles recorded in the schools canteen policy.

Gifts/Concessions

All discounts, allowances, complimentary articles, gifts concessions and the proceeds thereof from any supplier of goods or services, directly or indirectly, to the canteen shall remain the property of the canteen and be properly recorded and later accounted for at the time of stocktaking.

Alterations to this Policy

This policy shall not be added to, or amended, except at the annual general meeting of the sponsoring body, or a special meeting thereof (called for that purpose); and then only with the approval of the majority of those present who are entitled to vote.

This policy will be reviewed annually by the canteen committee/ principal and suggested amendments will be forwarded to the sponsoring body at least one month prior to the sponsoring body's annual general meeting.

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Registration

We the undersigned, hereby certify that this policy was adopted at the annual general meeting of the sponsoring body held on:

_____ the _____ day of _____ 2 _____

Secretary:

Sponsoring body: _____

President: _____

Sponsoring body: _____

Principal: _____

Canteen committee representative: _____

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Box 9: Intervention example—a model charter for a health promoting school

'Our school aims, through all our activities and structures, to assist students, staff and other members of our school community to experience physical, mental and emotional wellbeing.'

We are committed to:

- ensuring our physical surroundings are safe, pleasant and stimulating
- effectively teaching skills for health in the classroom
- relating and communicating well with members of our school community
- creating school policies and procedures that promote health
- participating with staff, students and their families in planning and carrying out health-promoting initiatives
- inviting local organisations to work with us to make our school community more healthy.

Our school will:

- provide personal development, health and physical education programs that are integrated with student welfare
- provide at least three supervised sessions of vigorous physical activity per week for all students
- involve the local community in the review, implementation or evaluation of at least one health promoting program per year
- provide the canteen with a policy of selling health promoting foods
- provide a fully equipped and well maintained first aid area, staffed by a qualified person, and ensure careful attention to practices and medications
- recycle paper, aluminium and glass and use environmentally friendly products where possible
- address safety in all school activities, including sport, playground, practical lessons and school traffic environments
- provide an environment that minimises health risks, with particular regard to air and noise pollution
- provide programs that address major public health issues such as road safety and drug education with community participation in planning and implementation
- establish links with local health services on issues relating to the health of students and staff.

Source: WHO (1995), at www.deakin.edu.au/faculty/education/math_sci_enviro/hpsschools/model.htm

What has been learned about nutrition promotion in schools?

- *Role models.* Are teachers, parents and practitioners perceived to follow the recommendations found in the *Australian Guide to Healthy Eating* and *The Australian Dietary Guidelines for Children and Adolescents*? If they are poor role models, children are less likely to eat healthily.
- *Timetable and changes in classroom rules.* Children should be enabled to consume foods and drinks that conform to healthy eating recommendations. The introduction of fruit and water breaks shows that most children are happy to eat healthily if the school enables them to do so.
- *Feedback and encouragement (positive reinforcement).* Children, teachers and parents should be rewarded for eating healthy foods. Footscray Primary School, for example, made the issue of water bottles fun and rewarding for children by introducing bottle decorating competitions and awarding small prizes for bottles that children judged to be 'best'. At a more abstract level, teachers and parents can benefit from feedback that shows they are complying with healthy eating recommendations (for example, through evaluation showing the extent to which they have improved their children's eating habits). People tend to learn only when they receive feedback about the effects of their actions (Powers 1979). Children, teachers, school principals and parents need to be informed about their compliance with healthy eating guidelines, and the evaluations should be motivating.
- The food and nutrition curriculum can be taught in a variety of disciplinary areas (for example, maths, English and social studies). The experiential aspects of eating food are important because they are how children develop preferences for healthy foods.
- The school food environment has to be consistent with the nutrition curriculum taught in the classroom. School canteens, for example, should actively promote healthy foods and beverages.
- Healthy eating is best promoted at school through the adoption of school food policies that involve students, teachers, canteen staff and parents (see below).

School food services

In Australia, parents are generally assumed to be responsible for supplying food to their children at school, either by preparing food that children take to school or by giving children money to purchase food from canteens, tuckshops or corner stores. Schools are encouraged to develop their own ways of regulating the consumption of foods on their premises (Department of Education & Training, Victoria 2003). Several other OECD countries have not adopted this approach. For example in France, Germany, Italy, the United Kingdom and the United States, government subsidies fund schools to provide healthy food to children (www.localfoodworks.org). This approach is undertaken in a variety of ways and with varying

degrees of success. In these countries, the feeding of children is perceived as a shared responsibility of the community (government) and parents.

