Stephanie Alexander Kitchen Garden National Program Evaluation: Final Report

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Note

This report has been informed by other documents submitted to the Australian Government Department of Health and Ageing. It is intended that details contained within these other documents will become publicly available in peer reviewed journal articles and other published materials.

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Abbreviation List

ACARA	Australian Curriculum, Assessment and Reporting Authority
AuSSI	The Australian Sustainable Schools Initiative
BER	Building the Education Revolution
CALD	Culturally and Linguistically Diverse
DEEWR	Department of Education, Employment and Workplace Relations
DoHA	Department of Health and Ageing (Australian Government)
HPS	Health Promoting Schools
HSIE	Human Society and its Environment
ICSEA	Index of Community Socio-Educational Advantage
KLA / KLAs	Key Learning Area/s – generic abbreviation across all states / territories Different names in other states / territories: ELs – Essential Learnings (QLD and SA); KCs – Key Competencies (SA); KGPs – Key Growth Points / Bands (NT); KLA - Key Learning Area/s (NSW); LASs – Learning Area Statements (WA); LOs – Learning Opportunities / Areas (TAS); VELS – Victoria Essential Learning Standards (VIC).
MCEECDYA	Ministerial Council for Education, Early Childhood Development and Youth Affairs
NAPLAN	National Assessment Program – Literacy and Numeracy
PSP	Priority Schools Programs
SAKG Foundation	Stephanie Alexander Kitchen Garden Foundation
SAKGNP	Stephanie Alexander Kitchen Garden National Program
SES	Socio-Economic Status

Executive summary

1. Introduction

In 2008 the Australian Government committed $12.8 million to fund the rollout of the Stephanie Alexander Kitchen Garden National Program (SAKGNP or the Program) and build garden and kitchen infrastructure in up to 190 government primary schools across Australia. The Australian Government is committed to reducing the prevalence of childhood overweight and obesity and to promoting nutritional health. Primary schools provide an ideal location to engage children in behaviours that will support their health for life.

The focus of the Program has been to enable primary school students in Years 3 – 6 to learn how to grow, harvest, prepare and share seasonal fresh food in the belief that this approach will positively influence children's food choices.

The Program works by involving children across Years 3 – 6 to spend a minimum of 45 minutes each week in a vegetable garden that they have helped to design, build and maintain. The garden is located on the school grounds and is run on organic gardening principles. Children also spend 90 minutes each week in a kitchen classroom preparing and sharing meals produced from the garden foods. The school employs two part-time specialist staff; a gardener and a cook, to run these sessions. The Program is implemented within a whole-school approach, engages the school community and is integrated with the curriculum.

In June 2011, the Centre for Health Service Development, a research centre of the Australian Health Services Research Institute at the University of Wollongong, was appointed as the national evaluator of the SAKGNP. This evaluation was undertaken on behalf of the Australian Government Department of Health and Ageing (DoHA).

The role of the Centre for Health Service Development was to conduct an independent evaluation of the process, impact and outcomes of the Stephanie Alexander Kitchen Garden National Program (SAKGNP or the Program). The evaluation was required to answer the following five questions:

- Evaluation question 1: Has the Program influenced students' lifestyle behaviours, eating habits and food choices?
- Evaluation question 2: Has the Program contributed to student learning in Key Learning Areas, attendance patterns and social behaviours within the school environment?
- Evaluation question 3: Has the Program had an impact on students or community members that may be identified as at risk of social exclusion and, if so, what is the attribution? How can the National Program better support the social inclusion agenda?
- Evaluation question 4: What are the enablers and barriers to participation in and sustainability of the Program? How can these be better harnessed and / or overcome?
- Evaluation question 5: What has been the return on investment to the Australian Government, students and the school community?

This report, the 'Stephanie Alexander Kitchen Garden National Program: Final Report', presents the final results of the SAKGNP evaluation and provides a synthesis of the data sources used in the evaluation to address the evaluation questions. The Final Report was submitted to DoHA as part of the reporting process for this national evaluation.

2. Summary of the literature

Schools have been recognised as very important settings for health promotion, including the promotion of healthy eating in children. Children spend a large amount of time at school and this setting provided opportunities to influence students' behaviour through structured learning and activities. Schools have taken on responsibility to teach students about healthy food choices or eating behaviours. These opportunities have been promoted through curriculum links, breakfast or

lunch programs or foods in school vending machines. School gardens with and without cooking programs have also been considered to have the potential to change children's eating behaviours. For children who normally abstain from physical activity, gardens may be a suitable, non-competitive way to encourage physical activity and form part of obesity prevention or chronic disease reduction programs.

The literature recognised that school garden and kitchen-based lessons offered opportunities for 'hands-on learning' in a variety of curriculum areas; had the potential to change the social behaviours of students; and provided settings for interaction and engagement with members of the broader school community.

2.1 Students' lifestyle behaviours, eating habits and food choices

Gardening and cooking programs in schools influenced children's eating habits by providing experiential learning around food, food growing, cooking, tasting and eating that influenced healthy eating behaviours, particularly increased consumption of vegetables and fruit. Almost all the reported studies have been small in scale and limited in duration, and cooking had not been included in many of the programs. Generalisation of many of the study findings was potentially limited, but there was consistency across a wide range of studies that suggests the patterns reported had some reliability and validity.

A recent US study found that fourth and fifth grade students who participated in a 12 week gardening program that included cooking had improved preferences for vegetables, increased perceptions that vegetables from the garden tasted better, and that gardening and cooking were easy. Another US study reported high levels of enjoyment of working in the garden, preparing fruit and vegetable snacks from garden produce, taste-testing fruits and vegetables, and learning about fruits and vegetables. An earlier study of a garden-enhanced nutrition education program for grades 4 – 6 in California found improvements in nutrition knowledge, as well as increased vegetable preferences.

Despite the frequent findings from both students and teachers that garden and kitchen programs in schools increased preferences for vegetables and fruit, increased willingness to taste new foods, and increased knowledge about vegetables and fruit, a number of studies found no change in the amount of vegetables and fruit consumed. It appears that overall attitudes have been improved by participation in the program, with no demonstrated impact on vegetable intake in the short term.

Appropriate levels of resourcing has been identified as a factor influencing the impacts – one California study found less than 40% of schools achieved their school garden goals, mostly due to insufficient funds to support the garden program.

Overall, the consistency of the research evidence suggested that the hands-on experiential learning involved in gardening and cooking resulted in increased willingness to try new foods, increased preferences for fruit and vegetables, increased levels of enjoyment in gardening and cooking, and translation of gardening and cooking experiences to students' families. However, there was less evidence that programs increase actual consumption of vegetables and fruit.

2.2 Student learning in Key Learning Areas and social behaviours within the school environment

School gardens and kitchens have been a context for a wide range of curricular and extra-curricular learning opportunities that have potential to enhance student achievement. They have been found to support the achievement of a variety of positive learning outcomes, particularly when tailored to be integrated with the culture of, and other programs within, a school. Experiential learning involved in these programs offered many opportunities for active learning about a wide range of knowledge. The literature suggested school leaders supported school gardens because of their potential to enhance academic instruction, particularly in science, environmental education and nutrition, as well as extra-curricular opportunities. But the public school policy emphasis on academic achievement has been said to limit teachers' abilities to focus on nutrition education or the broader goals of garden programs. The importance of mathematics

and science knowledge and skills being part of the garden curriculum has been noted in the literature, as has the need for specialist knowledge and competence of teachers to use the school garden for academic lessons.

Garden programs have been promoted in schools as a means to foster changes in students' social behaviours. The garden and gardening activities provided an engaging context for student learning and motivation for attitude change. Underpinning the attitude changes were the social interactions inherent in the experiential context of the learning activity in a garden. This was a key benefit for students because the garden offered a unique opportunity for them to have positive interactions with each other, as well as a place to practice conversation skills. School garden programs have been found to increase students' social behaviours, including working in groups, communicating with others, leadership and volunteerism. Schools also used garden programs to foster students' decision-making and problem-solving abilities.

2.3 Social inclusion

Evidence has shown consistently that participation in community gardens was associated with increased mutual trust, social connections and interpersonal relationships and studies of gardens in school settings have shown similar results. School gardens, though not specifically vegetable gardens, have been found to promote social inclusion. School gardens also had potential to engage students from multicultural backgrounds with the school curriculum.

The research has shown that gardening and cooking had positive impacts on engaging students who were otherwise difficult to engage with learning in the classroom, students with special needs, and students from diverse backgrounds, including indigenous students. In addition, school gardens and cooking classes offered opportunities for members of the broader school community to engage with schools and with their students' learning, fostering civic engagement and volunteerism. Most of the research has focused on school gardens, but a few studies have shown that cooking classes similarly offer opportunities for social inclusion.

3 Methods

The evaluation adopted a matrix framework to assess the impact of the Program at three levels: impact on the students and families; impact on the schools, including teachers, volunteers and the school community; and the program level outcomes in relation to health promotion in schools. Cutting across these three levels were questions about program delivery, program impact, sustainability, capacity building, generalisation and dissemination.

The five questions being asked by this national evaluation (see above) therefore required in-depth data to be collected that were relevant at all three levels, as well as addressing the cross-cutting questions.

Approval for the evaluation was obtained from the University of Wollongong Human Research Ethics Committee, as well as the state and territory education departments. Victorian schools were not included as they had not been involved in the first rounds of the SAKGNP.

Data were collected from students, school reports to the SAKG Foundation, school principals, teachers, staff involved in Program delivery in the schools, parents and volunteers, as well as stakeholder groups (see Table 1). A variety of data collection methods were used, that included both quantitative and qualitative approaches. These multiple sources of data and mix of methods enabled the evaluation to address the matrix of levels and questions in the evaluation. The multiple data sources also provided triangulation and added rigour.

Data collected from schools formed a sound foundation for the evaluation. Data were collected from schools categorised into two groups: an initiative group and a comparison group. Initiative schools were selected as they had been running garden and kitchen classes for the longest time of any of the Program schools. From the pool of 32 potential initiative schools, 28 were selected for the evaluation. Representation of different geographic regions, socioeconomic levels, school

size and state / territory was achieved (the relevant data were obtained from the *My School* website). The comparison schools were selected by matching the same set of school level characteristics with the initiative group. The comparison schools had been successful in their SAKGNP grant applications, but had not yet started the Program. They were selected as engagement in the evaluation was more likely than other schools not involved in the Program. However, they may have had an existing interest in garden and kitchen activities and a positive attitude towards pleasurable food education. A total of 14 comparison schools was included in the evaluation. This provided a sufficient number of schools to accurately match the attributes of the initiative schools, as well as provide sufficient numbers of returned surveys for statistical analysis. Additional schools would have unnecessarily increased the burden for schools.

Data from initiative schools were collected via school site visits that included face to face interviews with principals and staff associated with delivering the Program in the school, and discussion groups with students, mostly in Years 5 – 6, who participated in the Program, plus a tour of the garden and kitchen in the school. All school staff interviews and student discussion groups were audio recorded and fully documented for analysis. Records were analysed and entered into a spreadsheet to address the key evaluation questions. School visits were followed by a survey and a 24-hour food diary completed by students, and surveys of parents, teachers, and Program volunteers. Economic information about the Program was collected from school principals.

Data from the comparison schools included student surveys, parent surveys and 24-hour food diaries, which could be directly comparable to the initiative schools.

Data from stakeholder groups were obtained by interview. All interviews were transcribed for analysis, and all except one of the interviews were audio recorded.

A review of the literature was conducted on school garden and kitchen programs, their effectiveness and impacts on student outcomes related to the evaluation questions. Searches used bibliographic databases as well as hand searching reference lists of journal articles and other material about school garden and kitchen programs. The SAKG Foundation website was also reviewed for data relevant to the evaluation.

The data collection and analysis fed into a series of data sources that informed the evaluation (see Table 1).

Table 1 Data sources

Data Source	Description
1	Three and nine month school reports to the Foundation: all initiative and demonstration schools
2	National workshops and webinars: initiative and demonstration school staff
3	*My School* website: initiative and comparison schools
4	Student survey: 23 of 28 initiative schools (491 surveys), and 11 of 14 comparison schools (260 surveys)
5	Parent survey: 23 of 28 initiative schools (300 surveys), and 12 of 14 comparison schools (234 surveys)
6	Student food diary: 23 of 28 initiative schools (413 diaries), and 11 of 14 comparison schools (224 diaries)
7	School visits: 67 interviews involving 86 individual school staff (principal, program coordinator, kitchen specialist, garden specialist), 30 discussion groups involving 229 students, garden and kitchen tour and audit
8	Volunteer survey: 17 of 25 initiative schools (60 surveys)
9	Teacher survey: 16 of 26 initiative schools (62 surveys)
10	Stakeholder interviews: DoHA and DEEWR; SAKG Foundation central staff and project officers; state and territory education and health departments; and demonstration school principals (28 interviews involving 29 participants totalling 1,345 minutes)
11	Investment form: 15 of 24 initiative schools
12	Literature review
13	SAKG Foundation website review

Each of the data sources were mapped to the evaluation questions, which thus informed the multiple level matrix of the overall evaluation.

4 Summary of findings

4.1 Program implementation

The SAKGNP had been implemented as intended and it was found to provide pleasurable food education for children. Across Australia 177 schools had received funding to establish gardens and kitchens with the view to providing at least two years of garden and kitchen classes run by specialist staff, in collaboration with teaching staff and community volunteers. All schools reported implementing linked garden and kitchen class activities and student participation in eating the foods they had prepared. The aim of embedding the garden and kitchen classes within the school curriculum had been strongly embraced by Program schools. The SAKG Foundation actively supported schools to establish and implement the Program through a variety of mechanisms including state-based project officers, training, workshops and networking activities and an interactive website. The Foundation also had produced resource materials for specialists and teachers and ensured that the Program's public profile was promoted.

The implementation of the Program was assisted by the commitment and enthusiasm of key individuals, including the principal, specialist staff, community members and the students. Parents were enthusiastic about their child's school participating in the SAKGNP and many of their comments reflected what the Program aimed to achieve.

Challenges to Program implementation varied with individual schools and included: how to allocate sufficient time, encourage sufficient volunteers and involve all staff members, as well as budget variations.

Strategies identified to overcome challenges to implementation included: engaging local community, recruiting volunteers, working closely with all project team members, capacity to respond flexibly as implementation proceeded, and successfully soliciting donations / sponsorships.

Demonstration schools were a positive element of the SAKGNP model, especially initially. They had been established in the capital cities of each of the states and territories, with the purpose 'to increase accessibility for interested schools to visit and a training centre for schools joining the Program'. However, they faced difficulties in trying to assist other schools while they were trying to establish the Program themselves.

4.2 Overall findings across lifestyle domains

Student and parent surveys each contributed towards quantitatively assessing four lifestyle domains: garden lifestyle behaviours, kitchen lifestyle behaviours, eating habits and food choices.

The first domain of garden lifestyle behaviours considered the level of enjoyment, confidence and ability that the student had in regard to gardening. The second domain of kitchen lifestyle behaviours considered the level of enjoyment, confidence and ability that the student had in regard to cooking and other kitchen activities. The third domain of eating habits and behaviours of the students included the quantity of fruit and vegetables the student consumed, as well as mealtime behaviours. The fourth domain of students' food choices included willingness to try new foods and diversity of foods they chose to eat.

A comparative analysis of these four domains was performed between the initiative and comparison schools.

Overall, the evaluation has provided evidence that the SAKGNP can be ascribed with significantly improving students' kitchen lifestyle behaviours (as reported by parents) and food choices, while there was no significant difference reported in gardening lifestyle behaviours or eating habits.

Food choices

The SAKGNP has led to statistically significant overall improvements in student's food choices (as reported by students). There was a significant difference in the food choice domain scores between students from initiative and comparison schools ($t = 2.26$, $p = 0.024$), with initiative schools showing higher scores.

Female students and students from provincial schools were found to have statistically greater improvements than other students, but no statistically significant difference was reported by parents.

Students in initiative schools were more likely to report that they would always try new foods as compared to students in comparison schools, and the proportion was higher if the students had grown or cooked the foods.

Kitchen lifestyle behaviours

The SAKGNP has led to statistically significant improvements in student's kitchen lifestyle behaviours (as reported by parents ($t = 2.35$, $p = 0.019$)); it was reported that children liked cooking more, helped to cook more often and parents liked cooking with their children more.

Participating in SAKGNP has led to greater engagement of children with cooking at home:

- nearly 20% of parents indicated that they prepared more meals at home after their children participated in the Program
- 77.4% of parents indicated their child asked them to make foods that had been made at school as part of the Program
- 71.9% of parents of students reported that their child was more willing to cook at home since the start of the Program

The SAKGNP was associated with students reporting more confidence with a range of kitchen activities and a lower need for help in cooking specific foods.

Girls showed higher scores than boys ($t = 6.19$, $p < 0.001$) in the kitchen lifestyle domain and an overall effect of grade was found ($F = 5.71$, $p < 0.001$) revealing a general trend of students in higher grades to obtain higher scores.

Garden lifestyle behaviours

Involvement in the SAKGNP did not achieve a statistically significant difference in students' gardening lifestyle behaviours (as reported by students and parents) and students' level of enjoyment of gardening was similar in all schools.

Students in SAKGNP schools reported more confidence with a range of garden activities compared with comparison school students.

More than 80% of SAKGNP school students reported they learned new things in the garden.

Almost 1/3 of SAKGNP school parents reported that they worked more often with their child in the home garden since the beginning of the Program.

Eating habits

20% of parents of initiative school children reported that students ate fruits and vegetables more often after participating in the SAKGNP. However, no statistically significant difference was found for the eating habit domain scores between initiative and comparison schools, after adjustment for confounders.

Students in both sets of schools ate fewer than the recommended number of serves of fruits and vegetables per day and no differences in eating habits between schools were found.

Significant influences on children's eating behaviours included level of parent education (tertiary-qualified parents reported higher scores for their children than parents who did not finish high school ($t = 2.40$, $p = 0.017$) and (small) size of school (parents of children from very small schools reported higher scores for eating habits than parents of children from large schools ($t = 2.48$, $p = 0.014$).

There is an ongoing challenge to efficiently and reliably collect food intake data from students.

Program activities that influenced students' lifestyle behaviours, eating habits and food choices

Students in SAKGNP schools were reported to have developed basic skills in the kitchen and demonstrated increased willingness to try new foods, which are important steps in achieving behaviour changes associated with healthy eating.

Cooking skills developed by SAKGNP school students included using kitchen equipment and tools, reading and following recipes, and kitchen safety and hygiene.

SAKGNP school principals, staff and students reported that almost all students found garden and kitchen classes a source of enjoyment and fun.

4.3 Key Learning Areas

The school level data available on the *My School* website were not suitably comprehensive to analyse direct effects of a program such as SAKGNP.

Key factors that influenced SAKGNP integration with the curriculum included: teachers' liaison with and support from kitchen and garden specialists; and the development of relevant curriculum units.

Students found the experiential activities of the SAKGNP engaging and a positive context for learning across subject areas.

The subject areas of science and technology and mathematics were more frequently linked to the garden, while the subject areas of English, mathematics, health and physical education were more often linked to the kitchen.

The involvement of teachers in the garden and kitchen classes was considered to be a core requirement of the Program; 96.7% of teachers provided positive responses when asked how the SAKGNP supported classroom learning; teachers also commented that the Program "forms an intrinsic part of our students' learning".

Challenges to teacher participation included lack of time in a busy timetable, a full curriculum, the incoming new national curriculum and insufficient planning time.

4.4 Attendance patterns

No statistical differences in attendance rates reported on the *My School* website were found between SAKGNP initiative and comparison schools.

Teachers reported perceived improvements in student attendance since the introduction of the SAKGNP.

Students and parents at initiative schools reported a high level of enthusiasm among students for attendance on garden and kitchen days.

4.5 Social behaviours of students

The term social behaviours includes those behaviours and actions directed toward others individually, within a group or within a community and it can be context specific. It encompasses but is not limited to, communication, working with others, leadership, autonomous actions, respectful interactions with others, social skills (such as 'table manners') and conversational skills, and in the school context, school attitudes and pride in the school.

Teachers and parents at SAKGNP schools reported improvements in students' social behaviours since the Program had commenced. More than 86% of teachers reported improvements in students' teamwork skills and 50% of parents reported improvements across a range of student behaviours.

The range of SAKGNP school students' improved behaviours included: interacting with people of many ages, leadership skill development, modifying previous bullying behaviour, managing difficult behaviour, ethic of care and sense of pride in the school.

The SAKGNP model's expectation that staff and students share a meal following the kitchen activities provided a context for students to practice conversation skills while sitting at the table; many school staff noted improved social abilities of students as a positive social change in the school.

4.6 Program impact on students or community members at risk of social exclusion

The SAKGNP provided support for students at risk of social exclusion, including students from different socio-cultural groups, through hands-on practical activities that enabled students with differing abilities to participate in an equal manner.

Staff at SAKGNP schools reported a number of impacts on students at risk of social exclusion, including: improved involvement / participation / engagement (including attendance); trying and enjoying new (healthy) foods; improved self esteem and confidence; opportunities to learn differently and excel in different areas; improved / development of life skills; improved social skills / communication; and healthier eating habits.

Teachers at SAKGNP schools reported that the most frequent strategies to include students at risk of social exclusion were: involvement of teacher aides / assistants and special needs teachers, the support of volunteers, peer support and student mentors, role models and student leaders, and small student groups.

Other supports provided by SAKGNP schools to students at risk of social exclusion included sharing cultural food traditions, hands-on tasks and learning experiences, preparing cost-effective meals that could be cooked at home and not requiring a participation / user fee.

4.7 Ways in which the Program can support the social inclusion agenda

Garden and kitchen specialists at SAKGNP schools were aware of the possibilities offered through garden and kitchen classes to support social inclusion and actively incorporated them into the Program.

Aspects of the SAKGNP that limited a school's capacity to contribute to social inclusion included: the application process; the perceived inflexibility of the Program; insufficient physical space; and funding for specialist staff. However, it should be noted that the Program did include many schools from low socio-economic communities and several participating schools commented favourably that the structure of the Program supported their efforts to include at risk students.

4.8 Enablers and barriers to participation in and sustainability of the Program (at the individual school-level) and how can these be better harnessed and / or overcome

Enablers to participation in the Program

The Program model provided a 'vision' that can be used as a guide to implementation.

The Program model had a resonance with students through 'hands-on' learning opportunities.

The SAKG Foundation's activities actively supported participation in the Program.

Program champions, a role often undertaken by the principal, ensured a high profile of and support for the Program within the school and community.

A strength of the Program model was engaging the wider school community; their time, commitment and personal resources were critical to the establishment and implementation of the Program in the schools.

A strength of the Program model was the garden and kitchen specialist staff and program coordinators and the roles they undertook.

The Program model was reliant on engagement of volunteers and their contributions of time, labour and specialist expertise.

Program volunteers potentially gained skills and capacities through their engagement with the Program but they may potentially benefit from additional training opportunities.

The Program model supported an engaged, whole of school approach to the well-being of the students and the environment. This approach had particular resonance with the Australian Sustainable Schools Initiative.

Many SAKGNP schools had previous involvement with garden or kitchen activities, but the SAKGNP provided a more comprehensive structure with support to integrate garden and kitchen activities across the curriculum and the school.

The provision of lump sum funding through the Program was considered essential for the development of garden and kitchen infrastructures within schools.

Barriers to participation in the Program and how they can be overcome

The Program model may be too inflexible and limit the capacity of some schools to participate; this may apply particularly to schools whose students would benefit most from the Program.

The Program model should be reviewed to consider how it can be made more adaptable for local school environments.

The Program model should be reviewed to consider how it can complement other school-based health initiatives.

Strategies that facilitated integration of the Program with the curriculum included: identifying links with existing education and health strategic foci for schools; the provision of curriculum and teaching materials that supported linkages with the national (or state) curricula; employing specialist staff with teaching qualifications; and effective communication between Program staff and teachers.

A national scheme to acknowledge the contributions of volunteers to the Program may assist their retention.

Recognition and development of the special skills required to recruit and manage a cohort of volunteers would also assist program coordinators to undertake this role.

The most appropriate mechanisms to provide the specialist expertise required for the garden and kitchen classes and activities needed urgent attention, including the salary rates, times required for all required tasks and recognition of specialist expertise.

There was a need for the SAKG Foundation or other relevant organisation to continue to provide support and guidance for commencing schools in relation to project (building) management skills, contract negotiations and navigating the regulatory processes within each state.

Enablers to sustainability of the Program

The Program model of a whole-of-school approach and shared vision assisted with the sustainability of the Program; flexibility within the Program model allowed for schools to adapt it to match their circumstances and requirements.

Teacher support for the Program was high and could be considered a barometer of the likely sustainability of the Program.

Teacher interest in and support for the Program could be enhanced through their physical involvement with the garden and kitchen classes, teacher in-service activities linked with the Program and strategies to engage new and younger teachers with the Program.

The involvement of volunteers in the Program could be assisted through initiatives to develop their personal skills and capacities.

Schools would benefit from mechanisms to share their strategies to fund the specialist positions and other ongoing costs associated with the Program.

The provision of appropriate networking and training opportunities for schools and their personnel involved in the Program, that takes into account their circumstances and needs, was an important mechanism that would help to sustain the Program.

The promotion of the successes achieved by the Program was an important mechanism that helped to sustain the Program and the SAKG Foundation or other relevant organisations should continue this promotion.

Barriers to sustainability of the Program and how they can be overcome

The sustainability of the Program was dependent on the school principal and staff being fully supportive of the Program.

Regular collection of data and statistics on the Program, including its impact on students' eating habits and food choices, would provide evidence of the impacts of the Program.

The skills, expertise and dedicated time required to engage, support and sustain active volunteer participants requires recognition as a dedicated role within the Program.

Integration of the Program across the school and its curriculum could assist schools to be more resilient for the challenges caused by staff turnover.

Long term sustainability of the Program could be enhanced by the allocation of dedicated time for teachers and specialists to work together to plan lessons and integrate the curriculum during the early stages of establishing the Program in a school.

The high profile of the Foundation provided external support and was a source of motivation for Program schools but more attention on regular and consistent linkages and communication with schools could be required.

4.9 What has been the return on investment to the Australian Government, students and the school community?

The average Australian Government SAKGNP grant for capital expenditure provided was $44,758 with approximately two thirds (66.2% or $29,610) of that expenditure on kitchen capital and one third (33.8% or $15,147) on garden capital.

The return on investment economic analysis determined the total amount of resources (direct school and community activity) generated to provide the Program within the school. On average, a total of $181,979 was generated within the school community to run the Program over the initial two year period, including the initial average investment of the Australian Government ($44,758 per school). This indicates an economic multiplier of 5.07 for each dollar provided by the Australian government.