It may be time to question the food services provided in schools, for the following reasons:

- The number of adults who can work as volunteers in school food services is diminishing. Only 37 per cent of primary and secondary schools involve adult volunteers in the school canteen, for example (Maddock, Warren and Worsley 2004). Many parents work long hours in paid employment outside the home (ABS 2000; Pusey 2003), which makes food provision for children more difficult than in earlier generations. In response to this social change, over half of secondary schools provide food for children before school hours (Maddock, Warren and Worsley 2004), and the number of out-of-school hours child care centres is rising rapidly (www.facs.gov.au/internet/facsinternet.nsf/childcare/families-outside_school_hours_care.htm).
- The sale of food to customers, especially minors, carries legal responsibilities regarding the safety of the food. Companies and individuals that sell unsafe foods are liable to prosecution (under the *Victorian Food Act 1984*). Recent developments in the United States suggest the legal responsibility for food safety may extend to the adverse health effects of foods (such as those high in saturated fats) many years after sale (Caraher 2003).
- There is concern among educators and parents (Cleland, Worsley and Crawford 2004; Maddock, Warren and Worsley 2004) that the nutritional quality of foods sold in schools does not correspond with the knowledge taught in the classroom. In other words, the sale of fast foods undermines classroom nutrition education about the dietary guidelines, for example.
- Canteens are one of the settings in which children should be able to use their theoretical learning to practise healthy food habits. They can be used to reinforce the health messages taught in the classroom.
- Children and parents perceive many of the foods commonly sold by school food services (such as chocolate, hot chips and meat pies) as 'unhealthy' (Cleland, Worsley and Crawford 2003), so why are these foods sold in such high volumes?
- Many schools are finding it difficult to run school services that supply healthy food to children (Maddock, Warren and Worsley 2004). To worsen matters, school canteens are often used solely as revenue earners to subsidise other school activities (such as sports teams) (D Wilson, pers. comm., 2003).

Strong advocacy is needed to raise public and political awareness of the need for high quality food provision in schools. One powerful advocacy tool is the monitoring of school food sales and a comparison of these sales with the recommendations of the *Australian Guide to Healthy Eating* and Victoria's School Canteen Guidelines (Department of Education and Training, Victoria 2003). The disparities should be made available to schools and other responsible education and health organisations.

The NSW School Canteen Association is a useful model that attempts to promote healthy eating among children through its networking among schools, food identity and NSW Health. Schools pay an annual subscription to the association, which provides them with canteen guidelines, training and lesson plans, and access to healthy food products provided by companies that meet the Association's nutrition criteria (www.healthy-kids.com.au).

Although considerable policy development may be required at state level, school communities can do much to improve the quality of food that they supply by adopting school food policies. Only through 'ground up' approaches can the school community make its food policies sustainable. The recent Department of Education and Training, Victoria (2003) guidelines on healthy school food (www.sofweb.vic.edu.au/scln/docs/ExecMemo017) suggest a healthy school food service:

- makes it easy for students to choose healthy snacks and meals
- offers a variety of nutritious food and snacks
- promotes food that is consistent with current best knowledge in the provision of nutritious food for students
- can be an avenue for consistent and continual health education
- complements the diverse elements of the school curriculum
- involves students and parents
- is an integral part of the entire healthy school environment.

The guidelines suggest:

The school food services and the curriculum programs on healthy eating should complement each other. Ideally, positive peer pressure within the education setting will create a culture in which nutritious food and a healthy lifestyle are actively chosen. This culture should permeate the whole school environment and have an impact on the family. (Department of Education and Training 2003,)

Box 10 outlines ways in which to set up a school food policy.

Box 10: How to get started on a healthy school food service

The following points are suggestions to support a school council to move towards a healthy food service.

- Form a working party or a subcommittee of the school council, involving canteen staff, teachers, parents and, where appropriate, students.
- Engage support for the provision of a healthy school food service.
- Involve the principal, canteen administrator, canteen staff (including paid and volunteer workers), the canteen committee, teachers and other staff, the school parent body,

parents and students.

- Build awareness and knowledge.
- Collect and disseminate current and reputable information about nutrition and health through the provision of guest speakers, professional development for teachers and activities/videos for the school community.
- Find out what is already happening.
- Identify whether there is already a policy in place, whether it is recent, if it follows current guidelines and if it is being properly implemented.
- Identify any other school policies that impinge on the school food services.
- Find out what people think.
- Survey the school community. The type and range of foods provided by the school food services and the popular food items need to be identified. The extent to which the parents/staff/students support the school food services and the degree of satisfaction with them also need to be established.
- Develop a draft policy based on the information provided in these nutrition guidelines and circulate it to the school community for feedback.
- Present the modified draft to the school council for approval.
- Develop a detailed implementation plan.
- Stipulate a timeline for reviewing and evaluating the policy on a regular basis.

Source: Department of Education and Training, Victoria (2003)

Experience in Victoria and other states strongly suggests school food services can be run on a financially sound basis while providing healthier, appetising food choices. These outcomes require training in sound business, marketing and nutrition practices. A successful example of the linking of schools with the local community is Collingwood College, which has school garden and cooking programs that involve children and their families with food markets, food retailers and regional personnel of the Department of Human Services (Alexander 2003).

Several groups are concerned about the operation of school canteens—for example, students, parents, canteen staff and teachers. However, they are likely to have conflicting views and interests, such as differing views on what constitutes healthy food, the prices that should be charged, and the purpose of any financial surpluses made by the canteen. To achieve their educational goals and to maintain harmony in the school community, many schools devise their own school canteen policies (often as part of broader school policies).

School canteen policies

These policies are sets of operating rules and principles that should:

- involve students, parents and teachers

- actively promote healthy foods and beverages through marketing approaches such as loyalty schemes, preferential positioning in the canteen (with the foods at the front of the counter selling first) and lower prices
- set sales objectives that are consistent with the dietary guidelines for children and adolescents, and regularly monitor the school's progress against those objectives
- train staff in the principles of healthy eating, nutrition and business management
- limit the use of confectionery or other unhealthy foods to promote school objectives (such as the sale of fast food vouchers to support sports teams)
- avoid sponsorship deals with fast food and beverage companies that involve the placement of high energy, low nutrient dense products in the school (for example, soft drink vending machines).

Useful resources in this area include:

- the Children's Health Development Foundation's (Adelaide) *School canteen manual: a hands-on approach for South Australian schools* (www.chdf.org.au)
- the Primary Fightback Resource Kit (www.diabetes.com.au/resources/webresources.htm)
- the Active-ate program (Queensland), which includes classroom materials (Tuckshop Shortcuts, Breakfast Boost, Dig In—Creating an Edible School Garden, H₂O, Fruit and Veg to Go, Fat in Food posters) (www.health.qld.gov/ActiveAte/beyond/default.asp)
- Fruit and water school policy and related publications from the Department of Health, Western Australia (www.population.health.wa.gov.au/promotion/resources)
- The School Health Index—an approach promoted by the US National Center for Chronic Disease Prevention and Health Promotion, which has useful planning documents for developing school food and health policies (www.cdc.gov/nccdphp/dash/SHI/elementary1.htm).

Box 11: Intervention example—the Tooty Fruity Vegie project

The Tooty Fruity Vegie (TFV) project was a two-year, multi-strategic health promotion program aimed at increasing fruit and vegetable consumption among primary school children in the Northern Rivers region of New South Wales. The project aimed to achieve this increase by improving:

- children's fruit and vegetable knowledge, attitudes, access and preparation skills
- parents' fruit and vegetable knowledge and preparation skills and their involvement in fruit and vegetable promoting activities in the schools and elsewhere
- teachers' attitudes towards teaching about fruits and vegetables in schools and their skills and confidence in relation to teaching about fruits and vegetables.

Intervention

In late 1998, 10 volunteer primary schools (1174 students in total) were recruited as

intervention schools and another six local primary schools (992 students in total) were recruited to act as demographically and geographically matched controls. The project, which ran during the 1999 and 2000 school years, promoted a whole-of-school approach to implementing a range of classroom, canteen, family-oriented and community-based strategies promoting fruits and vegetables. The strategies were developed from the evidence available at the time and were designed to create a supportive environment by developing, and helping schools to implement, fruit and vegetable promoting educational resources and activities for children, their parents, teachers, schools, school canteens and the broader community.

Schools were encouraged to form project management teams to oversee the project's implementation in their school. Membership varied between schools but could include teacher, principal, child, parent, canteen, community nutritionist and Aboriginal Education Assistant representatives. These teams, assisted by a TFV project officer, were responsible for choosing the TFV strategies to be implemented in their school, organising their implementation, monitoring the response to them and modifying them as necessary. They also often initiated new, innovative strategies they found or developed themselves. Small grants of A\$270 to A\$750 per year were made available to schools, based on need, to assist with implementing TFV strategies. In line with the aim of creating a self-sustaining program, all intervention schools were encouraged and helped to recruit and train volunteers (mainly parents) to help with implementing many TFV strategies. The TFV project officers ensured information about successful strategies was communicated between intervention schools.

Evaluation

The TFV project had a comprehensive process, impact and outcome evaluation plan, of which only the first two are presented here. The latter involved prospective 24-hour food records at the beginning, middle and end of the project, are currently being analysed and will be reported separately.

In order to evaluate the quality of the project's implementation and its success in relation to its broad range of impact indicators, we drafted, pilot tested, revised and administered surveys to all the children, parents, teachers, principals, volunteers and other health professionals involved in or exposed to the TFV project. In addition, a 'participation index' was completed by each intervention school's project management team to indicate the reach, frequency and quality of implementation for each key TFV strategy.