This evaluation found that the SAKGNP offered the potential for longer term health impacts and associated health-related cost savings – based on the demonstrated statistically significant improvement in kitchen lifestyle behaviour and food choice domains attributable to SAKGNP, and its successful integration in school and the wider community networks (reflected in high multipliers on initial government capital investment), combined with findings reported in the current literature. Achieving this potential will depend upon continuation of the garden and kitchen class programs, which in turn is dependent upon their integration into schools' curricula.

5 Conclusion and recommendations

This evaluation provides clear evidence that the SAKGNP had enabled primary school students in Years 3 – 6 across Australia to participate in enjoyable food experiences that have included how to grow, harvest, prepare and share seasonal fresh food.

Strong evidence was found for significant improvements in students' food choices and kitchen lifestyle behaviours as a result of participation in the SAKGNP. Participating students, staff and school communities all reported positive observations of a range of contributions of the Program and the impact it had on the school and students.

The SAKGNP model is reflective of the health promoting schools approach of the World Health Organization and learning and teaching best practice. The Program is consistent with the Australian Government's strategic policy agendas of preventive health, social inclusion, a national curriculum and environmental sustainability.

Program implementation was enabled through: educational and program support from a dedicated unit (the SAKG Foundation); the role of the school principal or Program champion; stimulating and maintaining support from the school community; a supportive school ethos; adequate facilities; employment of dedicated and appropriately skilled school staff; facilitating and maintaining engagement of community volunteers; and maintaining appropriate funding.

Program implementation encountered the following barriers: limited flexibility of the Program model to account for different school circumstances; difficulties in recruiting and retaining a sufficient number of appropriate volunteers; maintaining specialist staff support; managing funding delays; and the specific circumstances and needs of the range of schools involved.

Program sustainability was supported by: the integration and adaptation of the Program in the school; the enthusiasm and contributions of volunteers; local funding and budgeting; networking with other schools; and the snowballing effect of success.

Program sustainability encountered the following barriers: limited staff and / or principal support; insufficient numbers of volunteers; ensuring ongoing funding; staff turnover; curriculum issues (such as integrating the Program with an already crowded curriculum, competing pressure from implementing the national curriculum at the same time and lack of time and funding for planning); and support of the SAKG Foundation.

Recommendations have been made that are directed to the maintenance and improvement of the provision of SAKGNP in schools, and to inform other health promotion initiatives in schools.

Program design

Recommendation 1:
It is recommended that the following core elements of the SAKGNP model be considered essential to the success of the Program.

- Students participate in hands-on, enjoyable food experiences in the garden and kitchen.
- Students, staff and volunteers participate in a shared meal time following the preparation in the kitchen of foods from the school's garden.
- Whole of school commitment and engagement in the Program.
- Leadership and support by the school principal (or designee).
- Dedicated staff with specialist garden and kitchen expertise.
- Engagement, support and maintenance of volunteer support.
- Regular classes throughout the school terms for designated grade levels.
- Integration with the curriculum and involvement of classroom teachers.

Recommendation 2:
It is recommended that a framework for incremental implementation of the SAKGNP model be developed to facilitate schools to join the Program, including designated levels of Program achievement, the support required to move from one level of implementation to the next and strategies to provide assistance to schools to achieve higher levels of Program implementation.

Recommendation 3:
It is recommended that research and evaluation be undertaken to examine the different contributions of the elements of the Health Promoting Schools framework to student learning and health outcomes, using the SAKGNP as a model.

Recommendation 4:
It is recommended that Program design elements be developed and agreed through collaboration between the Foundation, state level education authorities and the Australian Government, to enable future monitoring and evaluation of the Program's achievements and contributions. The Program design elements to include:

- A clearly articulated program model that builds on achievements to date and adapts where appropriate to address key evaluation findings.
- A program logic that provides a clear link between the Program's aim and objectives, inputs, activities, outputs and the short term, medium term and long term impacts and outcomes.
- An appropriate theoretical framework to inform the Program's aim, objectives, program logic and model.
- The Program's aim, supported by clear and measurable objectives that take into account the various levels of Program implementation (impacts and outcomes for students, schools and the Program overall).
- An operational plan that designates roles and responsibilities across government portfolios, levels of government and non-government organisations for the achievement of short and medium term Program impacts.

Program implementation

Recommendation 5:
It is recommended that the support and assistance required by schools to participate in the SAKGNP, including prior experiences of schools, (continue to) be documented and made readily available in a public location. Documentation to include:

- Grant application, establishment, implementation and maintenance guidance required at the different stages of Program implementation;
- The range of issues likely to be encountered by schools, based on their designation (demonstration school, rural / remote / urban, small / large), including building codes, fund raising, volunteers, environmental conditions, networking, using the media and generating sponsorship.

Recommendation 6:
It is recommended that the roles within the SAKGNP of the school principal, garden and kitchen staff, classroom teachers and volunteers be documented, together with the resources, network support and training required to undertake these roles.

Recommendation 7:
It is recommended that resources be developed and training provided to SAKGNP schools in the recruitment, training, support and retention of volunteers, as well as guidance on generating sponsorship and resources.

Recommendation 8:
It is recommended that curriculum experts be engaged to develop teaching resource materials and curriculum guidance to enable the garden and kitchen classes be integrated across the national curriculum as it becomes available to schools. Such materials should be freely available to schools and form the basis of pre-service and in-service education of primary school teachers and other relevant school staff.

Recommendation 9:
It is recommended that schools make available adequate planning time for garden and kitchen specialists and classroom teachers to integrate the Program with the school curriculum and include consideration of its role in achieving school goals in the areas of student social behaviours and social inclusion.

Recommendation 10:
It is recommended that teachers, specialist staff and the school community in Program schools develop Program learning outcomes and appropriate strategies for measuring their achievement.

Recommendation 11:
It is recommended that support be directed to establishing networks of SAKGNP schools in geographic regions and other innovative mechanisms through which resources could be shared, training provided and mutual support generated.

Program achievements

Recommendation 12:
It is recommended that a systematic scheme to acknowledge schools' achievements of Program outcomes be developed so that this information can be shared and the school can promote their achievements to their communities.

Recommendation 13:
It is recommended that a dissemination plan for the findings of the evaluation of the SAKGNP be developed and implemented in a timely manner to communicate its important contributions to the

Australian Government's preventive health agenda and to reinforce the importance of children participating in enjoyable food education in schools.

Recommendation 14:
It is recommended that a system of internal monitoring and evaluation against designated Program process and outcome objectives be developed and implemented in conjunction with participating schools to facilitate practical and readily accessible data to inform Program implementation and achievements.

Program sustainability

Recommendation 15:
It is recommended that alternative ways of integrating and evolving the SAKGNP as part of the school curriculum be pursued as priorities, while retaining the Program's elements of whole-of-school, hands-on learning and community engagement.

1 Introduction

1.1 *Overview*

In June 2011, the Centre for Health Service Development, a research centre of the Australian Health Services Research Institute at the University of Wollongong, was appointed as the national evaluator of the Stephanie Alexander Kitchen Garden National Program (SAKGNP or the Program). This evaluation was undertaken on behalf of the Australian Government Department of Health and Ageing (DoHA).

As the national evaluator, the role of the Centre for Health Service Development was to conduct an independent evaluation of the process, impact and outcomes of the SAKGNP that incorporated relevant best practice and research, and contributed to the evidence base on school health promotion.

The requirements of the evaluation, as specified in the Request For Quotation 368/1011 or Contract C042091033, were to answer the following questions:

- Evaluation question 1: Has the Program influenced students' lifestyle behaviours, eating habits and food choices?
- Evaluation question 2: Has the Program contributed to student learning in Key Learning Areas, attendance patterns and social behaviours within the school environment?
- Evaluation question 3: Has the Program had an impact on students or community members that may be identified as at risk of social exclusion and, if so, what is the attribution? How can the National Program better support the social inclusion agenda?
- Evaluation question 4: What are the enablers and barriers to participation in and sustainability of the Program? How can these be better harnessed and / or overcome?
- Evaluation question 5: What has been the return on investment to the Australian Government, students and the school community?

1.2 *Scope of the Final Report*

The purpose of this Final Report is to provide a synthesis of the key findings and final results of the SAKGNP evaluation. The report covers the period from the end of June 2011 to May 2012.

The Final Report presents key findings in an integrated format. It draws upon the diverse data sources and synthesises findings to answer the evaluation questions.

The report is structured to present:

- An overview of the Program;
- A summary of the targeted literature review;
- The methodology;
- The findings; and
- Conclusion and recommendations.

2 Overview of the Program

2.1 *Program background*

In 2001 Stephanie Alexander joined with the Victorian Government to fund government primary schools in Victoria to participate in the Stephanie Alexander Kitchen Garden Victorian Program. In 2008 the Australian Government committed $12.8 million to fund the rollout of the SAKGNP and build garden and kitchen infrastructure in up to 190 government primary schools across Australia. The Australian Government is committed to reducing the prevalence of childhood overweight and obesity and to promoting nutritional health. Primary schools provide an ideal location to engage children in behaviours that will support their health for life.

The focus of the Program has been to enable primary school students in Years 3 – 6 to learn how to grow, harvest, prepare and share seasonal fresh food in the belief that this approach will positively influence children's food choices.

The Program works by involving children across Years 3 – 6 to spend a minimum of 45 minutes each week in a vegetable garden that they have helped to design, build and maintain. The garden is located on the school grounds and is run on organic gardening principles. Children also spend 90 minutes each week in a kitchen classroom preparing and sharing meals produced from the garden foods. The school employs two part-time specialist staff; a gardener and a cook, to run these sessions. The Program is implemented within a whole-school approach, engages the school community and is integrated with the curriculum.

An initial evaluation of the first two and a half years of the Stephanie Alexander Kitchen Garden Victorian Program was conducted in 2009 using a mixed methods approach (Block and Johnson, 2009). Qualitative data were obtained from focus groups, interviews and participant observations and quantitative measures were collected via a survey. Six participating and six non-participating schools were included and longitudinal data were collected. The study found that outcomes aligned with the program objectives:

- Children had an increased appreciation of diverse and healthy foods;
- Children had improved knowledge and confidence in relation to growing, preparing, cooking and eating food;
- The schools' social and learning environments improved;
- The program benefits extended to the home and community; and
- The financial costs of the program and community investment generated additional resources almost double the original investments.

2.2 *Program funding*

Funding has been provided by the Australian Government for garden and kitchen infrastructure through four stages or funding rounds. There are 177 schools across Australia participating in the Program and at various stages of implementation. Funded schools are linked with the SAKG Foundation for ongoing support during implementation.

The Program has provided one-off funding of up to $60,000 (GST exclusive) to eligible schools to cover infrastructure costs associated with building a garden and kitchen. Additional one-off funding of $80,000 (GST exclusive) over two years was provided to seven demonstration schools located in metropolitan areas in each state and territory (except Victoria, which had an established demonstration school) to increase accessibility and allow interested schools to visit and to provide a training centre for schools joining the Program.

The Australian Government subsequently announced an additional $1 million through the Department of Education, Employment and Workplace Relations (DEEWR) over three years to develop curriculum resources to support the Program (Department of Health and Ageing: A

Healthy and Active Australia website, March 2012, http://www.healthyactive.gov.au/internet/healthyactive/publishing.nsf/Content/kitchen-garden). This funding support was out of scope in relation to this evaluation.

2.3 *Program aim*

The aim of the SAKG Foundation is to introduce pleasurable food education into as many Australian primary schools as possible (Philosophy, SAKG Foundation website, October 2011, http://www.kitchengardenfoundation.org.au/about-the-program/our-philosophy).

In the medium to long term this will enable participating children in Year 3 – 6 gain an understanding about growing, harvesting, preparing and sharing healthy food. The aim is to 'build capacity in government-funded primary schools to implement healthy eating and obesity initiatives linking to health and subsequent economic benefits' (Agreement between the Foundation and a school, p.22). This will in turn contribute to children developing life-long healthy eating habits.

2.4 *Program objectives*

Whilst the Program objectives have not been documented they can be derived from the questions the evaluation is required to address:

Table 2 Listing of evaluation questions and Program objectives

Evaluation Questions	Program Objectives
▪ Has the Program influenced students' lifestyle behaviours, eating habits and food choices?	1. To improve participating students' lifestyle behaviours, eating habits and food choices.
▪ Has the Program contributed to student learning in Key Learning Areas, attendance patterns and social behaviours within the school environment?	2. To positively contribute to: a. student learning in Key Learning Areas, b. attendance patterns, and c. social behaviours within the school environment.
▪ Has the Program had an impact on students or community members that may be identified as at risk of social exclusion and, if so, what is the attribution? How can the National Program better support the social inclusion agenda?	3. To increase engagement with students or community members that may be at risk of social exclusion.
▪ What are the enablers and barriers to participation in and sustainability of the Program? How can these be better harnessed and / or overcome?	-
▪ What has been the return on investment to the Australian Government, students and the school community?	-

For example Program objective 1 has been evaluated through assessing changes in participating students' knowledge, skills and attitudes and corresponding changes in students' lifestyle behaviours, eating habits and food choices.

2.5 *Program philosophy*

A particular element of the SAKGNP is its strong underpinning philosophy, which is premised upon enhancing and strengthening the school community across many levels. Program schools have worked to bring this philosophy to life by:

- Ensuring a whole school commitment;
- Recruiting the right team;
- Engaging the community;
- Attracting and retaining volunteers; and

- Creating a whole-school ethos (refer to the SAKG Foundation Implementation Manual at the SAKG Foundation website, http://sharedtable.kitchengardenfoundation.org.au/resource-library/165).

A revised philosophy was distributed to schools and posted on the SAKG Foundation website in October 2011.

The revised philosophy noted:

- The aim of the Stephanie Alexander Kitchen Garden Foundation is to introduce pleasurable food education into as many Australian primary schools as possible.
- Our Program emphasises the flavours as well as the health benefits of fresh, seasonal food.
- Dishes cooked reflect the vegetables, herbs and fruits grown, season-by-season, by the children in their organic gardens.
- Our specialist instructors emphasise balance and moderation, and endorse the concept of preparing fruit-based desserts 'sometimes' only.
- The Program is designed to be fully integrated into the primary school curriculum as it offers infinite possibilities to reinforce literacy, numeracy, science, cultural studies and all aspects of environmental sustainability.
- In addition, the Program delivers observable social benefits to all students, including those with special needs (refer to the SAKG Foundation website, 2012, http://www.kitchengardenfoundation.org.au/uploads//02%20ABOUT%20THE%20PROGRAM/downloads/SAKGF_philosophy_poster_2011.pdf).

2.6 *Program model*

A key aspect of the evaluation has been to address the question 'What did you do?' This evaluation question aimed to determine whether the SAKGNP model was implemented as it was designed.

Essentially the Program model consists of three core components; each component has several associated Program elements (refer to the SAKG Foundation website, 2011).

Table 3 Program model

Core Component	Program Elements
1. Student participation in garden and kitchen classes	▪ Garden classes of 45 mins each week (or fortnightly for greater than 6 classes); ▪ Kitchen classes of 90 mins each week (or fortnightly for greater than 6 classes);
2. Allocation of appropriate human resources (including specialist personnel and classroom teachers) to support Program implementation	▪ Employment of a dedicated permanent part-time garden specialist; ▪ Employment of a dedicated permanent part-time kitchen specialist; ▪ Attendance and participation in all garden and kitchen classes by the classroom teacher; ▪ Sufficient preparation time for the two specialists outside of class time; ▪ Allocation of a program coordinator from the teaching staff;
3. Whole school engagement in the Program	▪ Whole-school commitment to the philosophy of the SAKGNP; ▪ Whole-school commitment to introduce the SAKGNP into the school curriculum; ▪ Demonstrated ability for the school to fund associated staffing and ongoing Program costs; and ▪ Required space for an edible garden, kitchen classroom and dining area.

2.7 *Program logic*

Program logic models seek to establish the links between inputs, activities, outputs, impacts and outcomes (refer to Figure 1). Establishing a logic model not only results in a better understanding of what is being done as part of the program but also seeks to illustrate the 'how' and 'why' of the program. It involves setting out a logical chain of cause and effect between the program and the various program elements or activities and the expected outcome of these activities. This allows program managers and evaluators to see more clearly the underlying rationale or logic of the program and to answer the question: 'is it plausible that the sum of the program elements will result in the program aim being achieved?'

Figure 1 Generic logic chain

Inputs	Activities	Outputs	Short term impact	Medium term outcomes	Long term outcomes
Program elements			Objectives	Required changes	Aim/goals
Stephanie Alexander Kitchen Garden National Program					

The program's 'inputs' usually refer to what is invested in the program. In the SAKGNP these include for example: funding, teaching resources and support from the SAKG Foundation. The activities and outputs are the things that have been done – for example, the garden and kitchen classes. The short term impact is aligned with the program objectives and describes the expected results achieved immediately post implementation of the program, for example: to positively contribute to student learning in Key Learning Areas. The medium and long term outcomes include the longer term changes that the program aims to produce over time, for example, participating children developing life-long healthy eating habits.

The program logic can be documented during the design of a program to ensure that the program elements will generate the desired impact and outcomes. Alternatively it may be reviewed after an evaluation is completed to ensure that the program learns from the evaluation findings and adapts appropriately. This process must be collaborative and is most effectively done through involvement of key stakeholders.

2.8 *Attribution and contribution*

The Centers for Disease Control and Prevention (1999) note that determining attribution can be unrealistic in community based public health programs because multiple service providers and funders are often seeking to achieve the same objective. As a result, widely used indicators for tracking health outcomes (such as reducing the prevalence of childhood overweight and obesity and promoting nutritional health), are affected by many factors and cannot be attributed to the impact of a particular program.

The Centers for Disease Control and Prevention (1999) suggest that a more realistic approach to measuring program effectiveness is to measure the extent to which a program has made a 'contribution' towards achieving long term goals. Here, the aim of the assessment is to make an informed and evidence-based judgement about the overall contribution of a program to a long term objective. In this context, the aim becomes to ensure that the evaluation framework, the performance indicators and the related data collection provide a sufficient picture of the achievements of a program to make an informed judgement. If data are collected in accordance

with an agreed data protocol, and the subsequent data analysis indicate that a program has met its performance indicators, it becomes reasonable to conclude that the program has made a ‘contribution’ to achieving its overall aims and objectives.

In our view, the SAKGNP clearly fits within a model where it is reasonable to measure ‘contribution’ rather than ‘attribution’ and consequently this approach underpins the evaluation.

3 Summary of the literature

3.1 *Background*

The scope of the search for the literature review was focused on school garden and kitchen programs and their effects on student outcomes that were related to the evaluation questions (see below). Bibliographic databases were searched as well as hand searching the reference lists of journal articles and other material. Literature was included if it was reported in the English language and in peer reviewed journals and provided descriptions of school-based garden and / or kitchen programs and student outcomes.

3.2 *Results*

Schools have been recognised as very important settings for health promotion, including the promotion of healthy eating in children. Children spend a large amount of time at school and this setting provided opportunities to influence students' behaviour through structured learning and activities. Schools have taken on responsibility to teach students about healthy food choices or eating behaviours. These opportunities have been promoted through curriculum links, breakfast or lunch programs or foods in school vending machines. School gardens with and without cooking programs have also been considered to have the potential to change children's eating behaviours. For children who normally abstain from physical activity, gardens may be a suitable, non-competitive way to encourage physical activity and form part of obesity prevention or chronic disease reduction programs.

The literature recognised that school garden and kitchen-based lessons offered opportunities for 'hands-on learning' in a variety of curriculum areas; had the potential to change the social behaviours of students; and provided settings for interaction and engagement with members of the broader school community.

3.2.1 Students' lifestyle behaviours, eating habits and food choices

Gardening and cooking programs in schools influenced children's eating habits by providing experiential learning around food, food growing, cooking, tasting and eating that influenced healthy eating behaviours, particularly increased consumption of vegetables and fruit. Almost all the reported studies have been small in scale and limited in duration, and cooking had not been included in many of the programs. Generalisation of many of the study findings was potentially limited, but there was consistency across a wide range of studies that suggests the patterns reported had some reliability and validity.

A recent US study found that fourth and fifth grade students who participated in a 12 week gardening program that included cooking had improved preferences for vegetables, increased perceptions that vegetables from the garden tasted better, and that gardening and cooking were easy. Another US study reported high levels of enjoyment of working in the garden, preparing fruit and vegetable snacks from garden produce, taste-testing fruits and vegetables, and learning about fruits and vegetables. An earlier study of a garden-enhanced nutrition education program for grades 4 – 6 in California found improvements in nutrition knowledge, as well as increased vegetable preferences.

Despite the frequent findings from both students and teachers that garden and kitchen programs in schools increased preferences for vegetables and fruit, increased willingness to taste new foods, and increased knowledge about vegetables and fruit, a number of studies found no change in the amount of vegetables and fruit consumed. It appears that overall attitudes have been improved by participation in the program, with no demonstrated impact on vegetable intake in the short term.

Appropriate levels of resourcing has been identified as a factor influencing the impacts – one California study found less than 40% of schools achieved their school garden goals, mostly due to insufficient funds to support the garden program.

Overall, the consistency of the research evidence suggested that the hands-on experiential learning involved in gardening and cooking resulted in increased willingness to try new foods, increased preferences for fruit and vegetables, increased levels of enjoyment in gardening and cooking, and translation of gardening and cooking experiences to students' families. However, there was less evidence that programs increase actual consumption of vegetables and fruit.

3.2.2 Student learning in Key Learning Areas and social behaviours within the school environment

School gardens and kitchens have been a context for a wide range of curricular and extra-curricular learning opportunities that have potential to enhance student achievement. They have been found to support the achievement of a variety of positive learning outcomes, particularly when tailored to be integrated with the culture of, and other programs within, a school. Experiential learning involved in these programs offered many opportunities for active learning about a wide range of knowledge. The literature suggested school leaders supported school gardens because of their potential to enhance academic instruction, particularly in science, environmental education and nutrition, as well as extra-curricular opportunities. But the public school policy emphasis on academic achievement has been said to limit teachers' abilities to focus on nutrition education or the broader goals of garden programs. The importance of mathematics and science knowledge and skills being part of the garden curriculum has been noted in the literature, as has the need for specialist knowledge and competence of teachers to use the school garden for academic lessons.

Garden programs have been promoted in schools as a means to foster changes in students' social behaviours. The garden and gardening activities provided an engaging context for student learning and motivation for attitude change. Underpinning the attitude changes were the social interactions inherent in the experiential context of the learning activity in a garden. This was a key benefit for students because the garden offered a unique opportunity for them to have positive interactions with each other, as well as a place to practice conversation skills. School garden programs have been found to increase students' social behaviours, including working in groups, communicating with others, leadership and volunteerism. Schools also used garden programs to foster students' decision-making and problem-solving abilities.

3.2.3 Social inclusion

Evidence has shown consistently that participation in community gardens was associated with increased mutual trust, social connections and interpersonal relationships and studies of gardens in school settings have shown similar results. School gardens, though not specifically vegetable gardens, have been found to promote social inclusion. School gardens also had potential to engage students from multicultural backgrounds with the school curriculum.

The research has shown that gardening and cooking had positive impacts on engaging students who were otherwise difficult to engage with learning in the classroom, students with special needs, and students from diverse backgrounds, including indigenous students. In addition, school gardens and cooking classes offered opportunities for members of the broader school community to engage with schools and with their students' learning, fostering civic engagement and volunteerism. Most of the research has focused on school gardens, but a few studies have shown that cooking classes similarly offer opportunities for social inclusion.

4 Methods

The evaluation methods guided the work of the SAKGNP evaluation team. The evaluation framework was submitted at the commencement of the project (the "Project Plan") and was reviewed by the Evaluation Reference Group prior to commencement of data collection. Ongoing refinements to the evaluation framework and methods occurred as Program elements were clarified during the evaluation period. In this Final Report, the evaluation activities that were undertaken, and the methods employed, are described.

4.1 *Evaluation framework*

The evaluation adopted a matrix framework to assess the impact of the Program at three levels: impact on the students and families; impact on the schools, including teachers, volunteers and the school community; and the program level outcomes in relation to health promotion in schools. Cutting across these three levels were questions about program delivery, program impact, sustainability, capacity building, generalisation and dissemination (Figure 2).

Figure 2 Evaluation framework

EVALUATION HIERARCHY	What did you do? PROGRAM DELIVERY	How did it go? PROGRAM IMPACT	Can you keep going? PROGRAM SUSTAINABILITY	What has been learnt? PROGRAM / CAPACITY BUILDING	Are your lessons useful for someone else? PROGRAM GENERALISABILITY	Who did you tell? DISSEMINATION
Level 1	Impact on, and outcomes for, students and their families					
Outcomes, indicators and measures	How were the students and families involved?	What do the students think of the Program? Impact on school attendance?		Student improvements: - Foods eaten - Lifestyle behaviours - KLAs		Taking lessons home
Level 2	Impact on, and outcomes for, schools (teachers, volunteers and school community)					
Outcomes, indicators and measures	How were the school staff involved? How was the curriculum affected?	New lessons? Engaging students?	Challenges to teaching and curriculum?	Barriers and enablers to the school community	Case studies from schools	Foundation website Professional conferences
Level 3	Impact on, and outcomes in relation to health promotion programs in schools					
Outcomes, indicators and measures	What systems were implemented?	How did this Program impact on the school community?	Challenges to resources / operations of the Program?	Barriers and enablers to the Program	What roles for: - DoHA - SAKG Foundation - Health and education departments	Implications for other national health promotion programs

4.2 *Ethics approval*

An application to the University of Wollongong Human Research Ethics Committee for the project titled 'An Evaluation of the Process, Impact and Outcomes of the Stephanie Alexander Kitchen Garden National Program' was approved on 4 August 2011 (HE11/307). This included information sheets for participants, interview questions, consent forms and survey tools.

Ethics applications were individually submitted to and subsequently approved by all jurisdictional education departments. These applications included a copy of the ethics approval from the University of Wollongong Human Research Ethics Committee, as well as interview / survey

questions and participant information sheets. Evaluation team members who conducted the school visits also underwent Working with Children checks, as well as Criminal Record and Good Character checks where necessary. Each jurisdictional ethics committee had different requirements for information, not only necessitating tailored applications for each committee but also involving several iterative communications as additional information was requested.

Approvals from the different ethics committees were received over a two month period from mid September 2011 to early November 2011. In addition, the different jurisdictions placed various requirements on the reporting of the evaluation data, including that: individual school's data not be reported; between schools or between states comparisons not be presented; and a final report be made available to the jurisdictional education departments and schools participating in the evaluation activities.

An amendment to the original ethics application was submitted to University of Wollongong Human Research Ethics Committee on 25 August 2011 to provide detailed information for the second phase of the study, which involved visits to schools participating in the SAKGNP, as outlined in the original application. Additional participant information sheets were required for teachers and parents as part of the Stage 2 evaluation activities, and were submitted with the amendment. Approval of the amendment was received on 6 September 2011.

Another ethics amendment was submitted on 13 February 2012 to the University of Wollongong Human Research Ethics Committee, which included the investment form to be completed by initiative school principals, and a participant information sheet. This amendment was approved on 14 February 2012. Approval for the use of this data collection tool was subsequently gained from all jurisdictional education departments.

A final amendment was submitted to the University of Wollongong Human Research Ethics Committee on 14 March 2012. The change included additional stakeholder groups to be interviewed (representatives of DoHA, the SAKG Foundation and state and territory health and education departments) to explore broader issues relating to the national implementation of the SAKGNP, for inclusion in the SAKGNP Final Report. Approval for the amendment was received on 26 March 2012.

4.3 *Selection of schools for in-depth data collection and analysis*

Data were collected primarily from two distinct groups of schools.

- Initiative group comprised of schools where the Program was most established.
- Comparison group comprised of schools that had similar characteristics to those in the initiative group, but where the Program was yet to start.

The comparison group would provide baseline information that could be compared with that obtained from the schools in the initiative group, where the SAKGNP was most established.

4.3.1 Initiative school group

Schools in the initiative group were selected from a list of all the Program schools that had been ranked according to the 'garden classes commenced' date and the 'kitchen classes commenced' date. The top 32 schools were then selected as the potential pool of initiative schools. Therefore the initiative schools had been running garden and kitchen classes for the longest time of any of the Program schools.

Email letters were sent to the principals of these 32 initiative schools inviting them to participate in the evaluation and explaining the evaluation activities. A follow up phone call to the principal was made if there was no reply to the email invitation.

Two of the selected initiative schools were unable to participate. Another two schools were last to respond and as there were already 28 schools who had accepted, they were asked to be 'stand by' schools, in case one of the initiative schools needed to withdraw from the evaluation.

The target of 28 initiative schools was achieved (Table 4). Some basic information about each of the schools was collected from the *My School* website (www.myschool.edu.au/) and is included in Table 4. The categories for geographic region as recorded on the website were maintained in this evaluation. However, categories for school size and the socioeconomic status of the school population were defined for this evaluation. The categories were:

- Geographic region: determines the remoteness of the school. Categories are Metropolitan, Provincial, Remote and Very Remote (determined according to the Schools Geographic Location Classification Scheme of the Ministerial Council for Education, Early Childhood Development and Youth Affairs – MCEECDYA).
- Socioeconomic level: as measured by the Index of Community Socio-Educational Advantage (ICSEA). Schools above the average ICSEA score (1000) were categorised as 'High', schools below were categorised as 'Low'.
- School size: schools with 50 or fewer students were categorised as 'Very small', between 51 and 199 students 'Small' and 200 and more 'Large'.

Table 4 Initiative schools

School code	Geographic Region	Socioeconomic level	School size
Initiative school 1	Metropolitan	High	Small
Initiative school 2	Provincial	Low	Very small
Initiative school 3	Provincial	Low	Very small
Initiative school 4	Provincial	Low	Large
Initiative school 5	Metropolitan	Low	Large
Initiative school 6	Provincial	Low	Very small
Initiative school 7	Provincial	High	Very small
Initiative school 8	Provincial	Low	Small
Initiative school 9	Provincial	Low	Very small
Initiative school 10	Provincial	Low	Very small
Initiative school 11	Provincial	High	Large
Initiative school 12	Provincial	High	Large
Initiative school 13	Provincial	Low	Small
Initiative school 14	Provincial	Low	Large
Initiative school 15	Metropolitan	High	Large
Initiative school 16	Metropolitan	High	Small
Initiative school 17	Provincial	High	Small
Initiative school 18	Metropolitan	Low	Small
Initiative school 19	Remote	Low	Very small
Initiative school 20	Provincial	Low	Large
Initiative school 21	Remote	High	Very small
Initiative school 22	Provincial	High	Very small
Initiative school 23	Metropolitan	Low	Large
Initiative school 24	Provincial	Low	Large
Initiative school 25	Metropolitan	Low	Large
Initiative school 26	Provincial	High	Large
Initiative school 27	Metropolitan	High	Large
Initiative school 28	Metropolitan	Low	Large

Note on national distribution of initiative schools: 9 in NSW, 6 in Queensland, 8 in South Australia, 2 in Tasmania, and 3 in Western Australia.

Victorian schools that offered SAKG programs were out of scope for the national evaluation. Victorian schools were not involved in the first rounds of the National Program (and hence would not meet the inclusion criteria of the initiative schools group) and those Victorian schools offering SAKG programs at that time were doing so under different funding arrangements with the Victorian government. In addition, the wider health and education environments in Victoria varied from the remainder of Australia as Victorian schools had been offering SAKG programs for some years and there had been much wider promotion of the initiative. An evaluation of the SAKG programs in Victorian schools had already been undertaken (Block and Johnson, 2009).

4.3.2 Comparison school group

Once the initiative schools were selected, the comparison schools were then selected by matching certain school-level characteristics with the initiative group. The information concerning the characteristics of each school was collected from the *My School* website. The comparison group of schools had been successful in their SAKGNP grant applications, but had not yet started the Program (i.e. to be included they could not have made a start on their garden, their kitchen or the classes). They were selected as their engagement in the evaluation was more likely than other schools not involved in the Program. However, they may have had an existing interest in garden and kitchen activities and a positive attitude towards pleasurable food education.

The characteristics from the *My School* website used to match were: geographic region; socioeconomic level; school size; and state / territory.

Invitations to participate in the evaluation were emailed to 14 schools. The invitation was declined by four schools and another four schools were invited. Of these newly invited schools, three accepted, and one of the schools who declined the initial invitation was subsequently able to participate.

A total of 14 comparison schools agreed to participate in the evaluation activities (Table 5). This provided a sufficient number of schools to accurately match the attributes of the initiative schools, as well as provide sufficient numbers of returned surveys. Additional schools would have unnecessarily increased the burden for the schools.

Table 5 Comparison schools

School code	Geographic Region	Socioeconomic level	School size
Comparison school 1	Provincial	Low	Large
Comparison school 2	Remote	Low	Small
Comparison school 3	Provincial	High	Small
Comparison school 4	Provincial	Low	Very small
Comparison school 5	Metropolitan	High	Large
Comparison school 6	Metropolitan	High	Large
Comparison school 7	Provincial	High	Very small
Comparison school 8	Metropolitan	High	Large
Comparison school 9	Provincial	Low	Small
Comparison school10	Provincial	Low	Large
Comparison school 11	Provincial	Low	Small
Comparison school 12	Metropolitan	Low	Large
Comparison school 13	Provincial	High	Large
Comparison school 14	Provincial	Low	Large

Note on national distribution of comparison schools: 5 in NSW, 1 in Queensland, 4 in South Australia, 1 in Tasmania, and 3 in Western Australia.

4.3.3 Demonstration schools

There were seven demonstration schools participating in the Program (Table 6). The demonstration schools were invited, via email, to participate in the evaluation. Six of the schools replied with five schools attending the national workshop.

The demonstration schools were included as part of the in-depth study, primarily through the stakeholder interviews. Data collected from these schools were analysed separately from the initiative and comparison groups because their funding arrangements and participation in the SAKGNP were different.

Table 6 Demonstration schools

School code	Geographic Region	Socioeconomic level	School size
Demonstration school 1	Metropolitan	High	Large
Demonstration school 2	Metropolitan	High	Large
Demonstration school 3	Metropolitan	Low	Large
Demonstration school 4	Metropolitan	Low	Large
Demonstration school 5	Metropolitan	High	Large
Demonstration school 6	Metropolitan	High	Large
Demonstration school 7	Provincial	Low	Small

4.4 *Stages of the data collection*

The data collection was designed, and proceeded in two stages. These stages are outlined in general terms in Table 7, which includes refinements and changes.

Table 7 Data collection stages

Stage of Data Collection	Activity	Participants	Data collection methods	Status
Stage 1	Invitation to participate in the evaluation	Initiative schools Demonstration schools Comparison schools	Emails, with follow up phone call (if required)	Completed
	General information about the evaluation	All remaining SAKGNP schools	Emails	Completed
	Three and nine month reports review	Initiative schools Demonstration schools	Three and nine months school reports	Completed
	National workshop and webinars – Discussion groups	Initiative schools Demonstration schools	Discussion groups	Completed
	My School website review	Initiative schools Comparison schools	*My School* website	Completed
Stage 2	Student survey	School students – Initiative schools and Comparison schools	Survey (paper)	Completed
	Parent survey	Parents – Initiative schools and Comparison schools	Survey (paper)	Completed
	Food diary	School students – Initiative schools and Comparison schools	Food diary	Completed
	School Visits – Principal discussion	Principals – Initiative schools	Interviews	Completed
	School visits – School	Garden and kitchen	Discussion groups or	Completed

Stage of Data Collection	Activity	Participants	Data collection methods	Status
	staff discussion	specialists and project coordinators – Initiative schools	interviews	
	School visits – Year 6 discussions	School students – Initiative schools	Discussion groups	Completed
	School visits – Garden and kitchen audit	Initiative schools	Audit	Completed
	School visits – School data (such as Social Inclusion Reports, Annual Reports, etc)	Initiative schools	Reports review	Completed
	Teachers survey	School staff (teachers) – Initiative schools	Survey (online and / or paper)	Completed
	Volunteers survey	Community members (volunteers) – Initiative schools	Survey (paper)	Completed
	Interviews with key stakeholders	DoHA and DEEWR, SAKG Foundation central staff and project officers, state and territory education health departments, demonstration school principals	Interviews	Completed
	Investment Form	Principals – Initiative schools	Spreadsheet, with follow up	Completed

4.5 *Data sources and data collection processes*

Each data source used in this Final Report is outlined briefly below. Details of the tools, methods, analysis and results of each data source were submitted to DoHA in separate reports. It is intended that details contained within these other documents will become publicly available in peer reviewed journal articles and other published materials.

4.5.1 Three and nine month reports

As part of the Program requirements, schools submitted reports to the SAKG Foundation. Of these, the three month report (or first report) and the nine month report (or second report) for the initiative and demonstration schools were forwarded to the evaluation team by the SAKG Foundation and were analysed. There were some limitations with this source of data. These reports had not been designed for this evaluation, but for use by the Foundation and there was variability in the detail provided in them. They were reviewed by three evaluation team members, who were also school site visitors, and their contents were entered into specifically designed Excel spreadsheets for analysis.

4.5.2 National workshop and webinars

At the national workshop four discussion groups were held with participants, who were from initiative and demonstration schools. Each group was facilitated by a member of the evaluation team following a question guide. The groups were audio recorded and notes were taken by a second evaluation team member. In addition, four webinars were held, and the participants were asked the same discussion group questions.

4.5.3 *My School* website

Existing data which were available and relevant to the evaluation of the SAKGNP came from the *My School* website and a spreadsheet managed by the SAKG Foundation. Both these data sources were used to select the initiative and comparison schools.

The *My School* website had data on each school's NAPLAN results and attendance rates. Data were extracted from the website for both the initiative and comparison schools and an analysis was undertaken to determine if there were any differences between the two school groups in terms of NAPLAN scores and attendance rates.

4.5.4 Student survey

Initiative and comparison schools were invited to administer a paper survey to Year 6 (or equivalent) students as a classroom activity. An information kit was emailed to each school explaining the evaluation activity as well as participant information sheets, consent forms and the student survey.

Schools returned the student surveys via post throughout term four, 2011 or term one, 2012 depending on when the schools conducted the activity. Twenty-three of the 28 original initiative schools, and 11 of 14 comparison schools returned student surveys. A total of 491 surveys were collected from initiative schools and 260 from the comparison schools (see Table 8 and Table 9). The survey data were entered into a secure internal database for analysis.

4.5.5 Parent survey

Initiative and comparison schools were invited to administer a paper survey to the parents of Year 6 (or equivalent) students who completed the student survey and / or food diary. The parent survey was taken home and could be completed by the parents or by the parents and students. An information kit was emailed to each school explaining the evaluation activity as well as participant information sheets and the parent survey.

Of the 28 original initiative schools, 23 returned parent surveys and 12 of 14 comparison schools returned parent surveys. A total of 300 surveys were collected from initiative schools and 234 from the comparison schools (see Table 8 and Table 9). The survey data were entered into a secure internal database for analysis.

4.5.6 Food diary

Initiative and comparison schools were invited to organise Year 6 (or equivalent) students to complete a one day food diary. An information kit was sent to each school explaining the evaluation activity, as well as participant information sheets, consent forms and the food diary sheet. The food diary was undertaken by both initiative and comparison schools. Schools returned the food diaries via post throughout term four, 2011 or term one, 2012, depending on when the schools conducted the activity.

Of the 28 original initiative schools, 23 returned food diaries and 11 of 14 comparison schools returned food diaries. A total of 413 diaries were collected from initiative schools and 224 from the comparison schools (see Table 8 and Table 9). The food diary data were entered into a secure internal database for analysis.

4.5.7 School visits

Site visits were conducted with all 28 initiative schools at a time suitable for the schools. These were conducted during November and December 2011 by six evaluation team members.

Prior to the visit, each school was sent the interview / discussion group questions as well as the participant information sheets and consent forms for the parents and the students.

At the school visit, interviews or discussion groups were held with the principal, program coordinator, the garden and kitchen specialists, and Year 6 (or equivalent) students. In total, 67 interviews involving 86 individual school staff and 30 discussion groups involving 229 students were conducted. A garden and kitchen tour was also conducted at each school. The data collected during school visits were entered into a secure internal database for analysis.

4.5.8 Volunteer survey

Initiative schools were invited to administer a paper survey to people who had volunteered in the kitchen and / or garden classes in 2011. An information kit was sent to schools that included the volunteer survey (with consent form) and information on how to administer the survey.

Surveys were returned by volunteers during term one, 2012. Of the 28 original initiative schools, only 23 schools were asked to complete volunteer surveys, as the remaining five did not undertake earlier evaluation data collection activities. However, two of these schools, that were not asked to complete the surveys, did complete the survey. Of these 25 schools, 17 schools returned volunteer surveys. A total of 60 volunteer surveys were received from the schools (see Table 8). The survey data were entered into a secure internal database for analysis.

4.5.9 Teacher survey

Initiative schools were invited to distribute a survey to classroom teachers whose students had attended garden and kitchen classes during 2011 (online and paper surveys). An information kit was sent to each school that included the survey (with consent form) and information on how to administer the survey.

Surveys were returned by teachers during term one, 2012. Of the 28 original initiative schools, only 23 schools were asked to complete teacher surveys, as the remaining five did not undertake earlier evaluation data collection activities. However, three of these schools, that were not asked to complete the surveys, did complete the survey. Of these 26 schools, 16 schools returned teacher surveys. A total of 62 teacher surveys were collected from the schools – seven were completed online and 55 were completed on paper copies (see Table 8). The survey data were entered into a secure internal database for analysis.

4.5.10 Stakeholder interviews

Stakeholder consultations were conducted to obtain views regarding the broader issues relating to the national implementation of the SAKGNP and to gather data primarily relating to the evaluation questions. Purposive sampling was used to select the participants invited to be interviewed, from the following stakeholder groups: DoHA and DEEWR; SAKG Foundation central staff and project officers; state and territory education and health departments; and demonstration schools.

Each individual was invited via telephone or email to be interviewed and were sent a participant information sheet if they accepted. Interviews were conducted between late March 2012 and early May 2012. Most interviews were conducted over the telephone (one was conducted face to face) and had two evaluation team members present, one interviewer and one transcriber (the face to face interview was conducted by one evaluation team member).

Twenty-eight interviews were conducted involving 29 participants (one interview had two participants), with a total duration of 22.42 hours. Transcripts were produced and reviewed for accuracy. The transcripts were then analysed and key issues relating to the Program implementation and evaluation questions were identified.

4.5.11 Investment form

The return on investment study developed a conceptual framework to facilitate analysis that:

(i) Combined student and parent survey evidence from individual survey items into four domains: eating habits, food choices, kitchen lifestyle behaviour and garden lifestyle behaviour;
(ii) Triangulated evidence across the four domains, including initiative versus comparison school parent and student surveys and pre-post comparisons in initiative schools;
(iii) Evaluated short term return on investment of the SAKGNP as a health promotion and prevention strategy in estimating the multiplier impact on school and community investment up to two years of the SAKGNP funding agreement; and
(iv) Evaluated the longer term sustainability of the SAKGNP as a health promotion and prevention strategy in schools with investment beyond two years through: analysis of continuation of kitchen and garden classes beyond the two year agreement period; curriculum integration evolution of those classes in schools and communities beyond two years; and comparison of the scale of classes and school and community volunteer activity beyond two years relative to that up to two years.

The process of triangulation better enabled attribution, particularly where there was support between pre-post and initiative versus comparison school findings. The comparative analysis addressed the weakness of the pre-post analysis in controlling for the influence of Hawthorne effects and factors outside of SAKGNP (e.g. children getting older, environmental factors, other policy changes), while the pre-post analysis addressed weaknesses of the comparative analysis in not being able to adjust for non-observed selection factors and other potential confounders between initiative and comparison schools.

Investment analysis

An investment form was developed for the evaluation and completed by the initiative school principals. Data were collected on Australian Government grant expenditure, staff specialist and program co-ordinator time and rates of pay, community donations and volunteer contributions, SAKGNP classes and prior capital and BER related funding. Development of the investment form included trialling by an initiative school principal, and modifications were made based on their feedback to aid clarity and maximise school and item response. Following distribution of the investment forms to schools, follow-up emails and telephone calls were made to school principals to clarify any data issues that arose.

A total of 15 investment forms were completed from 23 schools invited, representing a response rate of 65.2% (see Table 8). Eight of these 15 schools provided investment data beyond the initial 2 years to enable assessment of potential longer term sustainability of the program. The investment forms were data cleaned and merged into a common spreadsheet and analysed.

4.5.12 Literature review

A literature review was conducted on school garden and kitchen programs, their effectiveness and impacts on student outcomes related to the evaluation questions. Searches conducted used bibliographic databases as well as hand searching reference lists of journal articles and other material about school garden and kitchen programs.

Searches were limited by English language and peer-reviewed journals (where available). If necessary additional limiters were used to define, for example, the age of the study participants or the specific field of research.

4.5.13 SAKG Foundation website review

The SAKG Foundation website was reviewed in order to summarise what was offered by the website, including the membership access only section, as well as review what had been recently added or improved.

The website was reviewed on 26 and 27 April 2012. The website is located at http://www.kitchengardenfoundation.org.au/. The reviewer accessed the website and viewed each of the main pages and links, reviewing the information provided. Attention was paid to the layout of the website, ease of access (e.g. do the links work) and applicability and usefulness of the information provided. A descriptive summary was written for each section of the website, and additional sub pages.

4.6 *Data collected*

Numbers of student surveys, parent surveys, food diaries, teacher surveys, volunteer surveys and investment forms collected for each initiative school are shown in Table 8.

Table 8 Initiative schools – number of surveys collected

School code	Student surveys	Parent surveys	Food diaries	Teacher surveys	Volunteer surveys	Investment forms
Initiative school 1	6	5	3	1	1	Yes
Initiative school 2	8	4	7	-	-	-
Initiative school 3	16	6	7	1	3	-
Initiative school 4	58	46	53	8	4	Yes
Initiative school 5	12	10	13	12	5	Yes
Initiative school 6	2	2	2	-	-	-
Initiative school 7	6	2	8	-	-	-
Initiative school 8	6	5	5	-	-	-
Initiative school 9	-	-	-	-	-	-
Initiative school 10	14	5	2	3	7	Yes
Initiative school 11	-	-	-	6	1	-
Initiative school 12	-	-	-	-	-	-
Initiative school 13	12	6	4	1	1	-
Initiative school 14	23	23	22	2	2	Yes
Initiative school 15	47	45	44	2	1	Yes
Initiative school 16	-	-	-	2	-	-
Initiative school 17	6	6	7	-	-	Yes
Initiative school 18	8	5	5	-	1	-
Initiative school 19	10	3	8	2	3	-
Initiative school 20	13	13	26	-	-	-
Initiative school 21	13	6	4	-	1	Yes
Initiative school 22	5	5	8	1	6	Yes
Initiative school 23	45	31	32	5	7	Yes
Initiative school 24	-	-	-	1	1	Yes
Initiative school 25	26	15	11	7	7	Yes
Initiative school 26	24	15	21	-	-	Yes
Initiative school 27	66	33	60	6	9	Yes
Initiative school 28	65	9	61	-	-	Yes
Unidentified school	-	-	-	2	-	-
Total surveys	**491**	**300**	**413**	**62**	**60**	**15**
Total schools	**23 (82.1%)**	**23 (82.1%)**	**23 (82.1%)**	**16 (57.1%)**	**17 (60.7%)**	**15 (53.6%)**

Numbers of student surveys, parent surveys and food diaries collected for each comparison school are shown in Table 9. It should be noted that teacher surveys, volunteer surveys and investment forms were not collected from comparison schools.

Table 9 Comparison schools – number of surveys collected

School code	Student surveys	Parent surveys	Food diaries
Comparison school 1	11	11	11
Comparison school 2	-	-	-
Comparison school 3	13	7	10
Comparison school 4	20	20	9
Comparison school 5	53	35	55
Comparison school 6	37	37	37
Comparison school 7	16	14	14
Comparison school 8	26	27	28
Comparison school 9	9	4	-
Comparison school10	36	25	16
Comparison school 11	-	6	-
Comparison school 12	11	23	26
Comparison school 13	28	25	-
Comparison school 14	-	-	-
Total surveys	**260**	**234**	**206**
Total schools	**11 (78.6%)**	**12 (85.7%)**	**9 (64.3%)**

4.7 Reporting the results and synthesising the findings

Each of the data sources map to an evaluation question/s. The evaluation questions are as follows:

- Evaluation question 1: Has the Program influenced students' lifestyle behaviours, eating habits and food choices?
- Evaluation question 2: Has the Program contributed to student learning in Key Learning Areas, attendance patterns and social behaviours within the school environment?
- Evaluation question 3: Has the Program had an impact on students or community members that may be identified as at risk of social exclusion and, if so, what is the attribution? How can the National Program better support the social inclusion agenda?
- Evaluation question 4: What are the enablers and barriers to participation in and sustainability of the Program? How can these be better harnessed and / or overcome?
- Evaluation question 5: What has been the return on investment to the Australian Government, students and the school community?

Table 10 below provides a matrix of which data source maps to which evaluation question.

Table 10 Matrix of mapping between data sources and evaluation questions

Data source	EQ1	EQ2	EQ3	EQ4	EQ5
1. Three and nine month reports	-	-	-	Yes	-
2. Workhops and webinars	Yes	Yes	Yes	Yes	-
3. My School	-	Yes	-	-	-
4. Student survey	Yes	Yes	-	-	-
5. Parent survey	Yes	-	-	Yes	-
6. Food diary	Yes	-	-	-	-
7. School visits	Yes	Yes	Yes	Yes	-
8. Volunteers survey	Yes	-	-	Yes	-
9. Teachers survey	-	Yes	Yes	Yes	-
10. Stakeholder interviews	-	Yes	Yes	Yes	-
11. Investment form	-	-	-	-	Yes
12. Literature review	Yes	Yes	Yes	-	-

Findings have not been reported separately on individual data sources, instead they have been integrated and synthesised for this Final Report. This was in accordance with the principles of triangulation; multiple sources of data and information have been synthesised to generate an overall Program finding to address the evaluation questions. This approach applied to the complete data collection enabled reporting on the impact of the Program from a number of different perspectives.

5 Summary of findings

An extensive range of evaluation information was collected from 13 data sources. This section provides a synthesis of these data sources, selectively utilising data to provide a rich account of the implementation and effectiveness of the Program. This synthesis is presented around three areas, reflecting the evaluation hierarchy presented in Figure 2 (section 4.1).

Section 5.1: Program design and implementation
Firstly findings are presented on the extent to which the Program was implemented as intended. The primary purpose of this section is to ensure accountability.

Section 5.2: Program achievement
Secondly findings are presented on the extent to which the Program achieved the desired / anticipated results. The primary purpose of this section is to inform future planning decisions, policy and resource allocation. Specifically this section provides answers to the evaluation questions as they pertain to Levels 1 and 2 of the evaluation framework.

Section 5.2.1: Level 1 – Student-related impacts and outcomes
Has the Program influenced students' lifestyle behaviours, eating habits and food choices?

Section 5.2.2: Level 1 – Student-related impacts and outcomes.
Has the Program contributed to student learning in Key Learning Areas, attendance patterns and social behaviours within the school environment?

Section 5.2.3: Level 2 – School-related impacts and outcomes.
Has the Program had an impact on students or community members that may be identified as at risk of social exclusion and, if so, what is this impact?

Section 5.2.4: Level 2 – School-related impacts and outcomes.
What are the enablers and barriers to participation in and sustainability of the Program (at the individual school-level)? How can these be better harnessed and / or overcome?

Section 5.3: Program context
The third section of the findings provides insights into the broader Program context and what has been learnt regarding the provision of health promotion programs in schools. This section will inform future systems level planning and policy. In particular this section provides important insights into the broader Level 3 of the evaluation framework, namely inter-relationships and responsibilities of the different sectors and agencies that have a role in the implementation, support and sustaining of such an ambitious Program.

Section 5.3.1: Level 3 – System-related impacts and outcomes.
What are the enablers and barriers to participation in and sustainability of the Program (at the national level)? How can these be better harnessed and / or overcome?

Section 5.3.2: Level 3 – System-related impacts and outcomes.
What has been the return on investment to the Australian Government, students and the school community?

5.1 *Program implementation*

This section outlines the extent to which the Program was implemented as intended.

This evaluation found that the SAKGNP had been established in schools across Australia. As of October 2011, funding (up to $60,000) had been provided to 177 schools[1] including seven demonstration schools (up to $80,000) to enable them to participate in the Program. The SAKG Foundation provided support to schools during their establishment and implementation of the Program and curriculum materials have been produced for use by participating and other schools (a purchase fee is required for non Program schools).

Demonstration schools were established in the capital cities of each of the states and territories (excepting Victoria which already had a demonstration school in place). These schools were provided with funding to support the employment of garden and kitchen specialists, on top of the infrastructure funding provided to all schools in the Program. The Foundation employed state project officers who were administratively located at the demonstration schools (one project officer subsequently was located in a state education department).