Results

The results showed that the TFV project was well implemented, reached the vast majority of all target groups and was overwhelmingly positively received by them. The project enhanced the quality, diversity and frequency of classroom fruit and vegetable promoting activities,

substantially increasing children's involvement in and enjoyment of such activities. It also increased the amount, range and use of fruit and vegetable promoting materials distributed to parents, as well as increasing parental interest and involvement in, and enjoyment of, fruit and vegetable promoting activities in schools and beyond. The fun, practical and hands-on nature of many of the TFV strategies, and the parental involvement, seem to have been key factors in the project's success.

The TFV project improved children's fruit- and vegetable-related knowledge, attitudes and preparation skills and their access to fruits and vegetables at home and in school settings, and may have improved their fruit and vegetable eating intentions and actions. Analyses in progress on 24-hour food record surveys will provide more definitive evidence regarding the project's impact on fruit and vegetable intake. Attitudes and home access to fruits and vegetables appear to have improved more for girls and younger children than for boys and older children. Similarly, younger children reported more impact on their fruit and vegetable eating intentions and actions.

Source: www.nrahs.nsw.gov.au/population/promotion/tooty_fruity/

Key lessons learned from the Tooty Fruity Veggie project

- Support from principals and the whole-of-school approach were important in enhancing the project's implementation.
- Adequate planning, training and support for project activities were essential in establishing the project in schools. The project performed well in this area.
- Providing teaching resources that address curriculum outcome statements was important in addressing the project's competition with other topics for limited curriculum space. The project performed well in this area, and existing materials need only be professionally produced before future implementations.
- Good communication with schools and support (for example, cooking equipment and teaching resources) from the project staff were important in achieving teachers' and principals' overwhelmingly positive attitudes towards the project.
- Having school project management teams was important for coordinating and sustaining project activities. Broad representation on the project management teams was also important in maximising the range of project activities and minimising the burden on individual members.
- Committed parent volunteers were an essential part of implementing many key project strategies. Although the project increased parental involvement in school-based fruit and vegetable activities, there was still much room for improvement. Better scheduling of events, improved training, more incentives and the offering of transport and child care were suggestions for increasing parental involvement. More efforts to improve networking

among volunteers from different schools could also improve volunteer numbers and satisfaction.

- Project activities scheduled to coincide with other school events (for example, sports days) were much better attended than those run alone.
- The fun and hands-on nature of many project activities, such as the 'Kids in the Kitchen' cooking classes, food tastings and gardening, was important in maximising children's, parents', volunteers' and teachers' enjoyment of, and satisfaction with, the project.
- Fruit and vegetable tastings, cooking lessons, gardening, videos and visits to fruit and vegetable growers and markets were consistently considered the most successful activities for improving children's fruit and vegetable knowledge, attitudes and skills, and for meeting teachers' curriculum goals.
- The 'Kids in the Kitchen' cookbook and manual, the *More teacher resources for classroom activities* folder and the gardening kit were the most useful classroom resources for the teachers.

Box 12: Intervention example—the CATCH (Child and Adolescent Trial for Cardiovascular Health) study

The study involved 5106 third to fifth graders in four American states. The intervention conducted in 56 schools included a combination of school food service modifications, enhanced physical education and classroom health curricula. Students in 40 schools acted as controls. A wide variety of health indices were measured before (1991), during and at the completion of the program (1994).

The percentage of energy intake from fat fell significantly more in the intervention school lunches (down from 38.7 per cent to 31.9 per cent) than in the control school lunches (down from 38.9 per cent to 36.2 per cent— $p < 0.001$). Self-reported daily energy intake from fat among students was significantly reduced in the intervention schools (down from 32.7 per cent to 30.3 per cent) compared with control schools (down from 32.6 per cent to 32.2 per cent— $p < 0.001$).

Other findings reported from this large scale trial included: significantly greater response scores for dietary knowledge, dietary intentions and self-reported food choice changes for the intervention schools compared with control schools; significantly higher perceived social reinforcement for healthful eating patterns in the intervention groups; significantly reduced dietary cholesterol among children in the intervention groups (down from 223 milligrams to 206 milligrams) compared with controls (up from 218 milligrams to 225 milligrams); a significant increase in the intensity of physical activity in physical education classes in the intervention schools compared with the control schools; and significantly more self-reported daily vigorous activity in intervention students compared with controls. The study showed that

combinations of intervention approaches can be effective in bringing about dietary and health behaviour changes in large school systems.

A three-year post intervention follow-up included 73 per cent of the initial CATCH cohort (when students were in grades 6–8). At grade 8, self-reported daily energy intake from fat was significantly different for the intervention group compared with the control group (31.6 per cent versus 30.6 per cent— $p=0.01$). There were also significant differences for dietary knowledge and dietary intentions, but not for social support or physical activity in the intervention students compared to controls at grade 8.

Source: Based on Luepker et al. (1996) and Nader et al. (1999)