The purpose of the demonstration schools, 'to increase accessibility for interested schools to visit and a training centre for schools joining the Program', had been fulfilled. All demonstration school principals reported that the demonstration school model was effective. Demonstration school principals reported that their role covered giving advice to schools considering applying for funding; providing information and support to newly funded schools; demonstrating the Program in action and hosting visits as an ambassador of the Program; networking with schools in the Program i.e. contact base; hosting professional development days / training; and promoting the Program through the media. Demonstration school staff worked with project officers to problem solve challenges, provide schools support and host visits and training. Both roles were reported to be key elements to the SAKGNP model. Some demonstration schools worked with state education departments to assist other schools to get into the Program.

A number of factors were found to assist in the implementation of the Program. These were: having a supportive school principal; local champion / driver; motivated garden and kitchen specialists; supportive and involved parents and / or community; committed school staff; and student ownership of the Program.

Schools in the Program also identified they had experienced issues and challenges during the establishment and implementation of the Program. Timeline variations were experienced by schools. By the nine month report the majority of initiative and demonstration schools reported having employed their garden and kitchen specialist staff and commenced their classes, even though their gardens were at various stages of completeness but their kitchens were predominantly in place. Timelines were impacted by late funding of the Program, delays in kitchen construction and construction delays associated with the Building the Education Revolution program.

Other challenges were reported by schools including not allocating enough time for the project, lack of volunteers, disinterest from staff, remote location and budget variations. Schools reported using various strategies to overcome these challenges, which were grouped into broad themes: the importance of engaging the local community, recruitment of volunteers, working closely with all members of the project team and making adjustments (for example using existing garden and kitchen facilities or modifying task sequences). Budget overruns were overcome through use of donated or recycled furniture and garden materials, volunteer professional labour (for example plumbing and electrical), donations and sponsorships. All the schools reported they had overcome their challenges.

Demonstration schools also experienced challenges in fulfilling their roles within the Program, in addition to those experienced by Program schools generally. The demonstration schools reported

[1] Roxon N, Albanese A, 2011, Stanmore Public School Amongst 50 New Schools to Start Stephanie Alexander Kitchen Gardens. URL http://www.health.gov.au/internet/ministers/publishing.nsf/Content/mr-yr11-nr-nr211?OpenDocument&yr=2011&mth=10 [accessed 22 May 2012]

that the support they received from the Foundation in the initial establishment period for the Program was inadequate.

> *"... at the start up there wasn't much support for demonstration schools... Really we forged alone, by ourselves, and made all the mistakes and told everyone else what the mistakes were but it was a long hard road at the cutting edge …." (Workshop Discussion)*

In addition, despite receiving funding for the specialist positions, the demonstration schools identified that the significant workload and inadequacy of the remuneration for the specialists, together with their part-time employment, were key challenges that needed to be overcome.

> *"Well, you do, you know, you work twice as many hours as what you're paid for... Not many people can afford to do that." (Workshop Discussion)*

The challenges experienced by Program schools and how these were overcome are expanded upon in section 5.2.4.

The aim of the SAKGNP to create and provide pleasurable food education for children was found to have been achieved. All schools reported implementing linked garden and kitchen class activities and student participation in eating the foods they had prepared. Principals, garden and kitchen specialists and program coordinators reported that almost all students found the garden, garden lessons, kitchen and kitchen lessons a source of enjoyment and fun. The students themselves also clearly demonstrated their enthusiasm for the Program activities. Many of the students' responses about what they enjoyed overlapped with the knowledge and skills they had learned and they reported that 'learning new things' was part of their enjoyment. This area is expanded in subsequent sections.

The aim of embedding the garden and kitchen classes within the school curriculum had been strongly embraced by Program schools but faced a range of challenges. Review of the nine month reports indicated that four of six demonstration schools and two thirds of the initiative schools reported they had integrated the SAKGNP into their curriculum. Specific subject areas were mentioned, including the curriculum areas of science ('best two years of science ever'), mathematics, art and technology.

Further support for integration with the curriculum was obtained during the school visits and from the teacher survey. Teachers reported they 'maximise[d] opportunities to use the program to bring class learning to life' and used the garden as a teaching space in the school. Schools also noted that the SAKGNP created new integrative possibilities and many cross curriculum linkages were reported, for example 'Eco-hospitality' (students designed recyclable food packages) and 'Lifestyles of the Fit and Healthy' (students produced videos on healthy lifestyles and litter-free lunches).

Integrating garden and kitchen activities with the classroom had been slow but will be critically important to the sustainability of the Program in the longer term. Teachers and school staff attributed this slow progress on curriculum integration to a crowded curriculum and lack of time and funding for planning. Project officers identified that in some instances limited awareness of the educational value of the Program may have affected the attention directed to integration with the curriculum. A school's ability to incorporate classes into the curriculum seemed to be a function of the school's commitment to the Program, the qualifications of the specialist staff and the extent to which teachers were involved in the garden and kitchen classes. In some schools timetabling challenges led teachers to become unhappy with the Program and in several states schools faced the additional challenge of changing to the new national curriculum. A further issue experienced by rural and small schools was difficulty in accessing training workshops or visiting other Program schools. These curriculum-related challenges and how they were overcome are discussed in more detail in 5.2.2 and 5.2.4.

Particularly positive responses were received from parents of children in SAKGNP schools, when asked to comment on the Program's impact on the school. The most common themes related to an increased sense of community, an increased sense of pride towards the school, and raising the school's profile.

Overall, 97.2% (278 of 286) of parents thought involvement in the SAKGNP was a good idea, clearly demonstrating that most parents had a positive opinion of the Program. Parents were asked to qualify why they felt that their child's involvement in the Program was a good idea and 199 parents provided reasons. The comments were overwhelmingly positive and were varied, not just focussed on gardening and cooking. Some examples are provided below:

> *Absolutely! This is the most innovative and wonderful thing the school has been involved in since I have had children at the school.*
>
> *I feel it is important as it is building children's pride in their school togetherness and a willingness to work together as well as learning life skills with gardening and cooking. It is also nurturing self-confidence problem solving and tolerance.*
>
> *…it has created a sense of community and belonging.*
>
> *SAKGNP provides lots of fantastic real life learning opportunities. Promotion of healthy lifestyle, literacy skills [and] social skills*
>
> *My child really enjoys this program and his schooling has improved due to this program.*
>
> *Absolutely this is excellent program for many reasons most importantly nutrition value of fresh vegetables to the table.*
>
> *…it is a holistic, real life experience that children can participate in that demonstrates what they are learning – maths, biology etc.*
>
> *Children can take skills learned in this programme with them for life and hopefully grow their own foods.*
>
> *It's given a sense of pride and community spirit. There is always something new in the garden and often large groups gathering there - it's a welcoming and friendly atmosphere*

Key points:

- The SAKGNP had been implemented as intended and it was found to provide pleasurable food education for children.
- The implementation of the Program was assisted by the commitment and enthusiasm of key individuals, including the principal, specialist staff, community members and the students.
- Parents were enthusiastic about their child's school participating in the SAKGNP and many of their comments reflected what the Program aimed to achieve.
- Challenges to Program implementation varied with individual schools and included: how to allocate sufficient time, encourage sufficient volunteers and involve all staff members, as well as budget variations.
- Strategies identified to overcome challenges to implementation included: engaging local community, recruiting volunteers, working closely with all project team members, capacity to respond flexibly as implementation proceeded, and successfully soliciting donations / sponsorships.
- Demonstration schools were a positive element of the SAKGNP model especially initially but they faced difficulties in trying to assist other schools while they were trying to establish the Program themselves.

5.2 *Program achievement*

5.2.1 Level 1: Student-related impacts and outcomes
Has the Program influenced students' lifestyle behaviours, eating habits and food choices?

The student survey and the parent survey were the primary sources of quantitative data on the four domains of garden lifestyle behaviours, kitchen lifestyle behaviours, eating habits and food choices. The return on investment calculations included triangulation of the domain outcomes. The food diary data were too unreliable and incomplete to be included in the quantitative analyses but the qualitative food diary data have been included. Further qualitative data on these four domains were sourced from the school visits and teacher and volunteer surveys.

5.2.1.1 Domain calculation

Student and parent survey questions were assigned to one of the four domains of garden lifestyle behaviours, kitchen lifestyle behaviours, eating habits and food choices. The domains are described as follows:

- Garden lifestyle behaviours considered the level of enjoyment, confidence and ability that the student had in regard to gardening.
- Kitchen lifestyle behaviours considered the level of enjoyment, confidence and ability that the student had in regard to cooking and other kitchen activities.
- Eating habits and behaviours of the students included the quantity of fruit and vegetables the student consumed as well as mealtime behaviours.
- Food choices included willingness to try new foods and diversity of foods they chose to eat.

The survey questions were given a weighting factor depending on its relative importance to that domain and the scale used in the question. Tallies of the weighted survey questions within each domain provided a numerical expression of the domain they represented. The higher this domain score, the more positive or healthy the student was in regard to that domain.

Once the four domain scores were calculated for each student, a linear regression model was fitted to the data to adjust for confounding variables which could change domain scores. The purpose of this was to compare the domain scores between initiative and comparison schools, while accounting for variables which could also contribute towards domain score differences. These explanatory variables included the student's gender, grade and time at school, along with their school's geographic region, socioeconomic level and size. Parent demographic factors included in the adjustments were country of birth, language and level of schooling. A variable was considered significant if the p-value of the corresponding coefficient in the model was less than 0.05.

Student-level variables were important to adjust for as, unlike school-level variables, they could not be matched on in the sample design. It was also important to adjust for school-level variables since the originally balanced school types became somewhat unbalanced with five out of 28 initiative schools and three out of 14 comparison schools not responding. For example, this led to a higher proportion of comparison schools with high socioeconomic levels (54.5%) than that of initiative schools (34.8%). Adjustment of parent-related factors was particularly important as a significantly higher proportion of comparison school parents were tertiary qualified (68.1% versus 57.0%, p= 0.010). Parents' education has previously been shown to be an important independent determinant of home environment and lifestyle, eating habits, social behaviour and food choices (Patrick and Nicklas, 2005).

The adjusted comparisons of the domain scores provide the primary and general findings of the student and parent surveys. The unadjusted results of the individual survey questions within each domain were used to support and explain those findings.

The student and parent surveys both had additional questions for respondents in initiative schools specifically regarding the SAKGNP. Answers to these questions could be used to explore the effects that the Program had on the students and parents. One particular set of questions in the parent survey was designed to support the results of the domain score comparisons between initiative and comparison schools. These questions asked parents about changes which had occurred since their child began participation in SAKGNP classes. Each of these questions corresponded with a domain and acted as a succinct way of providing a pre-post analysis. These questions provided a means to support the results of the adjusted comparisons of the domain scores, which would verify and strengthen any differences found. They also supplemented the comparisons between initiative and control schools with pre-post comparisons.

Twenty-three of the 28 original initiative schools, and 11 of 14 comparison schools returned student surveys. A total of 491 student surveys were collected from initiative schools and 260 from the comparison schools. Of the 28 original initiative schools, 23 returned parent surveys and 12 of 14 comparison schools returned parent surveys. A total of 300 parent surveys were collected from initiative schools and 234 from the comparison schools. Although these are the totals, the number of respondents reported varies depending on the response rates for each individual question.

5.2.1.2 Respondents

Student surveys were returned by approximately equal numbers of male and female students across both school types. The majority of respondents for both school types were from grade 6, which was the targeted grade. The initiative schools had a larger representation of respondents from grades 5 and 7 than the comparison schools, and both had smaller numbers of grade 3 and 4 respondents.

For both initiative and comparison schools the majority of parent respondents were female with 86.2% and 83.3% respectively. Similar proportions were also found in initiative and comparison schools for the variables country of birth and main language of the parent. The vast majority of respondents were born in Australia and spoke English as their main language. In terms of the level of schooling, comparison school parents had a higher level with 11.1% more possessing tertiary qualifications than initiative school parents.

5.2.1.3 Overall findings across domains

Overall, the evaluation has provided evidence that the SAKGNP can be ascribed with significantly improving students' kitchen lifestyle behaviours (as reported by parents) and food choice, while there was no significant difference reported in gardening lifestyle behaviours or eating habits.

5.2.1.4 Food choices

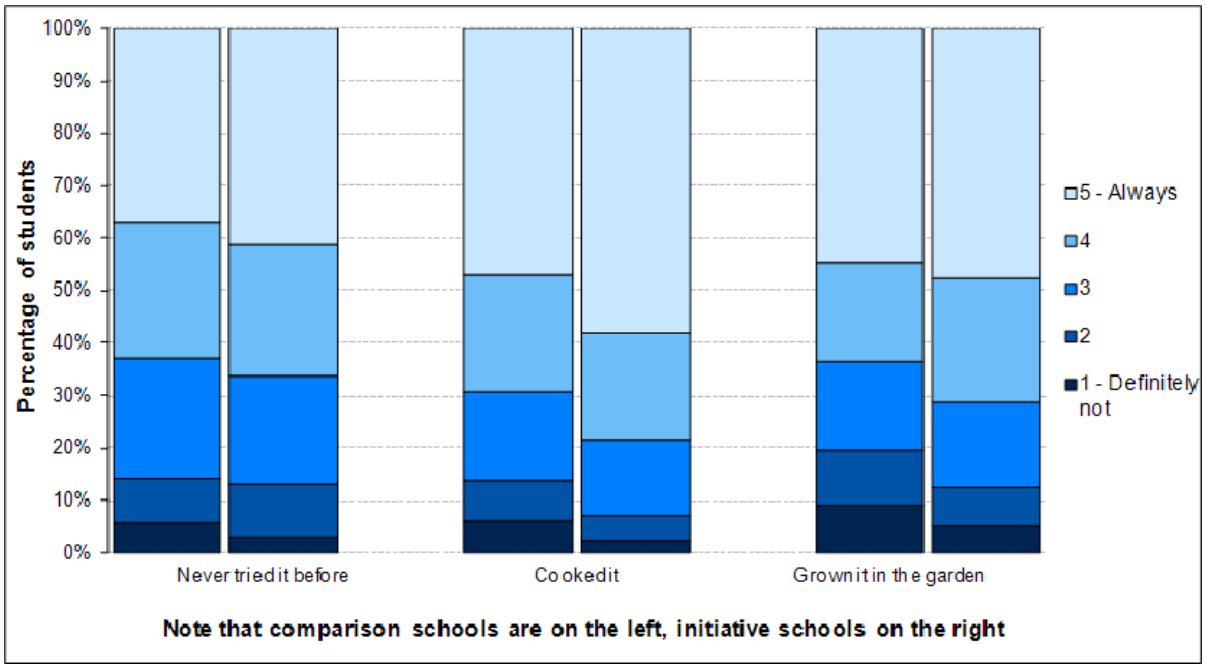
The analysis of the student survey revealed a significant impact of the SAKGNP on food choices in students. After adjusting for potential confounders, student responses in the food choice domain differed significantly between initiative and comparison schools.

There was a significant difference in the food choice domain scores between students from initiative and comparison schools ($t = 2.26$, $p = 0.024$), with initiative schools showing higher scores after adjusting for potential confounding factors. Female students were found to have significantly higher scores than male students ($t = 4.54$, $p < 0.001$), and students from provincial schools had significantly higher scores than metropolitan schools ($t = 3.74$, $p < 0.001$). All other variables had non-significant differences in food choice domain scores.

The questions within the food choice domain asked students if they would try a new food if they had: never tried it before; cooked it; or grown it in the garden. It also featured a question which aggregated the number of fruit and vegetable varieties they usually ate.

The students' willingness to try new foods is depicted Figure 3. In general the students were quite willing to try new foods with high proportions of students reporting they would 'always' try a new food if they had never tried it before, cooked it or grown it in the garden. This perspective was also supported in the additional comments provided by the students at the end of the survey; 10.0% of these comments specifically mentioned that the student had enjoyed eating the foods they cooked or trying new foods. For all items, proportionally more of the students from the initiative schools selected 'always' as compared with students from comparison schools. Moreover, this difference in willingness to try a new food was more pronounced if they had cooked or grown it. The frequency of fruit and vegetable varieties were similar between initiative and comparison schools.

Figure 3 Willingness to try a new food based on involvement with that food



The domain of a child's food choices explored in the parent survey included questions about their child's willingness to try new foods, involvement in food buying decisions and diversity of foods choices. There were no significant differences in domain scores for food choices between initiative and comparison schools ($t = -0.30$, $p = 0.768$) after adjusting for other confounding factors. Female parents reported significantly higher domain scores than male parents ($t = 2.32$, $p = 0.021$), while all other variables in the parent survey showed no significant effect on the food choices domain scores.

Key points:

- The SAKGNP has led to statistically significant overall improvements in student's food choices (as reported by students). Female students and students from provincial schools were found to have statistically greater improvements than other students, but no statistically significant difference when reported by parents.
- Students in initiative schools were more likely to report that they would always try new foods as compared to students in comparison schools, and the proportion was higher if the students had grown or cooked the foods.

5.2.1.5 Eating habits and behaviours

Despite improvements in students' reported food choices, adjusted eating habit domain scores were lower for initiative schools than for comparison schools in the student surveys. However this difference was not statistically significant ($t = -1.90$, $p = 0.058$). This difference was also non-

significant for eating habit domain scores in the parent survey (t = -1.10, p = 0.273) after adjusting for confounding factors. A statistically significant effect of parent education was found for this domain with tertiary-qualified parents having higher scores than parents who did not finish high school (t = 2.40, p = 0.017). Also, there was evidence of a significant effect due to school size with parents of children from very small schools having higher scores than parents of children from large schools (t = 2.48, p = 0.014).

In a typical week, the average number of nights an initiative school student reported eating dinner at the table with their family was 4.7 nights compared with 5.2 nights for comparison school students. The average number of nights an initiative school student would eat dinner in front of the television was 2.6 nights, little different from that of comparison school students, 2.7 nights.

The students were asked to estimate the number of servings of fruit and vegetables they ate on an average day. The average number of reported servings of fruit per day was found to be 2.7 for initiative school students (2.0 serves were reported by parents) and 2.9 for comparison school students (2.2 serves were reported by parents). Servings greater than 10 were considered outliers and removed. The average number of reported servings of vegetables per day was found to be 2.9 for initiative school students (2.4 serves reported by parents) and 3.4 for comparison school students (2.6 serves reported by parents). Servings greater than 10 were considered outliers and removed. Thus students (and to a lesser extent parents) from comparison schools reported eating more vegetables (and to a lesser extent fruit) on average than initiative school students (and their parents) but this difference was not statistically significant.

The food diary data indicated that students in both initiative and comparison schools ate only approximately one serve each of fruit or vegetables per day. This varies considerably from the number of servings of fruits and vegetables which the students and parents reported in their surveys. While the food diary data were very poor, this discrepancy is large and may warrant further consideration regarding how best to collect such data efficiently in the future.

The pre-post analysis revealed that 20.0% (58 of 290) of students from initiative schools ate fruit and vegetables more often and less than 1% (2 of 290) less often after the SAKGNP (as reported by parents).

Key points:
- 20% of parents of initiative school children reported that students ate fruits and vegetables more often after participating in the SAKGNP.
- No statistically significant difference was found for the eating habit domain scores between initiative and comparison schools, after adjustment for confounders.
- Students in both sets of schools ate fewer than the recommended number of serves of fruits and vegetables per day and no differences in eating habits between schools were found.
- Significant influences on children's eating behaviours included level of parent education and (small) size of school.
- There is an ongoing challenge to efficiently and reliably collect food intake data from students.

5.2.1.6 Kitchen lifestyle behaviours

Findings from the parent survey indicated that students from initiative school liked cooking more and helped with cooking more than students from comparison schools, and that parents liked cooking with their child more. There was a significant difference in the overall domain scores for kitchen lifestyle behaviours for initiative compared to comparison schools (t = 2.35, p = 0.019) after adjusting for potential confounding factors, with higher scores in initiative schools than in comparison schools. Female parents were found to report significantly higher kitchen lifestyle domain scores than male parents (t = 2.11, p = 0.036), and provincial schools had significantly higher scores than metropolitan schools (t = 2.80, p = 0.005).

Parent survey findings support a significant impact of the SAKGNP on kitchen lifestyle behaviours in students. These findings were further supported by pre-post analysis in initiative schools, where

18.6% (54 of 290) of surveys reported families preparing their own meals at home more often and only 1.4% (4 out of 290) less often, reflecting an impact of SAKGNP on the kitchen lifestyle behaviours domain. Triangulation therefore strongly supported the SAKGNP had led to improvements in kitchen lifestyle behaviours.

One important indicator of the Program's effectiveness is whether cooking knowledge and skills learned in class were implemented at home. A high proportion (71.9%) of parents of students from initiative schools reported that their child was more willing to cook at home since the start of the Program. Furthermore, 77.4% of parents indicated that their child had asked them to make food that they had made at school. These data indicate that the implementation of the SAKGNP may lead to significantly improved engagement of children in cooking and the kitchen lifestyle domain more generally.

The kitchen lifestyle behaviour domain as measured in the student survey showed some significant effects with girls having higher scores than boys ($t = 6.19$, $p < 0.001$) and an overall effect of grade ($F = 5.71$, $p < 0.001$) revealing a general trend of students in higher grades to obtain higher scores. However, results from the student survey, unlike those from the parent survey, revealed there was no significant difference in kitchen lifestyle behaviour domain scores between students from initiative and comparison schools ($t = 0.66$, $p = 0.511$).

To further explore the kitchen lifestyle behaviours the students' unadjusted level of enjoyment (on a scale from 1-5) were compared. There was a noticeably larger number of students from comparison schools with a lower level of enjoyment (1-2), while a greater proportion of students from initiative schools rated higher (4-5), but the extent of these unadjusted differences was not very substantial.

Students in the initiative schools reported a wide variety of activities they enjoyed most in the kitchen classes, most commonly, cooking in general, but also eating the food, and eating what they had cooked. They also reported that their favourite activity was cooking, or cooking and eating a new food or recipe. A wide variety of specific cooking and serving skills were reported as students' favourite activity, such as cutting, using knives, the stove and oven, setting the table, and even washing up. Students reported cooking specific foods as their favourite activity, and again these included a wide variety, from pasta, pizza, vegetables and soup to desserts. Some students reported they enjoyed everything.

There was little difference between students in initiative and comparison schools in cooking at home. In a typical week, the average number of nights a student from an initiative school would help cook dinner was 2.6 nights, compared to 2.8 nights for students from comparison schools, indicating no great differences between the school types.

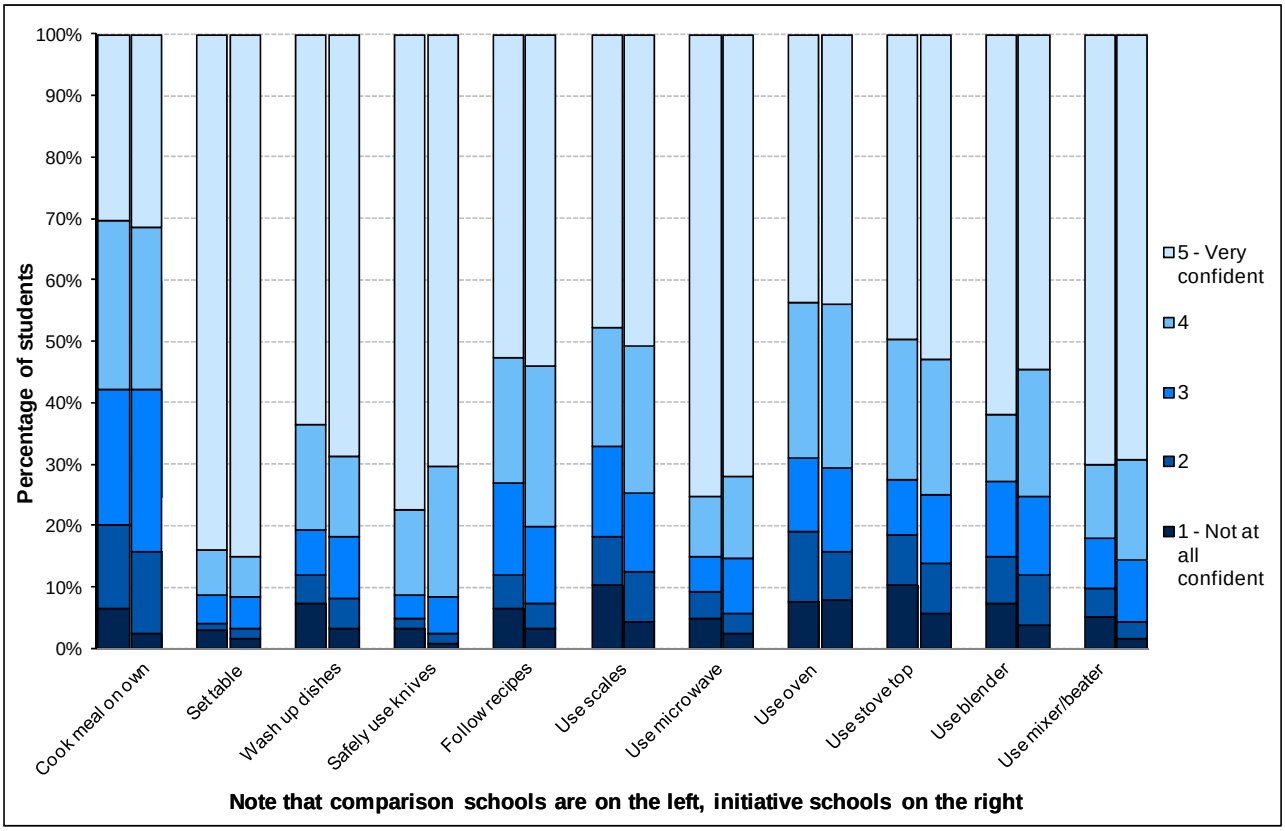
The levels of confidence expressed by the students towards kitchen activities are displayed in Figure 4. The general impression is that students from both initiative and comparison schools were confident in performing most of the listed kitchen activities. The unadjusted distributions of confidence between the initiative and comparison schools were similar. However, in almost all activities, a higher proportion of students from comparison schools reported that they were 'not at all confident'.

There were no large differences between the two school types in relation to students reporting they needed help preparing different foods (pasta and sauce, mixed salad, vegetable stir-fry), though the proportion of those who 'always need help' was larger for comparison school students in all three foods.

More than four out of five (81.0%) students in initiative schools reported that they learned new things in the kitchen. Students reported learning a diverse range of kitchen skills including reading recipes and safe usage, especially the use of knives; different cooking techniques; new and specific recipes; new vegetables and their names; cultural lessons around food; and setting the

table and table manners. Students also reported they learned how to measure and prepare before starting the tasks, and how to read and understand recipes and directions.

Figure 4 Extent of confidence in kitchen activities



Key points:

- The SAKGNP has led to statistically significant improvements in student's kitchen lifestyle behaviours (as reports by parents); it was reported that children liked cooking more, helped to cook more often and parents liked cooking with their children more.
- Participating in SAKGNP has led to greater engagement of children with cooking at home:
  - nearly 20% of parents indicated that they prepared more meals at home after their children participated in the Program
  - 77% of parents indicated their child asked them to make foods that had been made at school as part of the Program
  - 72% of parents of students reported that their child was more willing to cook at home since the start of the Program
- The SAKGNP was associated with students reporting more confidence with a range of kitchen activities and a lower need for help in cooking specific foods.

5.2.1.7 Garden lifestyle behaviours

The domain of garden lifestyle behaviours considered the level of enjoyment, confidence and ability that the student had in regard to gardening. Overall, there was no significant difference in the adjusted domain scores for garden lifestyle behaviours between students from initiative and comparison schools ($t = 0.23$, $p = 0.815$).

The unadjusted difference in the percentage of students who enjoyed gardening 'a lot / very much' was 4.8%, with more students from comparison schools rating this activity at this level. Apart from this finding, the general levels of gardening enjoyment were quite similar between initiative and comparison schools.

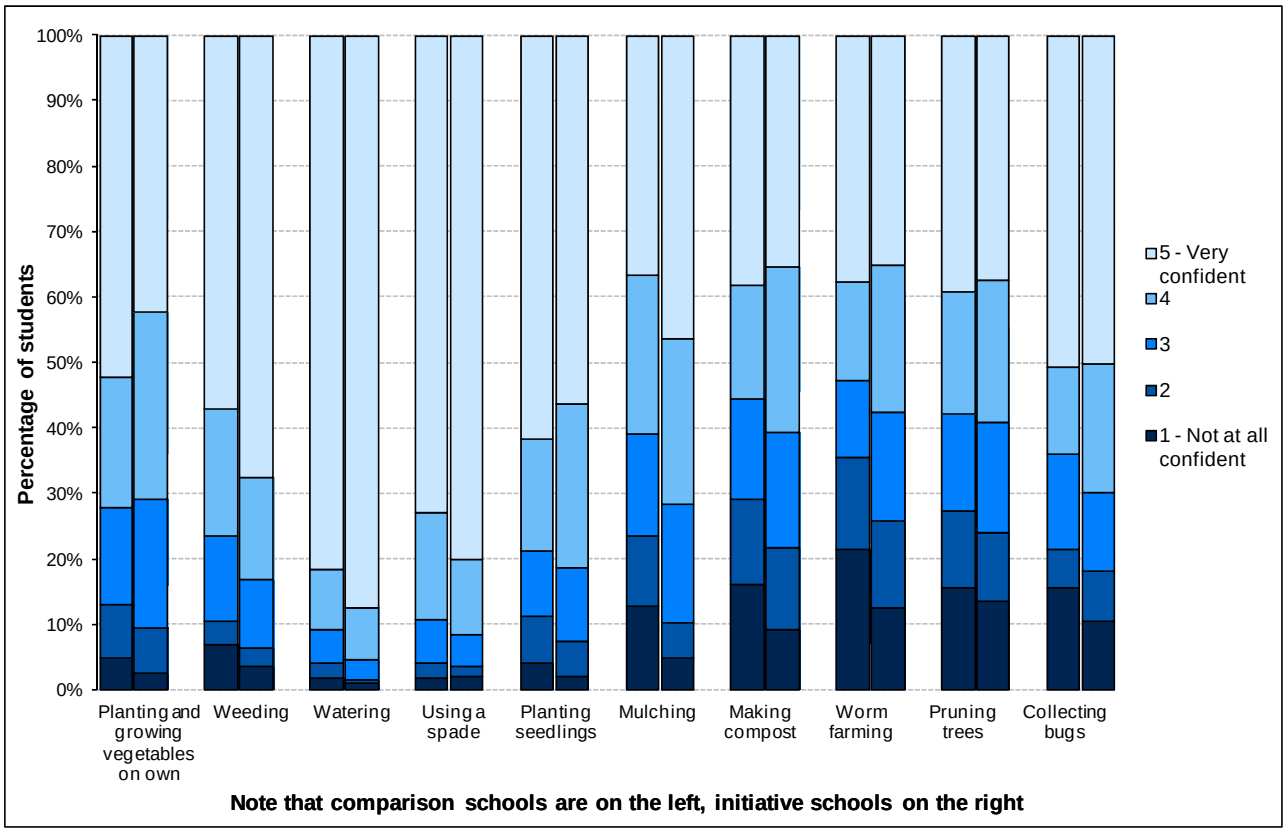
Students in the initiative schools reported a wide range of favourite activities that they enjoyed in the garden classes. These included the whole process of vegetable gardening, from preparing

and building garden beds through to harvesting, and also caring for the chickens and aquaponics. Students indicated favourites that included what might have been considered as less desirable jobs such as weeding, cleaning the chicken pens and shovelling compost. Many students reported that using garden tools, and the potential for fun, such as using wheelbarrows, were their favourite activities.

The levels of confidence expressed by the students towards garden activities are displayed in Figure 5. The common trend was a reasonably high level of confidence across the different garden activities but there were variations, for example confidence in watering plants was far more apparent than in worm farming. There were no obvious overall differences between initiative and comparison schools. Students from initiative schools appeared to have greater confidence in weeding, watering, using a spade and mulching. In almost all activities, a higher proportion of students from comparison schools reported that they were 'not at all confident'.

Initiative schools reported a smaller proportion of students who required help when planting and growing different foods (broccoli, silverbeet seedlings, pumpkin seeds) but this was not significantly different.

Figure 5 Extent of confidence in gardening activities



More than four out of five (81.2%) students in initiative schools reported they learned new things in the garden and many provided comments on what they had learned. What the students learned were very wide ranging and overlapped with what they enjoyed, including: skills involved in building and maintaining garden beds and ways to improve the soil; planting, growing, watering, pruning, managing pests and diseases; harvesting vegetables; care of chickens; aquaponics; and knowledge such as plant and insect identification.

The domain of garden lifestyle behaviours in the parent survey considered the student's level of enjoyment and gardening behaviours, as reported by the parent. There was no significant difference in the parents' domain scores for garden lifestyle behaviours between students from initiative and comparison schools ($t = -0.91$, $p = 0.361$) and no other variables showed any significant effect on the garden lifestyle behaviours domain scores. Hence there were no significant differences between initiative and comparison schools after accounting for confounding

variables. Another interesting finding was that the pre-post analysis in initiative schools revealed that 32.7% (91 of 278) of parents noticed they worked with their child in the garden more often since the Program began, and only 3.6% (10 out of 278) less often.

Key points:
- Involvement in the SAKGNP did not achieve a statistically significant difference in students' gardening lifestyle behaviours (as reported by students and parents) and students' level of enjoyment of gardening was similar in all schools.
- Students in SAKGNP schools reported more confidence with a range of garden activities compared with comparison school students.
- More than 80% of SAKGNP school students reported they learned new things in the garden.
- Almost 1/3 of SAKGNP school parents reported that they worked more often with their child in the home garden since the beginning of the Program.

5.2.1.8 Program activities that influenced students' lifestyle behaviours, eating habits and food choices

The aim of the SAKGNP is to provide pleasurable food education for young children. The growing and harvesting of a wide variety of vegetables, fruits and herbs was to occur in the garden and in the kitchen students were to learn to prepare dishes from seasonal produce they had grown and to share the meal in the company of others at a table. Findings from the school visits, together with workshop and interview data strongly support that the Program had achieved this aim.

Principals, program coordinators and garden and kitchen specialists consistently reported that almost all the students found the garden lessons a source of enjoyment and fun and the students' level of enjoyment of the kitchen classes was even greater; 'they love doing it' and it 'makes them want to come to school'. No staff reported that the students did not enjoy the classes.

Principals and staff at the initiative schools reported a wide range of knowledge and skills that students achieved in the kitchen classes. These included improvements in identification of vegetables, fruits, herbs and spices, especially unfamiliar ones, and different ways to cook and use them. Marked improvements were reported in reading and following recipes; using utensils (such as knives) and equipment; and in different cooking techniques such as frying, boiling, baking and preserving. Kitchen safety and hygiene were mentioned as important lessons learnt. Such basic skill development in the kitchen is an important first step in achieving behaviour changes to support healthy eating. Staff also reported that students had better knowledge of nutrients in the foods they cooked, which was an important additional learning that complemented the health areas of the school curriculum.

Students' views were even more enthusiastic than the reports by staff. They gave a very large and comprehensive list of activities they enjoyed in the garden, including 'everything'. A key part of their enjoyment of the cooking classes was eating what they had cooked; eating new foods; sharing the dishes they had made with their friends and classmates; and talking about the dishes. They particularly liked that they did everything themselves, as they reported they would not previously have been allowed to do so at home.

The Program was based on the premise that by using a holistic approach, children's food choices would be positively influenced. The qualitative data support the quantitative data reported above that changes in food choices had occurred and that kitchen lifestyles and attitudes had changed. In particular staff reported that students were now very willing to try new foods and that the Program had 'widened students' taste horizons'.

A very strong link was identified between the students' enjoyment of the Program, the learning opportunities it provided and the fact that they ate what they had grown and prepared. This link is foundational to a number of other findings and observations relating to food behaviour: students were more willing to try new foods; they ate a wider variety of foods; were more conscious of what they ate; and the skills learned in the school garden or kitchen were transferable to the home

garden and / or kitchen. These are likely long term behavioural changes with the potential for significant health consequences in the future.

Key points:
- Students in SAKGNP schools were reported to have developed basic skills in the kitchen and demonstrated increased willingness to try new foods, which are important steps in achieving behaviour changes associated with healthy eating.
- Cooking skills developed by SAKGNP school students included using kitchen equipment and tools, reading and following recipes, and kitchen safety and hygiene.
- SAKGNP school principals, staff and students reported that almost all students found garden and kitchen classes a source of enjoyment and fun.

5.2.2 Level 1: Student-related impacts and outcomes
Has the Program contributed to student learning in Key Learning Areas, attendance patterns and social behaviours within the school environment?

5.2.2.1 Key Learning Areas

Overall there was no quantitative evidence to suggest that the SAKGNP had an effect on student learning, either positive or negative, as measured by the one national indicator available, the NAPLAN scores. Both analyses, initiative versus comparison schools and baseline versus present NAPLAN scores found differences that were non-significant. However, the school-level data available on the *My School* website should not be considered comprehensive enough to show any direct effects of the Program. Even if data were collected at student level, it would still be difficult to attribute any changes in learning to the Program.

The absence of a positive change in NAPLAN scores was not unexpected as the intent of the SAKGNP was only to introduce the classes to the curriculum, as detailed in the statement of contract:

> *'Whole-school commitment to introduce the Stephanie Alexander Kitchen Garden Program into the school curriculum' (SAKGNP Sample Application Form, emphasis added)*

Results from the teacher survey indicated a quarter of the Program schools had fully incorporated the SAKGNP lessons into classroom lessons and 15% had fully incorporated classroom lessons into SAKGNP garden (15.7%) and kitchen (15.4%) lessons (refer to Figure 6 and Figure 7). The level of incorporation did not vary depending on whether it was a garden or kitchen lesson. Feedback received identified a number of factors that impacted on integrating the SAKGNP with the curriculum and these are identified below.

Figure 6 Incorporation of SAKGNP information or activities into classroom lessons

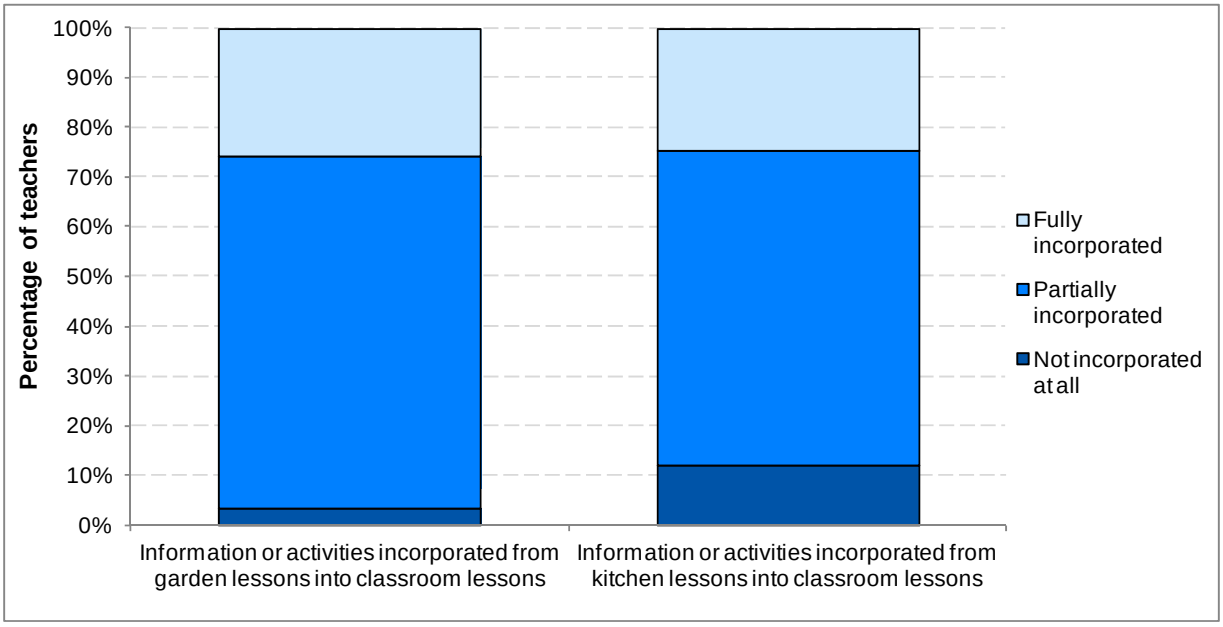
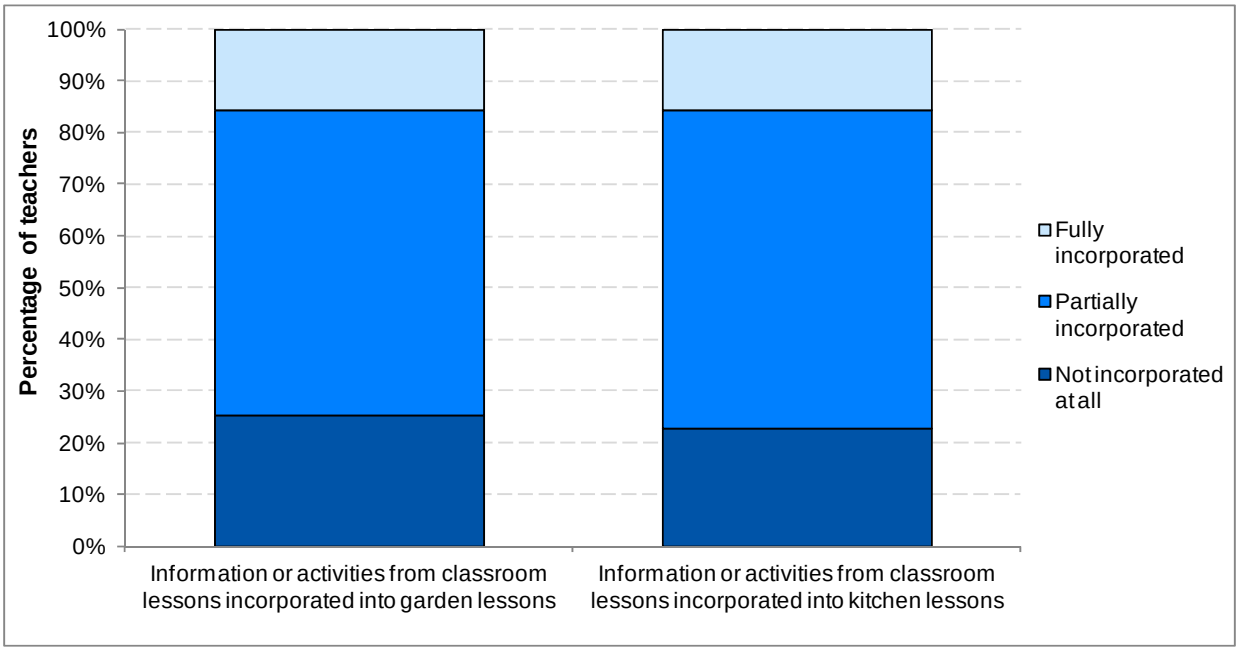


Figure 7 Incorporation of classroom information or activities into SAKGNP lessons



The SAKGNP espouses a number of principles directly related to considerations of the curriculum and to subsequent student achievements.

- The garden and kitchen provide a real-life context for learning, which interweaves the theories and practices behind growing, harvesting, preparing and sharing fresh, seasonal foods.
- Children learn best through doing, through positive examples, through trial and error.
- The shared meal is a time for students, specialists, teachers and volunteers to enjoy the fruits of their labour, and each other's company and conversation.
- A whole-school commitment is required – the SAKGNP should be embedded into the ethos and life of the school.
- The involvement of the community is crucial (from the SAKG Foundation website).

The SAKGNP's aim of engagement of the whole school community necessitates consideration of the degree to which the Program can be uniquely responsible for any direct and subtle changes to children's behaviour. The Program should be considered as one factor within a whole-school approach to modifying behaviour.

The school visits and conversations with teachers and students confirmed that students found the experiential activities of the SAKGNP an engaging context for learning across subject areas. The activities catered for all ability levels in a positive, active learning environment and the potential to allow for transferability of skills and knowledge to other domains and contexts was acknowledged. As much of the garden and kitchen activity was student-directed, students often made their own choices about how to participate or be involved during a given lesson, resulting in the development of self-regulation and monitoring skills and behaviours. The nature of the activities was reported to foster the students' willingness to try new foods. It also offered benefits for children who may have been marginalized in the 'regular' program or who struggled with academic matters. For these students the experiential activities of the SAKGNP helped them to be attached to the spaces and feel pride in accomplishments, which in turn helped them feel more a part of the school.

The SAKGNP principles had clearly been taken up by many teachers in the Program schools, who provided numerous examples of how they had integrated SAKGNP lessons in their classes. For garden classes, examples mostly related to science and technology, English and mathematics. For kitchen classes, examples mostly related to English, mathematics and health and physical education. These broad connections across the curriculum were confirmed by the data obtained from the schools visits which, in addition to the subject areas above, identified social studies (human social systems, cultural studies, environmental education, global issues) and a range of other curriculum areas such as citizenship / civics, languages other than English, art and special education. Examples of curriculum connections are included in Table 11.

Table 11 Examples of integration of SAKGNP activities into the curriculum

Curriculum area*	SAKGNP related activities**
Science (56.6% from garden, 13.6% from kitchen)	▪ Learning about reactions and changes in the kitchen during cooking ▪ Study of plant and animal growth cycles ▪ Weather cycles and seasonal changes ▪ Study of microclimates and soil types ▪ Ecosystems and their management ▪ Agriculture science, e.g. a barley mildew research study in conjunction with a university
Language / literacy (50.9% from garden, 59.1% from kitchen)	▪ Vocabulary words, word origins and word groups ▪ Authentic writing activities, e.g. journals, visual diaries, articles for the local newspaper, recording recipes, writing thank you notes to local sponsors ▪ More advanced activities included entering poetry or creative writing competitions and a school debate (on whether the chickens should be allowed to roam free on the school grounds) ▪ Interaction with different forms of text, such as reading recipes, developed students' abilities to interpret and follow directions ▪ Speaking skills through conversations with others in the garden or kitchen and through giving or following directions
Mathematics (35.8% from garden, 43.2% from kitchen)	▪ A range of basic skills, e.g. counting, measuring, length, area, volume, fractions, rations, time, temperature and patterns ▪ More advanced skills were used in designing aspects of the garden or a chook house (geometry, trigonometry, dimensions, scale/ design and 2D / 3D spatial relations)
Health / physical education (5.7% from garden, 22.7% from kitchen)	▪ Healthy eating and nutrition, learning about digestion, well-being and the benefits of physical activity ▪ Hygiene (especially relating to food preparation) ▪ Food processing and packaging, food additives ▪ The garden provided an outdoor activity context that was not sports based
Social studies (15.1% from garden, 18.2% from kitchen)	▪ Cultural experiences such as growing herbs and spices from a country and linked these with words and phrases related to food customs of that country, followed by preparing and eating country dishes ▪ Geography lessons around other regions with similar growing conditions as the Program school, their seasons and ecosystems ▪ Food environmental issues such as the use of palm oil in processed foods and rainforest destruction, habitat loss and soil erosion
Citizenship / civics	▪ Highlighted through community involvements in the SAKGNP
Languages other than English	▪ Using recipes written in different languages or translating their own recipes into another language
Art (13.2% from garden, 6.8% kitchen)	▪ Many gardens and kitchens had sculptures, woodwork, pottery or new structures designed by students

* Percentage refers to the proportion of respondents in the teacher survey who identified this curriculum area
** Activities were mentioned during school visits and in the teacher survey

Teachers provided information on the factors that had supported their incorporation of the garden or kitchen activities into their regular classroom work. The two key factors that supported curriculum integration were liaison with, and support from, garden and kitchen specialists and the development of curriculum units incorporating SAKGNP. The types of support identified by teachers are listed in Table 12.

Table 12 Types of support for incorporation of garden and kitchen activities

Type of support	No.	%
Liaison with, and support from, garden and kitchen specialists	13	36.1%
Development of curriculum units incorporating SAKGNP	11	30.6%
Group planning e.g. stage / year / team meetings	4	11.1%
Resources (unspecified)	3	8.3%
Professional development opportunities	2	5.6%
Parental involvement and support	2	5.6%
Support of senior staff	2	5.6%
Websites	2	5.6%
Attending garden and kitchen classes	1	2.8%
Having the facilities to use as extra classrooms	1	2.8%
Guest speakers from community	1	2.8%
No support received	1	2.8%
Unsure	1	2.8%

The involvement of teachers in the garden and kitchen classes is considered to be a core requirement of the Program and was identified by demonstration school principals as an important aspect of the SAKGNP model. The importance placed on this involvement of teachers in the garden and kitchen classes was reflected in the results of the teacher survey, which found a high percentage of teachers reported they always attended garden classes (64.9%) and kitchen classes (70.9%). However, despite such high attendance rates in classes, only one teacher respondent identified 'attending garden and kitchen classes' as a support for incorporation of the SAKGNP activities with the curriculum. This contrary result may reflect the challenges experienced by teachers, outlined in the next section.

Teachers were also asked what they perceived as challenges to incorporating the garden or kitchen activities into their regular classroom work. The key challenges to incorporating lessons were: lack of time in busy timetable; existing busy mandatory curriculum; new national curriculum; and insufficient planning time (e.g. to develop worksheets, liaise with specialists / teachers). All the challenges identified by teachers are listed in Table 13.

Table 13 Challenges to incorporation of garden and kitchen activities

Type of challenge	No.	%
Lack of time in busy timetable	19	33.9%
Existing busy mandatory curriculum	11	19.6%
New national curriculum	7	12.5%
Insufficient planning time e.g. to develop worksheets, liaise with specialists / teachers	6	10.7%
Lack of resources to support integration	3	5.4%
NAPLAN testing narrowing the curriculum	1	1.8%
Planning for pests and diseases	1	1.8%
Unexpected absence of helpers	1	1.8%

With the upcoming implementation of a national curriculum (ACARA, 2011 – http://www.acara.edu.au), the SAKGNP may assist schools by providing a rich context for implementing a range of curricular and extra-curricular learning opportunities for students. The 'Tools for Teachers' documents already used the language of the national curriculum, and this should enable teachers across Australia to continue to develop garden and kitchen lessons linked

with the formal curriculum. A clear framework for integration of the Program with the curriculum, aided by strong communication and cooperation between teaching and SAKGNP staff, would also support the Program's contributions towards student learning.

Also of interest was that no negative change in the NAPLAN scores was found, as one of the criticisms of the Program was that it took valuable classroom time away from teaching in key learning areas. Despite the many challenges faced by schools in implementing the Program and attempting to link it with the curriculum, it would not appear that the achievement of KLAs had been negatively impacted.

Key points:

- The school level data available on the *My School* website were not suitably comprehensive to analyse direct effects of a program such as SAKGNP.
- Key factors that influenced SAKGNP integration with the curriculum included: teachers' liaison with and support from kitchen and garden specialists; and the development of relevant curriculum units.
- Students found the experiential activities of the SAKGNP engaging and a positive context for learning across subject areas.
- The subject areas of science and technology and mathematics were more frequently linked to the garden, while the subject areas of English, mathematics, health and physical education were more often linked to the kitchen.
- The involvement of teachers in the garden and kitchen classes was considered to be a core requirement of the Program; 96.7% of teachers provided positive responses when asked how the SAKGNP supported classroom learning; teachers also commented that the Program "forms an intrinsic part of our students' learning".
- Challenges to teacher participation included lack of time in a busy timetable, a full curriculum, the incoming new national curriculum and insufficient planning time.

5.2.2.2 Attendance patterns

Indicative support for a strengthening of attendance patterns associated with the SAKGNP was provided by both teachers and parents but was not evident from the *My School* website data.

Attendance patterns at Program schools were reviewed quantitatively and qualitatively. The *My School* website data were analysed to determine any differences in attendance rates between initiative and comparison schools and in initiative schools over time. No differences in attendance rates were found between initiative and comparison schools. There was a small but strongly significant difference between attendance rates in 2009 and 2011 at the initiative schools, suggesting that attendance rates had reduced over the course of the Program. However, as the attendance rate data on the *My School* website covers Years 1 – (up to) 10 at the school whereas only students in Years 3 – 6 (Years 4 – 7 in some states) actually participated in the Program, this change could not be attributed to the SAKGNP.

Observations of changes in student attendance potentially related to the SAKGNP were obtained via the teacher and parent surveys. Seventeen (29.8%) teacher respondents thought student attendance had improved following introduction of the SAKGNP, while the remainder reported no change. None of the teachers thought attendance had worsened. The difficulty of attributing the effect of one factor such as the SAKGNP to any change in student attendance was recognised by one respondent. The survey of parents asked about any changes in students' attitudes to school following commencement of the SAKGNP. Of the 61.3% of parents who indicated they had observed changes in their child, the most common description of this change related to their child's enthusiasm for attending school on garden or kitchen days (49 of 114, 43.0%, parents who described the change in their child or 16.3% of all parent respondents). This provides indicative support for a strengthening of attendance patterns associated with the SAKGNP.

Qualitative data on student attendance patterns primarily were obtained during school visits when school staff verbally reported that attendance patterns for students could not be attributed to the

SAKGNP. One school program coordinator, who worked in a low-SES school, stated that students' attendance was beyond their individual control in many cases. She explained that the uncertainty or chaos of parents' lives had a larger impact on attendance patterns than did students' desires to not miss out on garden or kitchen days at the school.

Students reported that they did not want to miss garden or kitchen classes and that they even came to school these days when sick. One school reported a continued improvement in attendance above the region's average, a pattern since initiating the SAKGNP. Similarly, in one school with an indigenous student population who had a history of erratic attendance, they noted that these students' attendance had improved since the inception of the SAKGNP.

Key points:
- No statistical differences in attendance rates reported on the *My School* website were found between SAKGNP initiative and comparison schools.
- Teachers reported perceived improvements in student attendance since the introduction of the SAKGNP.
- Students and parents at initiative schools reported a high level of enthusiasm among students for attendance on garden and kitchen days.

5.2.2.3 Social behaviours of students

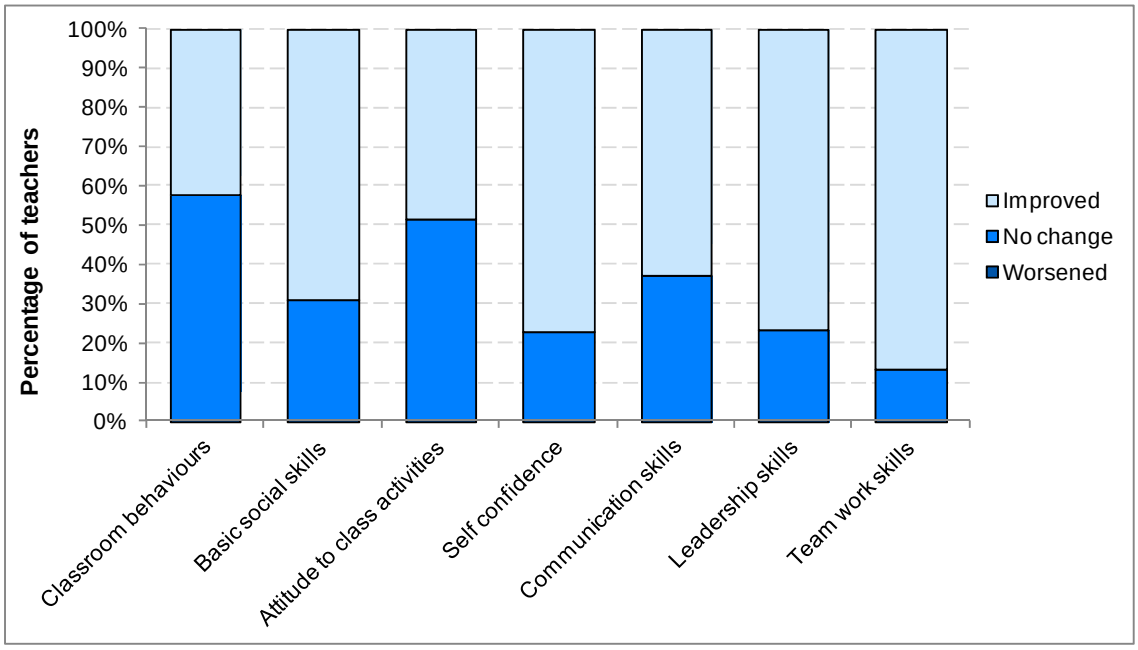
The term social behaviours includes those behaviours and actions directed toward others individually, within a group or within a community and it can be context specific. It encompasses but is not limited to, communication, working with others, leadership, autonomous actions, respectful interactions with others, social skills (such as 'table manners') and conversational skills, and in the school context, school attitudes and pride in the school.

The evaluation found that social behaviours of SAKGNP school students were reported to have improved since the commencement of the Program. Over 40% of teachers reported that classroom related behaviours had improved; other student behaviours had improved more than this, with 86.4% of teachers reporting improvement in team work skills. Parents also noted positive changes in the social behaviours of their children since the onset of the Program: the most prominent change was that children had become better at helping with kitchen jobs, reported by 72.5% of parents, and around half or more parents also reported improvement for the other four behaviours since their child's involvement with the SAKGNP. Only a small number of students' comments referred to this component. However, student responses to both the question about favourite things in the kitchen, and in additional comments, referred specifically to working and sharing in a group ("It's fun working in groups and tasting food"), valuing groups as a learning context or to enjoying the social components of the activities ("We enjoy eating as a group and sharing our thoughts all together"). Some students also specifically referred to interacting with volunteers ("The volunteers are fun and they are really kind to us"), including older people.

The improvements of social behaviours of students are supportive of the impact of the SAKGNP educational approach. The focus on skills-based and cooperative learning, enjoyable and practical experiences and a supportive whole of school approach not only reflected good educational practice but also contributed to improvements in students' social behaviours.

Teachers reported either no change or an improvement in students' social behaviours since the commencement of the SAKGNP. Team work skills were reported to have improved the most with 84.8% of teachers identifying an improvement. All other behaviours had over half of the teachers reporting improvements, with the exception of classroom behaviours and attitude to class activities, each of which had approximately 45% reporting improvement. No teacher reported any behaviour worsening as a result of the SAKGNP. These results are shown in Figure 8.

Figure 8 Changes in student behaviours observed by teachers



A number of teacher respondents (n=32) provided additional comments relating to changes in student behaviours. These comments were generally positive and provided expanded reasoning for their rating of improved behaviour, as illustrated by the following quote:

> *"Students are keen to have the opportunity to participate in the Program and adjust their behaviour accordingly".*

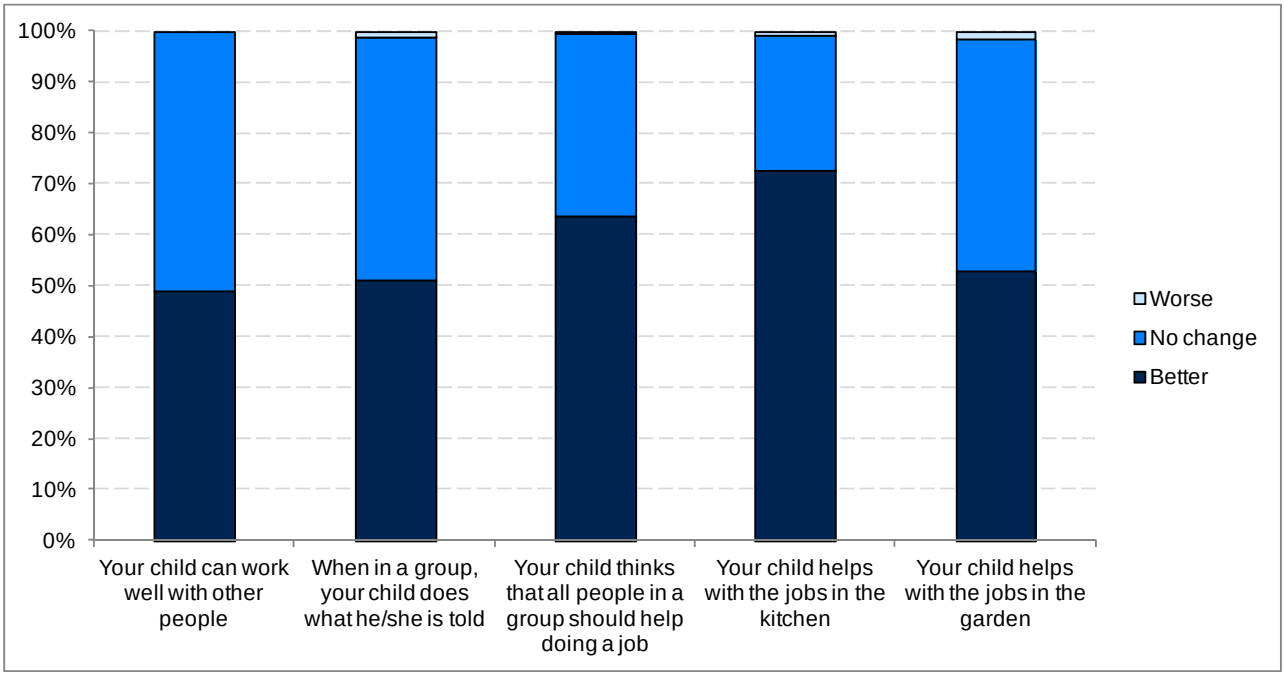
A few qualifying remarks were made by the teachers, exemplified by the following comment:

> *"Very hard to say 'as a result of the SAKGNP' as there are many things making an effect – not just one".*

Additionally, some teacher respondents noted that they already taught explicit social skills, team work skills and leadership skills, thus any change was difficult to attribute to the Program.

Changes in social behaviours were reported by many parents who noted positive changes since the onset of the Program. These results are shown in Figure 9. The most prominent change was that children had become better at helping with kitchen jobs, which was noticed by 214 of 295 (72.5%) parents. Even for the other four behaviours around half or more parents reported that their child's behaviour had improved since their involvement with the SAKGNP.

Figure 9 Behaviour changes since the child's involvement in the SAKGNP



School principals, program coordinators, garden and kitchen specialists and students all reported improvements in students' social behaviours during the school visits. The hands-on, experiential opportunities in the garden and kitchen classes required a level of personal engagement that translated into improved social skills among groups of students. As noted by one principal, who expressed a common sentiment among the participating initiative schools, 'they are learning to cooperate in the kitchen, how to work together'.

The expectation to work in teams in the garden or kitchen developed teamwork skills of negotiating, delegating, listening, taking on responsibility and speaking in effective ways to communicate essential information or guidance.

The team-based activities employed in the garden and kitchen provided a range of opportunities to develop social behaviours. In many initiative schools, students worked across age groups and it became common for older children to help and support the younger ones. This represented both a personal and a social change in student behaviour. One specialist noted 'they might have a bit of attitude but you put them with the little ones and their other side comes out and they want to help them'. Principals noted changes in attitudes were also linked with how students spoke to each other; their interactions had a focus on an activity in the garden or kitchen, which directed the students' clear use of language to communicate for a purpose.

A range of social skills developed through the Program by virtue of the nature of the garden or kitchen activities where people helped each other to perform tasks. As one principal noted, 'there has also been some really good improvements in terms of cohesiveness of the school, not only because they cook but they sit down afterwards and eat together'. Garden and kitchen specialists commented that social behaviour changes resulted from the kinds of conversations and language used to communicate relevant information in a context. The language tended to be more positive, for example instead of 'don't do this', the wording was more supportive, positive and helpful: 'perhaps you could do it this way?' In addition to the purposeful speaking around tasks in the garden or kitchen, school staff described how eating together provided a context for students to practice conversation skills while sitting at the table and many noted the improved social abilities of students as a positive social change in the school.

The Program provided a context for students to improve a range of other social behaviours, including: interacting with people of many ages through the volunteer involvements and wider community links; leadership skills through taking a turn as a group or activity leader; modifying

bullying behaviour through providing purposeful activity in garden or kitchen; and dealing with behaviour management issues through the garden providing a sanctuary or place to settle down or 'cool off'. As one principal offered, 'they don't shout at the vegetables'. Students also learnt to care for other creatures and students learned very quickly that caring for things was necessary to ensure their survival. As one child commented, 'if you don't take care of it, it will die'. From this ethic of care, students developed a sense of accomplishment and felt responsible and proud. Many principals commented that a sense of pride for what they have accomplished around the school grounds had developed, with the result that there was a much lower incidence of vandalism and littering on school grounds.

Key points:
- Teachers and parents at SAKGNP schools reported improvements in students' social behaviours since the Program had commenced. More than 86% of teachers reported improvements in students' teamwork skills and 50% of parents reported improvements across a range of student behaviours.
- The range of SAKGNP school students' improved behaviours included: interacting with people of many ages, leadership skill development, modifying previous bullying behaviour, managing difficult behaviour, ethic of care and sense of pride in the school.
- The SAKGNP model's expectation that staff and students share a meal following the kitchen activities provided a context for students to practice conversation skills while sitting at the table; many school staff noted improved social abilities of students as a positive social change in the school.

5.2.3 Level 2: School-related impacts and outcomes
Has the Program had an impact on students or community members that may be identified as at risk of social exclusion and, if so, what is this impact?

5.2.3.1 Program impact on students or community members at risk of social exclusion

Many schools reported they had elected to join the SAKGNP because of the perception of what the Program could offer in terms of engaging students on different levels, providing specifically for learners who needed hands-on activity (ADHD, behaviour management, autism spectrum) or who were at risk of social exclusion.

The SAKGNP was found to provide positive support for students at risk of social exclusion. The focus of the Program, food, provided a platform for inclusion of different cultural and social groups and its hands-on, practical nature enabled students with different abilities to participate in an equal (or near equal) manner. Reported impacts included: improved involvement / participation / engagement (including attendance); trying and enjoying new (healthy) foods; improved self esteem and confidence; opportunities to learn differently and excel in different areas; improved / development of life skills; improved social skills / communication; and healthier eating habits.

The teacher survey reported the representation in the initiative schools of the four groups of students considered at risk of social inclusion, refer to Table 14.

Table 14 Social exclusion groups present at initiative schools

Social exclusion group	No.	%
Multi-cultural and / or refugee students (culturally and linguistically diverse – CALD)	19	30.6%
Students with special needs	43	69.4%
Aboriginal and Torres Strait Islander students	23	37.1%
Students from socioeconomically disadvantaged households	33	53.2%

Teachers reported the most frequent way in which these groups of students were assisted to be included in the Program was through involvement of teacher aides or assistants and special needs teachers in garden and kitchen classes (13 of 51 responses), and this assistance was supplemented by the support of volunteers (n=5, 9.8%). Utilising peer support and student

mentors, role models and leaders assisted social inclusion, as well as strategically forming small student groups (n=8, 15.7%). Other supports for the inclusion of these students in the SAKGNP included: the use of culturally relevant produce and sharing of cultural food traditions (e.g. cultivating an Indigenous herb garden or cooking with foods related to other cultures) (n=6, 11.8%), hands-on tasks and learning experiences (n=4, 7.8%), preparing cost effective meals that may be cooked at home and not having any costs associated with participation (n=4, 7.8%), designating activities that students could more easily cope with and excel in (n=2, 3.9%), and the support of specialists (n=2, 3.9%). Nine respondents stated that all social exclusion student groups in the school were always involved in all programs, and no extra support was required.

These survey findings were supported by data from the school visits. The very nature of the SAKGNP with development of practical and social skills was particularly relevant to assisting students from low socio-economic backgrounds.

> *"'... the [kitchen] routines [are important] because for some of our kids even sitting at a table is a new experience so those sorts of skills and the social skills that have come out of it and also that pride and self esteem is the biggest thing that we have found with our children who are low socioeconomic children, many living in poverty…" (Workshop discussion)*

Students with special needs were reported to be able to participate in the Program with few adjustments or special programs. There were some instances of special needs students, particularly those with physical challenges, being excluded due to facility size and design. However, other schools took the physical needs of their students into account when designing the garden and kitchen. For example, to facilitate wheelchair access, garden paths were designed to be wider and finished with a hard surface (not gravel) and kitchen benches were lower.

Many initiative schools made no specific adjustments in the kitchen and integrated all students into the general kitchen activities, except where students lacked the physical dexterity for tasks such as chopping with a knife. For kitchen lessons, aides or special education teachers in initiative schools often assisted specific students rather than develop separate activities for them. When special lessons were developed, examples were provided of added prestige associated with the lessons. For example, in an initiative school with a separate multi-age class for special needs students, the class had the responsibility of cooking lunch for the school staff on Mondays. The kitchen specialist noted that:

> *"Normally these students may feel excluded but not in this Program … they feel included; it increases their confidence and gives them a chance to be successful. For example a student with [cerebral palsy] in their hands was given tasks (shelling broad beans) which was a skill they could practice as well as were happy and felt 'I have done this'".*

Increasing participation of CALD and indigenous groups is an important aspect of the social inclusion agenda. Refugee children were a particularly vulnerable subgroup attending some schools. Parents of children from CALD backgrounds and / or indigenous community members had also become involved in the Program, which was reported to have helped to break down barriers in the wider community. Growing and cooking foods from different cultures had introduced students to cultural diversity in a positive way as well as helped students and parents who may otherwise be at risk of social exclusion due to cultural background be included in school activities. Linking kitchen classes to languages other than English lessons through Thai or Japanese cooking days also provided opportunities to promote cultural diversity.

Teachers provided their personal views / observations on any impacts (positive or negative) the SAKGNP had on the students who were at risk of social inclusion (39 teacher responses were received). Some respondents described more than one impact. All except one impact of the SAKGNP on students at risk of social exclusion were positive. The results are shown in Table 15.

Table 15 Impacts of the SAKGNP on students at risk of social exclusion

Positive impacts	No.	%
Improved involvement / participation / engagement (inc. attendance)	13	27.7%
Opportunities to learn differently and excel in different areas	11	23.4%
Trying and enjoying new (healthy) foods	9	19.1%
Improved self esteem and confidence	9	19.1%
Improved social skills / communication	8	17.0%
Improved / development of life skills	6	12.8%
Healthier eating habits	6	12.8%
Improved knowledge of English / vocabulary	3	6.4%
Opportunities for leadership, sharing their knowledge	3	6.4%
Improved teamwork	2	4.3%
Improved behaviours	2	4.3%
Negative impact		
Noisy environment unsettling some children	1	2.1%

These findings were supported in various ways through the school visits and in stakeholder interviews.

> *"As I've been speaking with specialists and teachers they are telling me 'there's no losers' in the kitchen and garden – the students thrive. Teachers see their students in a different light in these environments. For students that are disengaged in the classroom the Program gives them a chance at success in another area that is still part of the school. So, because of their experience in the garden and kitchen they have a better experience of the school". (SAKG Foundation project officer interview)*

Key points:

- The SAKGNP provided support for students at risk of social exclusion, including students from different socio-cultural groups, through hands-on practical activities that enabled students with differing abilities to participate in an equal manner.
- Staff at SAKGNP schools reported a number of impacts on students at risk of social exclusion, including: improved involvement / participation / engagement (including attendance); trying and enjoying new (healthy) foods; improved self esteem and confidence; opportunities to learn differently and excel in different areas; improved / development of life skills; improved social skills / communication; and healthier eating habits.
- Teachers at SAKGNP schools reported that the most frequent strategies to include students at risk of social exclusion were: involvement of teacher aides / assistants and special needs teachers, the support of volunteers, peer support and student mentors, role models and student leaders, and small student groups.
- Other supports provided by SAKGNP schools to students at risk of social exclusion included sharing cultural food traditions, hands-on tasks and learning experiences, preparing cost-effective meals that could be cooked at home and not requiring a participation / user fee.

5.2.3.2 Ways in which the Program can support the social inclusion agenda

The SAKGNP focus on enjoyable food education provided an excellent conduit to support the social inclusion agenda in Australian primary schools. The philosophy of the Program for enjoyable and hands-on practical education was considered to be a leveller, overcoming social and behavioural issues apparent in the classroom setting.

> *"…our lower ability kids are my best in the kitchen, particularly the boys, and this is where I don't have behaviour problems with them like I do in the class … so just bringing in inclusion, bringing in all these kids that really are excluded in the classroom…" (Workshop discussion)*

Garden and kitchen specialists were very aware of the possibilities offered through garden and kitchen classes to support social inclusion and actively incorporated them into the Program. Many examples of activities facilitating social inclusion were provided during the school visits. Some specific examples are listed in Table 16.

Table 16 Examples of ways the Program supports the social inclusion agenda

Student group	Examples of activities
Special needs students	▪ Providing routine tasks or special spaces in the garden for students with autism ▪ Use the garden as a 'time out' space to reduce stress or anxiety ▪ Purchase of kitchen aids to assist students with limited hand dexterity ▪ Incorporate special dietary needs into the menu and recipes
Indigenous students	▪ Plant a 'bush tucker' garden ▪ Indigenous foods cooking days ▪ Undertake activities as part of NAIDOC week ▪ Invite local community elders to participate in or lead gardening or cooking activities.
CALD and refugee students	▪ Support literacy through use of clear illustrations and visual demonstrations ▪ Link kitchen classes with food studies of different cultures ▪ Comparing staple foods from different countries, eg Australian and African foods ▪ Invite parents to demonstrate and cook traditional cultural dishes
Low SES	▪ Develop basic kitchen skills, e.g. peeling an orange or using a colander ▪ Adapt recipes to account for basic cooking skills ▪ Use low cost ingredients in recipes ▪ Some schools passed extra food to students ▪ Sitting down to meal during kitchen classes provides a free lunch
Parents and community	▪ Encourage and recognise volunteers ▪ Conduct cooking demonstrations or classes for community members; small community grants can be available
Students with behaviour management issues	▪ Provide more time in the garden ▪ Link students with a mentor or Chaplain to help guide students' behaviour through informal conversations
Students who struggle academically	▪ Boys often excelled in the garden and could take on leadership roles, leading to increases in self confidence ▪ Garden and kitchen classes were good motivators for classroom activities

Aspects of the SAKGNP identified as limiting its capacity to contribute to the social inclusion agenda were the application process and the perceived rigidity of the Program.

The application process was described as 'huge and daunting' and the main task of officers in state education departments was reported to be assisting schools to prepare their applications. Insufficient physical space and insufficient finances to commit to funding specialist staff, specific requirements of the Program, were two main reasons identified by Foundation project officers for schools not being successful in their applications. One project officer also commented that low socioeconomic status schools were thought to have fewer volunteers, thus impacting on their ability to fully implement the Program. However this was not necessarily the case, as schools where there was a passionate principal and supportive local community had been able to boost volunteer numbers and achieve positive outcomes in the Program. One strategy of project officers to overcome these challenges was to connect schools with similar socioeconomic backgrounds to share their resources and ideas. Enablers and barriers to participation in the Program are presented in the next section.

Key points:
- Garden and kitchen specialists at SAKGNP schools were aware of the possibilities offered through garden and kitchen classes to support social inclusion and actively incorporated them into the Program.
- Aspects of the SAKGNP that limited a school's capacity to contribute to social inclusion included: the application process; the perceived inflexibility of the Program; insufficient physical space; and funding for specialist staff. However, it should be noted that the Program did include many schools from low socio-economic communities and several participating schools commented favourably that the structure of the Program supported their efforts to include at risk students.

5.2.4 Level 2: School-related impacts and outcomes
What are the enablers and barriers to participation in and sustainability of the Program (at the individual school-level)? How can these be better harnessed and / or overcome?

Virtually all initiative schools reported challenges to their participation in the Program. They identified a range of factors that enabled their participation or assisted them to overcome difficulties.

This section reports the findings in two parts. In the first part the enablers and barriers to schools' participation in the Program are discussed, together with information on how these were harnessed or overcome. In the second part of this section of the findings, the enablers and barriers will be discussed in relation to sustainability of the Program in schools. Findings from many of the data sources are incorporated into this section to ensure a breadth of ideas is presented to inform future decision making about the support for this Program within schools. Enablers and barriers to participation in and sustainability of the Program at a system-wide level are reported in the subsequent section 5.3.1 of the findings.

5.2.4.1 Enablers to participation in the Program

The factors that enabled the initiative schools to participate in the Program included: the Program model and Foundation support; Program champions / principals; school community support; Program staff to coordinate and run the Program; volunteers; a supportive school ethos; adequate space and facilities; and funding.

Program model and Foundation support

The data indicate that the Program model provided 'a vision' that had been used as a guide to get the Program started in schools and was identified as an enabler for establishment of the Program. The garden and kitchen provided schools with tangible symbols for their activities and the name of the Program, Stephanie Alexander, raised the profile and in some cases the prestige of the school. The Program model also provided a framework for implementing garden and kitchen classes.

The SAKG Foundation provided a range of support for schools including state-based project officers, an interactive website, promotional support, training opportunities, resources for staff and ideas for practical learning opportunities to engage students. Data from the teacher survey identified that 41.7% teachers (20 of 48) had participated in training days, professional development or workshops related to the Program. Fourteen (40.0%) teachers reported use of the SAKG website, while 12 (34.3%) used other websites as resources. Various books (cook books, fruit / vegetable books and the SAKG book) were also used (but not as much as websites). Five (14.3%) teacher respondents stated the SAKG specialist or coordinator supplied the resources, and four (11.4%) reported they used no resources. The SAKG Foundation also provided networking opportunities, both in person through workshops and regional meetings, as well as via the 'Shared Table' social networking link on the website. It was observed that the activities provided by the Foundation staff and project officers made the Program schools feel 'supported', and it did not appear that such Program-level support was provided with other school initiatives.

The other very important aspect of the Program model was the 'hands-on' learning opportunities for students. Students' reports of the Program were very enthusiastic – they enjoyed getting out of the classroom; they valued learning practical life skills; their learning was fun; and they learned a range of social and practical skills. Such immediate positive feedback for the school's involvement acted to support teacher and parent participation and commitment to the Program.

Key points:
- The Program model provided a 'vision' that can be used as a guide to implementation.
- The Program model had a resonance with students through 'hands-on' learning opportunities.
- The SAKG Foundation's activities actively supported participation in the Program.

Program champion / principal

Champions of the Program ensured a high profile of and support for the Program within the school and community. They often had initiated involvement in the Program, including being responsible for the application and subsequently they facilitated implementation of the Program in the school. Program champions often spent countless volunteer hours in addition to any paid role, to establish and implement the Program. The Program champion may have been a garden or kitchen specialist or a parent with skills and knowledge relevant for the Program.

The principal was often a champion for the Program and maintained good communication with both parents and staff, which also increased participation and support for the Program. She / he usually had some direct involvement in the original submission and had responsibility for many of the negotiations required during the establishment stages. However, regular turnover of principals had resulted in different levels and types of ongoing support for the Program. At some schools the support of the principal was administrative in nature, whilst at other schools the principal continued to be an active champion of and participator in the running of the Program. In the latter case the Program was more likely to be consistent with the Program model.

Key point:
- Program champions, a role often undertaken by the principal, ensured a high profile of and support for the Program within the school and community.

School community support

The Program had a resonance with many staff, parents and community members, who were actively engaged from its inception. They were willing to provide their time, commitment and personal resources to its establishment and implementation. The strength of this personal commitment was critical to the establishment of the Program in the schools, as was noted by this Principal:

> *"It was actually the community's decision [to apply for the Program]. It wasn't mine to start off with. The community had received through the P&C the brochures the Foundation had sent out".*

Parent involvement ranged from being part of a core group driving the Program in the school, to providing resources, expertise and community contacts. Other members of the local community donated equipment and materials as well as funds to develop the Program. One school's P&C contributed all of its fundraised monies to the Program for the first two years of the Program, to the exclusion of other programs in the school.

Key point:
- A strength of the Program model was engaging the wider school community; their time, commitment and personal resources were critical to the establishment and implementation of the Program in the schools.

Program staff

The garden and kitchen specialist staff and program coordinators were critically important, providing a range of essential roles, including: being able to plan and implement the garden and kitchen lessons; manage the garden or kitchen; Program the lessons across a term; communicate and coordinate with the other specialist and with the classroom teachers; recruit, train, work with, manage and continue to enthuse volunteer workers; and often participate in working bees or fund raising activities. These specialists regularly reported working at least double their paid time to ensure the Program ran smoothly and successfully.

Key point:
- A strength of the Program model was the garden and kitchen specialist staff and program coordinators and the roles they undertook.

Volunteers

All schools relied on voluntary contributions of time, labour and specialist expertise that enabled the Program to occur. Volunteers included parents, grandparents, community members and organisations, school staff and students. In many cases the voluntary contribution of machinery or materials was also critical to the successful establishment of the Program. For those schools where community or parent volunteers were less engaged, these voluntary inputs were provided by the school staff and their immediate families.

The majority (52 of 60, 86.7%) of the volunteers rated their involvement in the Program positively. Volunteers identified several factors that enabled their participation in the Program (refer to Table 17). Prior connections with the school (63.3%) or links with students (46.7%) had helped or supported the volunteers in participating. The enthusiasm of the staff (78.3%) and, to a lesser extent, the enthusiasm of the students (71.7%), as well as knowledge and skills in gardening / kitchen activities (65.0%) were the most frequently reported factors that helped or supported the volunteers. Only eight respondents reported that training was made available to them in their role as a SAKGNP volunteer.

Table 17 Factors which helped or supported the volunteers

Factors which have helped or assisted the volunteers	No. (Total n = 60)	%
Enthusiasm of the school staff	47	78.3%
Enthusiasm of the school students	43	71.7%
Knowledge and skills in garden / kitchen activities	39	65.0%
Prior connection with the school	38	63.3%
Prior links with some of the students	28	46.7%
Prior experience with working with the students	27	45.0%
Training was made available to the role	8	13.3%

Note: Responses shown in Table 17 were not mutually exclusive as respondents could select multiple factors. The percentage of responses is out of 60 respondents.

The volunteers also reported a number of positive experiences while volunteering for the Program, representing additional Program enablers. In particular they highlighted learning new skills themselves, being part of a great team, working with inspiring specialists and increasing community engagement. The following quote is illustrative of the extremely positive nature of the comments:

> *"I think the Program is an excellent program and has been an excellent addition [to the school]".*

Key points:
- The Program model was reliant on engagement of volunteers and their contributions of time, labour and specialist expertise.
- Program volunteers potentially gained skills and capacities through their engagement with the Program but they may potentially benefit from additional training opportunities.

School ethos

A school ethos of an engaged, whole of school approach to the well-being of the students and the environment was a participation enabler. An existing school commitment to the environment and environmental sustainability (e.g. the Australian Sustainable Schools Initiative, AuSSI), healthy eating and / or physical activity provided complementary frameworks or activities to facilitate participation in the Program. Typically it was the principal who fostered the school ethos but this did not happen without similar support and passion from teachers, staff and parents at the school.

Key point:
- The Program model supported an engaged, whole of school approach to the well-being of the students and the environment. This approach has particular resonance with the Australian Sustainable Schools Initiative.

Physical space and facilities

Adequate physical space for gardens and kitchens, and perhaps having an existing kitchen and / or garden that could be expanded, were identified as enabling participation in the Program. It was noted by one principal that:

> *"We had been running a garden here for more than a decade on a very small scale. The children would walk around and eat the carrots and the snow peas and the like, but we knew we would like to do something a bit more focused on curriculum and integrate the school activities and the P&C and Council suggested that we have a go at this"*

Key point:
- Many SAKGNP schools had previous involvement with garden or kitchen activities, but the SAKGNP provided a more comprehensive structure with support to integrate garden and kitchen activities across the curriculum and the school.

Funding

Even with extensive community support, lump sum funding was considered to be essential to initiating the Program. Lump sum funding was used for construction of both gardens and kitchens, although kitchen construction was usually the most expensive aspect of Program start up. Some schools reported combining the Program funds with Building the Education Revolution funds in order to build their gardens or kitchens, providing some indication of the level of financial commitment required to provide such infrastructure in a school.

Other sources of funding that had been used to assist participation in the Program were identified: the Priority Schools Program PSP which supports low SES school communities; and the Country Assistance Program, targeted at literacy and numeracy issues.

Key point:
- The provision of lump sum funding through the Program was considered essential for the development of garden and kitchen infrastructures within schools.

5.2.4.2 Barriers to participation in the Program and how they can be overcome

Participation in the Program was reported to be inhibited by several factors such as restrictions of the Program model; curriculum issues; volunteers; maintaining specialist support; funding delays;

and the 'tyranny of distance'. This section outlines the factors identified as barriers for participation in the Program and ways these were overcome.

Program model

The Program requirements for sufficient physical space and finances to commit to funding specialist staff were two main reasons reported by SAKG project officers for schools not being successful in their application to the Program. As a consequence, the communities that may have benefited the most from the Program were often those where the schools were unable to participate.

Some initiative schools reported feeling restricted by the Program model, believing it to be too rigid and inflexible (e.g. ratio of garden space per capita of students). There was a feeling that the model needed to be more readily adaptable at the local school-level. It was reported that some initial resistance and limited support for the Program from some state education departments added to the barriers faced by schools.

For some, the model was perceived as shifting costs: on to the community to support the Program through volunteering, fund raising and donations; on to demonstration schools to host visits (as well as the cost of the visiting school to attend); and requiring teachers to attend garden and kitchen classes on top of their 'normal' load.

The visits to initiative schools also identified that in some schools tensions existed between the Program philosophy and other initiatives implemented at the school. For example, schools commented on the non alignment of the Program philosophy and the National Healthy School Canteen initiative (described as promoting the importance of fresh or minimally processed foods versus providing guidance on the relative health qualities of processed foods). In some schools this was not an issue, as the school did not have a canteen. In other schools the garden or kitchen provided food to the canteen on designated occasions, thus providing some links between the two program areas. It was apparent that the concerns were raised in schools where the two programs operated in parallel rather than in cooperation and collaboration.

Key points:
- The Program model may be too inflexible and limit the capacity of some schools to participate; this may apply particularly to schools whose students would benefit most from the Program.
- The Program model should be reviewed to consider how it can be made more adaptable for local school environments.
- The Program model should be reviewed to consider how it can complement other school-based health initiatives.

Curriculum issues

Teachers and school staff identified there were delays in integrating the Program with the curriculum and attributed this to a crowded curriculum and lack of time and funding for planning. The school's commitment to the Program was also a factor. Where schools were connected to a variety of programs that had synergies with the Program, such as in health, physical activity, sustainability and environment, there were clearer links between the Program and the curriculum. Program links with sustainability and environment initiatives (e.g. AuSSI) were much more commonly cited than links with health-related programs, which appeared to be available in schools on a more intermittent basis. Limited linkage with school-based health programs was also indicated by the lack of knowledge of the Program by state-based health department staff.

Timetabling was the most frequent challenge cited by teachers (33 of 55, 60.0%, teacher survey respondents) in relation to the Program. Timetabling options were dependent on the physical spaces of the garden or kitchen and schools had to modify schedules for offering classes. Additionally, garden or kitchen classes in some schools ran over into other classes or break times causing problems. To overcome the timetable challenges schools showcased positive results of

the Program, used creative scheduling options and set aside time and funding for teacher release to support planning.

Teaching staff's existing perceptions regarding the way children should be educated in the basic curriculum areas, or general teacher disinterest and disengagement from the Program, were challenges in some schools. This was particularly the case in schools where there was a high level of teacher turnover and newer teachers had not been exposed to the Program. In these circumstances the teaching staff were not in support of the Program, considered it a poor use of their time and were reluctant to give up their designated release time to support the Program.

Some schools had chosen to appoint specialist garden or kitchen staff who had teaching qualifications. Many of these schools were more effective in integrating garden and kitchen lessons across the curriculum, as the specialists prepared lessons with curriculum links for teaching staff. Principals also felt that getting teachers involved in the garden and kitchen classes was the key to overcoming the barriers cited in association with the curriculum challenge, as cited by one principal: 'when teachers had the opportunity to make classroom linkages, they saw positive impacts for their students and as a result, many teachers had become very passionate supporters of the Program'. In schools where the specialist staff were not classroom teachers, integration with the curriculum required regular communication between the Program staff and teachers.

An important and emerging concern relating to curriculum integration was implementation of the national curriculum and the anticipated changes to the teaching and learning environment. How the Program would complement and be integrated with the national curriculum and assist in meeting the expectations of the Australian Curriculum, Assessment and Reporting Authority (ACARA) was still being explored.

Key points:

- Strategies that facilitated integration of the Program with the curriculum included: identifying links with existing education and health strategic foci for schools; the provision of curriculum and teaching materials that supported linkages with the national (or state) curricula; employing specialist staff with teaching qualifications; and effective communication between Program staff and teachers.
- Teacher interest in and support for the Program could be enhanced through their physical involvement with the garden and kitchen classes, teacher in-service activities linked with the Program and strategies to engage new and younger teachers with the Program.

Volunteers

A major challenge for the Program was the capacity and available time of teaching staff (usually the nominated program coordinator) to maintain an active group of volunteers. The Program model required volunteers to be present in order for the garden and kitchen classes to be offered – no other teaching programs were identified that had this same requirement (volunteers in school canteens would be the closest example but is normally run by the P&C committee).

A shortage of volunteers led to classes being modified, or in rare cases cancelled. Volunteers were involved as follows: 11 of 60 respondents (18.6%) doing only garden classes, 20 (33.9%) doing only kitchen classes and the remaining 28 (47.5%) respondents involved with both classes (one did not respond). In low SES areas and in smaller rural and remote communities where students were bussed in to school, the garden had less relevance or importance to parents and they were less likely to volunteer. The care and ongoing maintenance of the garden then became the primary responsibility of the garden specialist, contributing to the significant level of unpaid labour associated with the specialist positions.

Schools noted a number of issues related to managing volunteers, including: irregular attendance of volunteers, resulting in some volunteers bearing a heavier burden and becoming burnt out; lack of sufficient knowledge or skills (also acknowledged by the volunteers themselves); and fewer

volunteers for certain age groups. For rural and remote schools and schools in low SES areas the Program generally had access to a smaller pool of skilled and willing volunteers.

Volunteers were asked to identify the challenges they personally had experienced during their participation in the Program. Eight respondents (11 of 49, 22.4%) indicated they had not experienced any challenges. The challenges identified were relatively infrequent, including: student issues (negative attitudes of students and ensuring safety in the kitchen, especially in relation to knives); personal issues (finding time to volunteer); adverse weather conditions (e.g. hot summers and lack of knowledge); and a lack of volunteers. Although only two respondents identified a lack of volunteers as a challenge, when respondents were directly asked whether they believed there were enough Program volunteers at the school, eleven (18.6%) answered 'yes', 12 (20.3%) were 'unsure', but the majority (n=36 of 59, 61.0%) answered 'no'.

Respondents were also asked what they thought prevented people from volunteering, thereby identifying additional barriers to volunteers' participation. The most common factor identified was work commitments (n=13 of 41, 31.7%), followed by a general lack of interest, motivation and commitment, or a sense of complacency towards volunteering (n=12, 29.3%) and busy lifestyles and lack of time generally (n=12, 29.3%).

Ways schools overcame volunteer-related issues included strategies to actively recruit appropriate volunteers, for example conducting sign-ups during the public launch including taking an inventory of their skills to see how to best utilise the skill set and interests of a particular volunteer. Further suggestions to overcome these barriers to participation included: attempting to more actively involve grandparents; distributing a parent handout to explain the benefits of the Program; 'selling' it to the whole community; and running introductory sessions for volunteers so that they can see they are capable of contributing and thus making involvement in the Program less intimidating.

SAKG project officers also suggested volunteers could be supported through the development of a national scheme to recognise the work of Program volunteers, as 'you can never thank volunteers enough'. Recognition and development of the special skills required to recruit and manage a cohort of volunteers would also assist program coordinators to undertake this role.

Key points:
- Schools would benefit from a mechanism to share their strategies to engage, support and maintain volunteers to support the Program.
- A national scheme to acknowledge the contributions of volunteers to the Program may assist their retention.
- Recognition and development of the special skills required to recruit and manage a cohort of volunteers would also assist program coordinators to undertake this role.

Maintaining specialist support

Schools had the responsibility for maintaining the Program, particularly the specialist staff salaries and consumables, which was a deterrent for some schools in even applying for the Program. Schools also were expected to pick up extra costs associated with participation in SAKG Foundation training days. For rural and remote schools this could involve up to two to three days away from school, together with relevant travel and accommodation costs and payment for additional days of work and / or for relief staff, making the cost of attending prohibitive.

Recruitment and retention of specialist staff was compounded by other factors. In some states employment of suitable specialists was difficult due to the rigidity of position descriptions and human resource systems (within education departments). There also was the perception that specialists' salaries were too low for what was required of the position.

In addition to 'low' salaries, specialists were required to commit a considerable amount of extra 'time' (laundry or shopping tasks, working bees and lesson preparation), equating to unpaid labour. Most specialist staff indicated they were happy to extend good will to the Program, in the

form of unpaid work, but this was not the case in all schools. In some schools, specialists worked only during paid hours, which was insufficient for planning time, maintenance time and time for integrating the lessons into the curriculum. Schools reported this as a challenge that would be difficult to overcome without an increase in funded time for specialist and teaching staff, perhaps through alternative funding sources such as teacher release time. Dissatisfaction of specialists in relation to the limited recognition of their role resulted in turnover of key people.

To meet these challenges, some school principals had reallocated staff commitments to ensure the required resourcing of the Program, but this was not always the case. Other schools felt under ongoing pressure to fund participation in the Program. Fund raising activities were very time consuming and resource intensive for schools. In some schools with larger numbers of families from low SES communities, expectations to regularly make contributions via fund raising activities to support Programs for which the school had made commitments, was very stressful and prohibitive.

Key points:
- Schools would benefit from mechanisms to share their strategies to fund the specialist positions and other ongoing costs associated with the Program.
- The most appropriate mechanisms to provide the specialist expertise required for the garden and kitchen classes and activities needed urgent attention, including the salary rates, times required for all required tasks and recognition of specialist expertise.

Funding delays and infrastructure maintenance

Several schools identified challenges associated with ongoing funding delays and time taken to wait for contractors, occupancy permits or even state government approvals. In some instances schools had to meet commercial building codes and food safety requirements, adding to the cost of building and delayed construction of the kitchen. Costs also were incurred in dealing with the impact of Australia's varied climate and environmental factors on gardens' growth and sustainability. Challenges varied from inconsistent water supply through to the more complicated science of soil quality, requiring the purchase and installation of rainwater tanks, irrigation systems or soil enhancers.

Barriers such as funding delays may not always be avoidable but one school turned this to advantage when they noted that the delays in funding meant they had more time to plan the garden and kitchen and how to enact the Program. Other schools responded to delays in kitchen construction by beginning other aspects of the Program, such as garden construction and / or garden classes or offering classes in temporary facilities. The SAKG Foundation provided support to schools through assisting with funding or contractor negotiations and developing guidance on navigating the regulatory processes in specific states.

Key point:
- There was a need for the SAKG Foundation or other relevant organisation to continue to provide support and guidance for commencing schools in relation to project (building) management skills, contract negotiations and navigating the regulatory processes within each state.

Tyranny of distance

The 'tyranny of distance' was also identified as a barrier to participation in the Program. Schools at a significant distance from capital cities and demonstration schools found it difficult to attend workshops and to maintain a network of support. Schools also faced different and often extreme climactic conditions affecting their gardening activities.

5.2.4.3 Enablers of sustainability of the Program

School staff reported that Program sustainability after the initial funding period expired depended on a number of factors including: the integration and adaptation of the Program in the school; volunteers; local funding and budgeting; networking with other schools; and the snowballing effect of success.

Integration and adaptation of the Program in the school

Integrating the Program into the school ethos and school activities was an important factor in promoting sustainability, as was ongoing support from school staff, parents and community members. The principals of the demonstration schools referred to this as student, parent and community 'ownership' of the Program. A number of schools reflected that both students and parents had made investments of time, effort and sometimes resources in the Program and thus expected to keep it going. The continued promotion and publicity of the Program was considered important to maintain such 'ownership'.

Enabling staff and parents to see the Program's successes had also been important to help sustain commitment. One principal commented, 'once teachers see that the Program works – then they get engaged and this reduces most barriers'. At another school the specialist also recognised the importance of commitment:

> *"If the principal did not support it and the teachers did not support it, it probably would make [sustainability] harder".*

Teacher support for the Program was determined through the teacher survey. Teachers were asked to rate their attitude towards the Program both before its onset and as it was currently. Many teachers (n=43 out of 61, 70.5%) had not changed their view of the Program since its inception at their school; however 42 or 68.9% of respondents already had a maximum positive attitude before Program had begun. Thirteen respondents (21.3%) had a positive change indicating their attitude towards the Program had improved and five respondents (8.2%) had a negative change indicating their attitude toward the Program had changed unfavourably.

Teachers attributed the improvements in their attitude toward the Program to: the unexpected zeal of parents, community, staff and students; the high level of student engagement; the increasing benefits of the Program; and a better understanding of how the Program fitted with KLAs and the school timetable generally. For those few teachers who reported a negative change, reasons given related to the time the Program took away from the crowded curriculum and repetition of certain activities in the garden and kitchen.

Teacher support for the Program's role in supporting the curriculum could be an indicator of the likely sustainability of the Program. From the teacher survey it was clear that teachers did believe the Program supported classroom learning; 58 of 60 (96.7%) teacher respondents were very positive and provided numerous perspectives of the ways the Program was supportive of classroom learning. The opportunities for integration of the Program into KLAs and the curriculum was the most frequent support mentioned by respondents, especially with regard to how it complemented English, mathematics, science, HSIE and health. It was suggested by the state project officers that if links with the curriculum were established from the start as a central part of the Program and the Program became embedded in the curriculum, then this would assist in sustainability.

In addition, the Program was seen to assist in making the teaching of these KLAs in the classroom relevant, allowing students to appreciate the purpose of learning and the learning opportunities could be very rewarding for students who had difficulty in succeeding in more traditional academic approaches. One respondent noted how the Program catered for all of Gardner's Intelligences (e.g. logical-mathematical, spatial, linguistic, kinaesthetic, naturalistic etc).

Of the teacher responses received, only two were negative: one stated that the [Foundation] support was not entirely apparent; and the other stated the Program took up too much time in the curriculum, with potential for the learning to be equally effective if the time was reduced by half.

Factors relating to human resources were considered by demonstration school principals as key for sustainability. They included reference to having someone that was a passionate driver, having supportive teaching staff participate in the garden and kitchen classes, having the specialist positions (and valuing them both financially and as part of the staff) and having a program coordinator. Other factors they thought important to sustain the Program were: the Program being a vehicle for changing the culture of a school; embedding the Program into the school curriculum; and providing ongoing training (as a means of a continual point of contact and to ensure adherence to the model).

Making adaptations to the Program model enabled schools to better integrate the Program into the school's activities. A number of small schools incorporated all grades of students into the Program, thus boosting numbers but with the challenge of also requiring more volunteers. As with older students, these schools believed that younger students benefited from the Program and its emphasis on enjoyable food education.

Key points:
- The Program model of a whole-of-school approach and shared vision assisted with the sustainability of the Program; flexibility within the Program model allowed for schools to adapt it to match their circumstances and requirements.
- Teacher support for the Program was high and could be considered a barometer of the likely sustainability of the Program.
- Teachers' involvement with the Program may be aided through their personal involvement in garden and kitchen classes and with provision of training opportunities.

Volunteers

Encouraging and rewarding volunteers enabled some Program schools to continue to gain volunteer support. Some schools were able to utilise volunteers' skills and experience in areas where the volunteers were best qualified. Other schools had encouraged volunteerism by organising trips to other gardens for volunteers and providing childcare to help volunteers stay involved in the Program. Workshops were developed by some schools to teach garden or kitchen skills to community members and these had served several purposes: raising funds, increasing the size of the volunteer pool and capacity building for the volunteers themselves.

Key point:
- The involvement of volunteers in the Program could be assisted through initiatives to develop their personal skills and capacities.

Local funding and budgeting

Accessing alternative ongoing funding sources was a key factor for Program sustainability. Alternative funding sources included grants and awards from government and non-government organisations; P&C funds; other fund raising events and activities, including selling produce from the garden and food products from the kitchen; preparing a weekly lunch for school staff and charging a nominal fee; collecting donations from community members and businesses; a student levy for participating in the kitchen classes; or selling other items such as a school cook book. As one principal noted:

> *"That's where the community is really important. In one night the P&C ran a trivia night and raised $7000, which fully equipped the kitchen with everything we need, even to the extent of plates, knives, forks and things for 80 people."*

A few schools had started a small catering business within the school to help raise funds, while an Environmental Centre located at another school provided funds for the Program.

Schools also worked within the school budget to employ specialists as school support officers or teaching assistants, or used other areas of the budget, such as teacher release monies to fund aspects of the Program, as described by this principal:

> *"Our budgeting is global. Any money goes into the pot and we spend a fair bit of time discussing how to spend the money on a one-year (specific) and three-year (broad) basis. We had already funded staff costs for a garden [specialist] (SSO), class teachers gave an hour of their SSO time to Program for support for [the school coordinator] and we found an extra half hour from revenue. We have some excellent SSOs and so we buy their time for [the Program]."*

Key point:
- Schools would benefit from mechanisms to share their strategies to fund the specialist positions and other ongoing costs associated with the Program. [stated previously]

Networks

Networking with other schools had also promoted sustainability, allowing schools to learn from and support each other. Staff from functioning Program schools visited other schools during start up to share expertise and offer support.

Resources for the Program and accessing the Foundation website's 'Shared Table' forum was reported by Foundation project officers to have assisted schools to create their own profile and facilitated the identification of similar schools for the purposes of networking and support. The introduction of training via webinars (for free) meant that training only required a time commitment, not a financial commitment. Regional training had also been introduced to offer training to schools within geographical regions, thus facilitating schools' networking and sharing.

Key point:
- The provision of appropriate networking and training opportunities for schools and their personnel involved in the Program, that takes into account their circumstances and needs, was an important mechanism that would help to sustain the Program.

Snowballing effect of success

Success had a snowball effect that promoted sustainability: when parents, teachers and community members saw positive outcomes they were more likely to support the Program. The snowballing then enabled the school to engage more with the community and build further relationships that promoted and sustained the Program. As a national program, rather than a local or state based program, schools were part of a high profile and growing program and this helped to sustain the profile and hence support for the Program.

Key point:
- The promotion of the successes achieved by the Program was an important mechanism that helped to sustain the Program and the SAKG Foundation or other relevant organisations should continue this promotion.

5.2.4.4 Barriers to sustainability of the Program and how they can be overcome

Barriers to Program sustainability were reported to include limited staff and / or principal's support; insufficient numbers of volunteers; ongoing funding; staff turnover; curriculum issues; and support of the Foundation. While not barriers in every initiative school, these were key issues for the Program and successful schools had advice to offer in terms of how to overcome these barriers to sustainability.

Staff and / or principal's support

Schools where the principal or other school staff were not overtly supportive of the Program often struggled in terms of funding, coordination support and curriculum integration, indicating such a lack of support was a key inhibitor of Program sustainability. Winning over unsupportive principals (either by school staff, parents or Foundation project officers) was difficult as 'hard evidence' to demonstrate effectiveness of the Program was considered to be absent. This was particularly evident in schools where teachers or staff felt that the Program had taken resources, time and funds away from other Programs or classes, or where the principal felt the Program was just another 'warm and fuzzy' program. Having a champion for the Program was one way to ameliorate lack of support from the principal but acting alone was not likely to be effective. Demonstrating the Program's impacts through the regular collection of data and statistics would provide information that could assist maintaining involvement in the Program. For example, it was suggested that measuring the impacts on the students' eating habits and food choices would reinforce the benefits of the Program.

Key points:
- The sustainability of the Program was dependent on the school principal and staff being fully supportive of the Program.
- Regular collection of data and statistics on the Program, including its impact on students' eating habits and food choices, would provide evidence of the impacts of the Program.

Volunteers

The maintenance of an adequate number of volunteers was an ongoing challenge to sustainability for the Program. This issue has been described previously. While a range of (often successful) strategies to recruit and support volunteers to the Program had been evident in schools, the designation of such actions as a specific responsibility that required certain skills, expertise and dedicated time had not been recognised.

Key point:
- The skills, expertise and dedicated time required to engage, support and sustain active volunteer participants requires recognition as a dedicated role within the Program.

Ongoing funding

Ongoing funding of the Program for specialist positions and for renovations, resources and supplies was a sustainability concern for many schools, and also identified by Foundation project officers and principals of demonstration schools. Some schools suggested they were likely to scale back the Program when their two-year commitment had been completed. Other schools had developed a number of funding sources to sustain the Program. Some schools utilised special purpose funds or funding attached to specific students but they recognised that this was not sustainable. Some schools were seeking state funding for garden or kitchen specialists or other ongoing support to maintain the specialist positions in the school after the implementation phase of the Program. Other funding suggestions included corporate support and rental of kitchen facilities. It was not apparent if a portfolio of funding options and strategies had been collated and made available to Program schools but it may prove useful.

Key point:
- Schools would benefit from mechanisms to share their strategies to fund the specialist positions and other ongoing costs associated with the Program. [stated twice previously]

Staff turnover

Stability in school staff was beneficial to the sustainability of the Program and staff turnover was an issue in some schools. Some schools noted a particular loss when key Program staff took employment elsewhere or ceased their involvement in the Program. In schools where there was

minimal support from other school staff or in small schools with few staff, turnover was a serious threat to the Program's sustainability. However, where schools had widely integrated the Program into the general activities of the school and the school ethos, staff turnover was not an inhibitor to Program sustainability, as described by this principal:

> *"What we have always done over this period of time is actually engage the community in everything we do. During that time we have had a school council that has operated for 21 years and it has been my aim throughout all that time to empower the community, so I expect the community will make sure that things don't change dramatically from their expectations of a community school, regardless of the staff turnover."*

Key point:

- Integration of the Program across the school and its curriculum could assist schools to be more resilient for the challenges caused by staff turnover.

Curriculum

Another important barrier to sustainability identified by demonstration school principals related to curriculum. They identified that a focus on curriculum was not evident early in the Program and clearer links with curriculum from inception were needed. One principal suggested that being able to have teachers off class and working with the specialists to plan the lessons and integrate into the curriculum would be very helpful. It was also suggested the Program model needed to be adapted to make it fit with the curriculum, as well as making it suit different schools and geographic regions.

Key point:

- Long term sustainability of the Program could be enhanced by the allocation of dedicated time for teachers and specialists to work together to plan lessons and integrate the curriculum during the early stages of establishing the Program in a school.

Support of the Foundation

The SAKG Foundation primarily provided Program schools with support through the activities of the project officers at the establishment and implementation stages.

The project officers reported they aimed to conduct an average of two visits to each school annually. During the infrastructure stage they explained the paperwork requirements and the process of putting together plans for kitchens and gardens, helped to revise garden and kitchen designs and provided advice on garden construction. Their assistance also included helping schools to find sources of funding for the specialists' positions.

During the implementation stage the project officers reported providing a range of support. The support included assisting with lesson plans, linking the SAKGNP classes and lessons with the curriculum, staffing issues and arranging for the principal and key staff to tour a more established SAKGNP school. They also provided monitoring and assistance to schools with their progress reports each term (using standard reporting templates), although the project officers reported that the submission of these reports did not necessarily occur spontaneously or routinely.

The project officers provided more broadly based support to the schools within their area of responsibility in terms of networking, training, sharing resources and assisting with media enquiries. The Project Implementation Training was compulsory for new schools, while other training sessions were optional but were reported to be usually well attended. Starting in 2012 the Foundation introduced an in-depth workshop on curriculum integration training for new principals and webinars to assist the more remote schools by minimising time out of the classroom and travel costs to attend training. The project officers also reported directing schools to the SAKG Foundation website and the new 'shared table' which enabled schools to identify other schools with similar challenges to their own.

Overall the SAKGNP school staff reported positively on the role of the project officers, however some rural and remote schools and demonstration schools expressed some dissatisfaction with the support provided by the SAKG Foundation. As mentioned previously, rural and remote schools had difficulty attending city-based training sessions and had the view that the materials prepared by the Foundation did not cater for their needs, for example more extreme weather conditions. Some demonstration school principals felt that there was inconsistent support and communication from the Foundation. They suggested that the Foundation should have had more consistent contact with schools to keep them interested and motivated in the Program. The high profile of the Foundation generated interest and motivation, but this was needed to be sustained by frequent support and contact with schools. More direct contact from Stephanie Alexander personally was suggested to sustain the 'pulling power' of the brand name. It was suggested that this could just be in the form of emails to the schools or some other contact to show her support.

Key point:
- The high profile of the Foundation provided external support and was a source of motivation for Program schools but more attention on regular and consistent linkages and communication with schools could be required.

5.3 *Program context*

5.3.1 Level 3: System-related impacts and outcomes
What are the enablers and barriers to participation in and sustainability of the Program (at the national / state level)? How can these be better harnessed and / or overcome?

These findings explore the enablers and barriers to participation and sustainability of the Program at the national / state level and have primarily been drawn from Stakeholder interviews, together with data from school visits and parent surveys when appropriate. Issues are broadly grouped into the lessons learnt from this particular national model of program provision, including informing health promotion practice, and lessons to inform administrative arrangements and program relationships.

5.3.1.1 Lessons learnt from having this particular national model of program provision

The SAKGNP offers many insights into the national implementation of innovative approaches to health (and other) education initiatives.

The SAKGNP is an example of an unusual program funding arrangement. The Australian Government provided funding that facilitated a not-for-profit community organisation to expand the uptake of their 'product', a kitchen garden program for primary schools. The funding provided by the Australian Government was directed to schools to purchase the infrastructure required to participate in the Program and to the SAKG Foundation to oversee the uptake and implementation of the Program. To further facilitate the participation of schools in the Program, funds were provided to the SAKG Foundation to develop curriculum materials for schools to use to integrate the Program with the national curriculum.

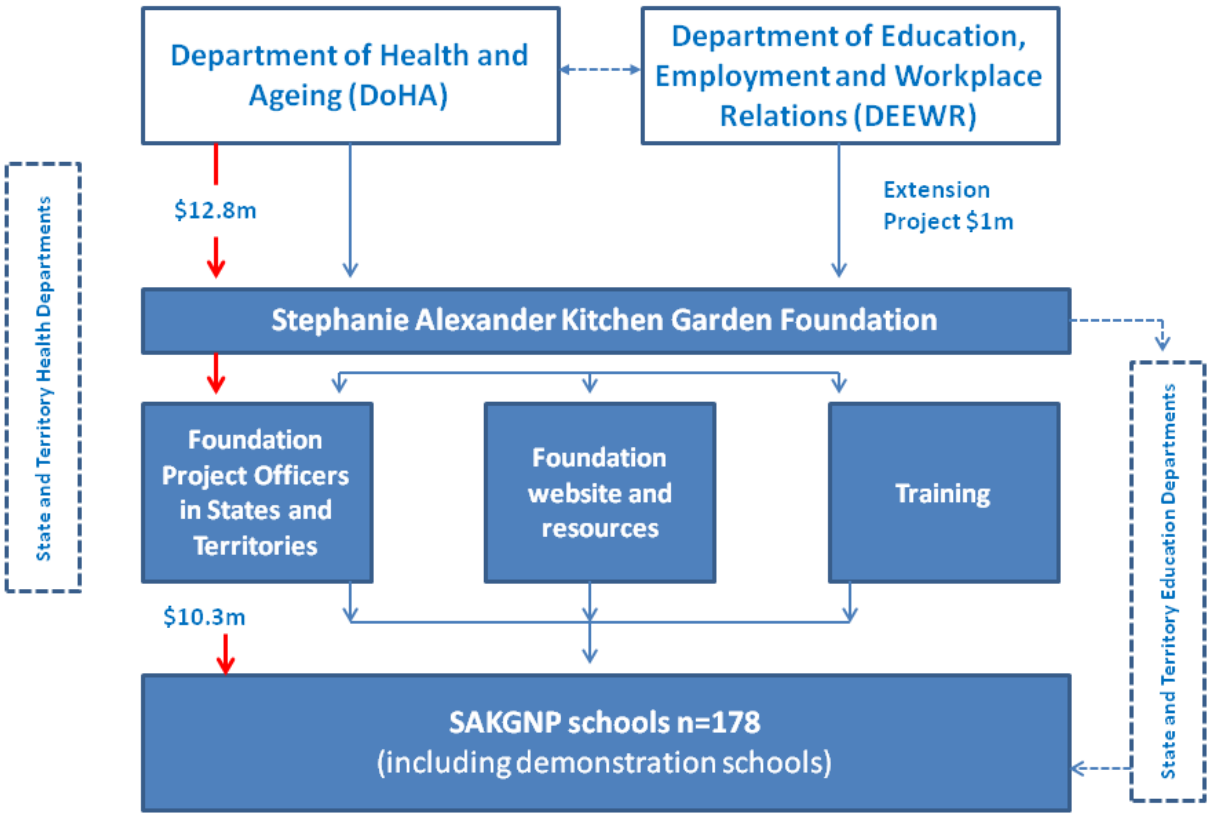
The arrangement between the Australian Government and the SAKG Foundation differs from more traditional program contract arrangements, whereby a government agency would contract with an external organisation to conduct a government program or service. The ownership of the Program clearly remained with the Foundation. To some extent there was a 'hands off' approach by government to the Program itself, while at the same time the Program was positioned as a government initiative within the Health Reform Agenda and it was anticipated that it would actively contribute to school-based learning outcomes.

The SAKG Foundation was committed to the goals of the Program (enjoyable food education) and for as many children as possible in Australia to benefit from having such a Program in their school. The SAKGNP was based on a practical framework and principles of hands-on and enjoyable food educational experiences in the garden and kitchen. The Program had been built 'from the ground up' over a considerable period of time. It had a history of implementation and some evaluation in Victoria but its growth to a national program offers many insights into the implementation of innovative approaches to health (and other) education initiatives.

Roles of agencies and organisations

The infrastructure available to or linked with the implementation of the SAKGNP was extensive, reinforcing the complexity of implementing a national program of this kind. An overview of the roles of the agencies and organisations involved in the implementation of the SAKGNP is represented in Figure 10. It is important to understand the roles of the different agencies and how these roles may be enhanced to enable sustainability of the Program.

Figure 10 Roles of agencies and organisations



The Department of Health and Ageing (DoHA) was the primary funder of the Program and the funding was positioned within the preventive health agenda. DoHA was responsible for administrative oversight of the Program, such as determining the target numbers and mix of schools that joined the Program, and some of the administrative processes, e.g. the funding agreement development as well as the selection process through auditing the selected schools prior to approval and public announcement. The Foundation provided the supportive and promotional role for the Program. .Regular meetings with Foundation staff and shared commitments to the success of the Program supported smooth administration of the Program. Any risks or issues were dealt with on a case-by-case basis. DoHA also liaised with the Department of Education, Employment and Workplace Relations (DEEWR) regarding the extension project funded through that agency.

The DoHA staff identified two key issues in this relationship with the Foundation, which were expectations and branding. In relation to expectations, the DoHA staff had procedures they needed to follow to ensure accountability within their department. As a not-for-profit organisation, the Foundation was not familiar with these procedures, the need for timely information to inform decisions and government communication protocols. Ensuring that government expectations were met was an important role undertaken by DoHA staff. The issue of 'branding' related to appropriate recognition of DoHA's financial commitment and the role of the Program within the preventive health agenda. The Program gained its recognition from the name of its founder, Stephanie Alexander, and the maintenance of this recognition, including regular public profiling by Stephanie Alexander, provided support at the school-level for their ongoing commitment and involvement. The challenge of how to successfully joint brand the Program required considered discussions between the DoHA, other government officials, the Foundation and Stephanie Alexander herself.

DEEWR were responsible to administer the additional 'Extension' funds received from the Australian Government for the development and support of curriculum related materials. A steering committee had oversight of this funding arrangement with the Foundation. It comprised government (DEEWR and DoHA) and Foundation representatives and had three roles: monitoring progress; evaluation; and providing advice where needed. The Foundation submitted a project plan with timelines, half yearly reports and regularly met with the steering committee. One requirement within the Funding Agreement was that the Foundation received advice from educational specialists, which they subsequently did.

The SAKG Foundation was responsible for administering the whole Program including: advertising availability of funding; managing the selection of schools; developing the funding agreements with particular schools or state education departments; providing the essential support both during and post implementation; being the first point of contact for schools; and being the visible party. They faced a range of challenges during the rollout of the Program, including moving from a state-based to a nationally focused and operational organisation and ensuring that the administrative arrangements with DoHA (legal requirements, intellectual property, etc) were mutually agreeable and respectful of their small not-for-profit status. Political sensitivities during the early stages of the Program's implementation also needed to be managed, as did the different administrative and building requirements within each jurisdiction. A further challenge was the difficulty implementing a program which was subject to multiple portfolio responsibilities. The SAKGNP was a health funded program that was located within schools and espoused strong linkage with curriculum, both of which are the responsibilities of education departments. The SAKG Foundation reported expending considerable effort to achieve 'win-win' outcomes for students and teachers and in communicating and promoting successes of the Program.

The SAKG state project officers provided the day-to-day support for schools participating in the Program. They acted as a conduit of information between the school and the Foundation, delivered training (frequently using the demonstration school premises), undertook school visits, provided advice and suggestions for modification, and were very knowledgeable about the Program. The project officers were primarily located at the demonstration schools, which reduced the requirement for the SAKG Foundation to provide state-based premises and helped to profile the demonstration school activities. In one state it was recognised that greater linkage with the school curricula could be achieved if the project officer was located within the state education department.

The state education departments primarily provided support to schools during the application period, which in some instances included training and support to prepare the applications, and up to the point of signing the funding agreement. Most education department staff had a good understanding of the Program. The education department staff commented extensively on the potential links between the school curriculum and the SAKGNP activities and how the Program could complement other school based initiatives for which they had responsibility, particularly the sustainability focus within schools. In Victoria and Queensland the state governments provided

separate funding to schools to participate in the Program. In both instances the SAKG Foundation continued to provide the direct support to the schools for implementation of the Program.

The state level health department staff reported they did not have any meaningful involvement with the Program. The level of knowledge of health staff about the Program staff was variable, with one being quite familiar but others having very little, if any, knowledge of the Program.

Demonstration schools were part of the Program design, with one demonstration school in each state or territory. The demonstration schools were set up to 'enable interested schools to view a working model of the Program and provide guidance for schools joining the Program' (Statement of Requirement, RFQ368 / 1011, DoHA). Their role covered: giving advice to schools considering applying for funding; providing information and support to newly funded schools; demonstrating the Program in action; hosting visits as an ambassador of the Program; networking with schools in the Program; hosting professional development days / training; and promoting the Program through the media. Some demonstration schools worked with state education departments to assist other schools to apply for Program funding.

Strengths of the Program model

The strengths of the Program arrangements are discussed in two parts. Firstly the Program model is discussed in relation to its alignment with current literature on implementing health promotion initiatives in the school setting. This discussion provides the context for the subsequent discussions of the strengths of the infrastructure arrangements established to support this Program, followed by weaknesses in these infrastructure arrangements.

The Program model needs to be viewed from multiple perspectives: the educational activities themselves; school-level infrastructure to support such activities; and infrastructure support for the school.

At the level of the educational activities, the Program model aimed to provide food education in the primary school setting, which is consistent with evidence supporting improvements in children's attitudes to fruit and vegetables, and to gardening and cooking achieved through school-based programs. The Program incorporated enjoyable and fun education and hands-on learning, used daily life tasks to teach key learning concepts and recognised the need for specialist skills to provide garden and kitchen classes. This also is consistent with recent literature that increasingly recognises school gardens and kitchen-based lessons for: the opportunities they offer for hands-on learning in a variety of curriculum areas; the important effects they have on social behaviours of students; and providing settings for interaction and engagement of members of the broader school community (Ozer 2007).

Key factors identified in the literature for successful interventions to increase children's healthy eating, such as promoting the consumption of fruit and vegetables, included: program duration of at least a year; increased exposure to fruit and vegetables; integration within the curriculum; leadership; engagement of parents; appropriate levels of resourcing; and adherence to planned program processes and criteria. Many of these factors are reflected in the SAKGNP model. Another key factor for program success identified in the literature was appropriate provision of teacher training, however this was not a feature of the current Program model.

At the school-level, the Program is premised on a whole of school approach and active engagement with the community. This is completely consistent with the Health Promoting Schools (HPS) initiative (World Health Organisation 2012), which has been used to guide school-based health promotion initiatives. The HPS approach has been applied to healthy eating and also to the development of social skills, relationships, social inclusion and classroom performance and it takes a holistic approach to program implementation.

Key features of successful school health promotion programs have been identified, as follows:

- Supported by leadership staff;

- Comprehensive and influence all aspects of the school environment and curriculum and are supported by policies;
- Involve the whole school community in all aspects of the program;
- Comprehensive in nature with a wide focus. For example: health issues, personal and social wellbeing and development, health literacy and health promotion;
- Based on partnerships between all members of the school community that extend outside the school to include the wider community, health workers and other organisations;
- Resourced adequately with human and material resources including time for developing relationships; and
- Delivered in accordance with teaching and learning strategies including active participation, and the development of life skills as well as knowledge (Women's and Children's Health Network 2011).

All of these elements have been identified in relation to the SAKGNP in schools, reinforcing their importance in the Program model.

The evaluation of the SAKGNP has collated information pertaining to several of these school-level factors, thus informing the HPS approach. For example, the need to support principals and other Program leaders to undertake their leadership role has been identified. Additionally, the need for a designated role with the expertise to engage and retain volunteer staff has been identified as a strategy to support community involvement.

The work on HPS has more recently directed attention to refining guidelines for promoting health in schools (International Union for Health Promotion and Education 2009), development of school policy frameworks to support the implementation of the WHO global strategy on diet, physical activity and health (WHO 2012) and the assessment of the evidence to support the effectiveness of the health promoting schools approach (Stewart-Brown 2006). These developments may provide guidance to support the sustainability of the SAKGNP.

The SAKGNP model provided much insight into the infrastructure required to support schools. A range of tasks were provided by the different agencies involved, as detailed in Table 18. It is clear that the Foundation and the project officers provided an extensive range of support for the Program schools, consistent with the factors identified as important within a health promoting school.

Table 18 Provision of support for Program schools

Key factors of successful Health Promoting Schools + Infrastructure actions identified in SAKGNP evaluation	**Foundation + project officers**	**Demonstration Schools**	**Education departments**
1. Support to apply for Program funding; - Project management skills to install and maintain infrastructure for the Program	X	X	X
2. Provision of clear Program guidelines and requirements	X	-	-
3. The provision of curriculum resources, for: - the garden and kitchen classes and - integration with the school / national curriculum (minimises the burden on schools to develop such resources)	X	-	X
4. Training and support to: - implement the garden and kitchen classes, together with - networking with other Program schools to share ideas and resources was strongly supported	X	X	-
5. Curriculum training support for teachers; Leadership training support for principals and Program coordinators; Engagement strategies for volunteer coordinators	X	-	-

Key factors of successful Health Promoting Schools + Infrastructure actions identified in SAKGNP evaluation	Foundation + project officers	Demonstration Schools	Education departments
- all serve to build capacity within the school to ensure the key factors for success are built into the Program			
6. Assistance to build partnerships with: - community members and - potential sponsors of the Program	X	-	-
7. Profiling the Program to support: - ongoing community recognition and support for the Program and - contributing to the retention of volunteers; This was done through regular media events, branding of the Program through Stephanie Alexander's name and public events and through an ambassador program which engaged high profile chefs	X	X	-
8. Adequate resourcing to sustain Program	-	-	-

In addition, evaluation of the SAKGNP model has identified other factors reported to have supported the schools to implement and sustain the Program. The importance of profiling the Program was identified as a core element of this Program. Support to gain the funding in the first place and practical project management support to install the necessary facilities has been provided to Program schools. As discussed in the previous section, support and training was provided not only for teachers, but also for principals in the schools in terms of obtaining the necessary resources and funding to implement and sustain the Program and for program coordinators to recruit and retain volunteer staff. These skills and expertise should not be assumed, but are critically important to comprehensive programs such as the SAKGNP.

Weaknesses of the Program model

In terms of necessary infrastructure to support an ambitious initiative such as the SAKGNP, a number of weaknesses are apparent.

An immediate area of concern identified by observing Table 18 above is the dependence on the Foundation for support for school involvements, the limited linkage with the state education departments and the non presence of the state health departments (also refer to Figure 10). The implication of this current arrangement is that if funding to the Foundation were to cease, the support for the Programs in schools, in areas that have been identified as key factors of success in HPS, will not be offered to schools. The resultant scenario is for the Programs in schools to wallow and for the majority to discontinue, as has occurred with many 'program-funded' initiatives in the past. Thus immediate attention should be directed to how support for schools can be provided in an ongoing manner.

Also apparent from Table 18 is the absence of adequate resourcing to sustain the Program. This was identified by initiative schools as a significant factor in the ongoing sustainability of the Program. Urgent attention is needed to be directed to this issue, as many schools are already suffering fatigue in relation to fund raising activities to secure specialists' wages in particular. Strategies for resolving this funding situation may vary between the different states, as different administrative arrangements are in place in relation to the relative autonomy of schools to hire staff and offer particular pay rates. It is also clear from the evaluation results that some schools have been quite successful in re-organising their finances and their fund raising activities to cover the ongoing costs of the Program.

The administrative challenges presented by the Program, both in terms of securing funds initially and in the administration of the dispersal of those funds, were clearly significant, requiring input and support from multiple agencies. Some of the issues involved in applying for funds have been described elsewhere in this report as inhibitors to participation. Consideration needs to be directed to how to simplify the application process to facilitate the involvement of those schools who would most benefit from the Program, while retaining responsible governance and oversight of the process. In one state the SAKGNP was referred to as a 'Rolls Royce' model that was unattainable for most schools. Options could be considered to enable schools to progress through stages of achievement, as is the case in Victoria with the Prevention and Health Promotion Achievement Program for schools (Victorian Government, Department of Health, 2011). This may reduce the burden of securing funding for all aspects of the Program up front, and also ease the burden of integrating the Program into the curriculum while concurrently attempting to install infrastructure and train staff.

Another weakness identified by interview participants was the challenge of an outside organisation, the Foundation, needing to communicate and partner with eight different jurisdictions regarding requirements in their states and territories that may impact on schools' abilities to participate in the Program. Some of these discussions were reported to be quite protracted. In some instances formal agreements had to be agreed and signed, which once in place facilitated activities in that state but could take several years to be finalised. This situation may have been more challenging for the Foundation, as an organisation outside of government to be implementing the Program within government schools for which the state education departments were responsible.

A further challenge of the Program infrastructure that is more fundamental than the issues so far discussed, is the tension identified by St Leger and colleagues (2007) between the education and health sectors in their expectations of a school health program.

> *"Schools see learning as cumulative over the time a student is in school (up to 12 years and usually at least 6). Literacy, numeracy, and other core school programs build knowledge and competencies over many years, taking into account a student's cognitive and physical development. They don't expect major behavioral outcomes in less than one year, or even after two or three. The evidence shows that it is unrealistic to expect health "interventions" which are supported with limited and short-term funding, to make much difference in behavior change" (St Leger et al, 2007, p.110).*

While this evaluation has been able to identify some changes in students' behaviours and attitudes that can be attributed to the Program, actual change in health outcomes is not likely in the short term.

An evaluation, such as has been undertaken, does not answer the questions: What are the expected outcomes of the SAKGNP? As a health-funded program, are there particular contributions this program is expected to make to the preventive health agenda? As an initiative within primary schools, are there particular contributions that are expected from an educational perspective? And most importantly, are these two sets of expectations aligned?

Associated with the need to identify Program outcomes is the need to identify what is the best way to measure this impact? What research methods will provide the evidence required to determine the effectiveness of this whole of school preventive health initiative? As identified by St Leger and colleagues (2007 p.114):

> *"We risk missing out on the richness of school health activities by evaluating a narrow set of pre-determined outcomes".*

Stewart-Brown (2006, p.18) identified a number of questions that need to be answered in relation to HPS initiatives, including:

> *"How did this [HPS] initiative work? What might make this [HPS] initiative more effective?"*

Other gaps in the evidence that were identified included evaluations of cost-effectiveness, the potential contribution to effectiveness of cultural factors, participation of the school in developing the Program and the school ethos. This evaluation, with its thirteen different data sources and mixed methods approach, has made significant contributions to answering such questions.

5.3.1.2 The national preventive health agenda

The Australian Government's commitments to health promotion and disease prevention occur within a wider policy context, nationally and internationally. At the national level they form an important part of the human capital stream of the National Reform Agenda.

> *"Good health underpins the wellbeing of Australians. It enables people to lead active lives and determines their capacity to participate and be productive in the workforce. Too many Australians fail to reach their potential because of debilitating disease… It is important that all people are encouraged and supported to realise their potential through good health" (COAG National Reform Initiative Working Group 2005, p.18).*

The contribution of the Program to the prevention health agenda had not been clearly described, for example it was not clear how 'pleasurable food education' was linked to reducing childhood obesity. The Foundation had not initially positioned the Program as a 'health' program and the Program design agreed at the beginning of the SAKGNP to be implemented in schools did not have a clear health focus. It was not until October 2011 that the word 'health' appeared in the Program's philosophy statement and some linkage was made to the school canteen initiative that included the concept of 'sometimes' foods:

> *"Our Program emphasises the flavours as well as the health benefits of fresh, seasonal food."*
>
> *"Our specialist instructors emphasise balance and moderation, and endorse the concept of preparing fruit-based desserts 'sometimes' only." (SAKG Foundation website)*

Evaluating the Program in relation to the preventive health agenda would have been facilitated by clear articulation of the Program's role within this agenda at the beginning of the initiative.

Initiatives under the preventive health program are funded by the Australian Government and often implemented and / or managed by state health departments. However, state health departments were not engaged with the SAKGNP. In some instances health staff had very little knowledge of the Program, even when they acknowledged that it had goals that were synergistic with other programs in which they were involved, for example the OPAL program in South Australia.

Lack of involvement of state health departments in the Program has two main impacts. Firstly, the opportunity for health initiatives in schools (and communities) to reinforce each others' messages and maximise the opportunities to impact on children's health behaviours is diminished. The second impact is that even if the state health departments are not directly engaged with the implementation of the Program, they act as advocates for the Program or facilitate access to government resources. State health departments could have a role in identifying the importance of practical food education in early years of education to enable health messages to be understood and implemented, for example the promotion of consumption of fresh fruit and vegetables.

The Program also has potential to advance the Australian Government's social inclusion agenda but it is not clear if this was considered as part of the original plan for the national Program. The SAKGNP philosophy statement now includes the statement: 'In addition, the Program delivers observable social benefits to all students, including those with special needs.'

This evaluation has identified many examples of schools using the Program as a vehicle to include individual students or groups of students who are at risk of social exclusion. Evidence is available that participation in community gardens is associated with increased mutual trust, social

connections and interpersonal relationships (Armstrong, 2000; Kingsley, Townsend and Henderson-Wilson, 2009), with similar results also being found for gardens in school settings. The importance of social inclusion, the concept of inclusivity and catering for diversity are strongly recognised in educational policies in Australia (Berlach and Chambers, 2011), and incorporated into the draft principles of the new national curriculum. This provides opportunities for more structured ways through which the Program activities may advance the social inclusion agenda in the future.

The national curriculum has been under development during the period of the SAKGNP implementation. This presents both challenges and opportunities. The challenge has been for schools and the Foundation to have teaching materials available for schools that integrate the Program with school curricula when those curricula are changing. In one state the education department has produced teaching materials that link the Program with that state's curriculum, but will now need to produce new materials as it changes over to the national curriculum.

The materials that have been produced by the Foundation to link the Program with the national curriculum will only focus on Phase 1 topics – English, science, history and mathematics. It is not likely that extension funding will be available in forthcoming years to make similar links with Phase 2 or Phase 3 subject areas. The health curriculum is being developed as part of the Phase 3 developments and thus integration of the Program would not be expected for several years to come. It was not apparent if the lessons learnt through the SAKGNP about food and health education has been communicated to or incorporated into the current drafts of the new national health and physical education curriculum.

As with the health portfolio, the education portfolio has priority areas for action. Both through interviews with state education department staff and during school visits, the AuSSI program was raised. This initiative has goals and strategies synergistic to the SAKGNP and even directs schools to the Foundation for resources.

> *"The Australian Sustainable Schools Initiative (AuSSI) is a partnership of the Australian Government and the states and territories that seek to support schools and their communities to become sustainable.*
>
> *AuSSI engages participants in a whole-of-school approach, to explore through real-life learning experiences, improvements in a school's management of resources and facilities including energy, waste, water, biodiversity, landscape design, products and materials. It also addresses associated social and financial issues." (AuSSI website)*

AuSSI operates in approximately 30% (3,000) schools nationally. Program schools and state education staff more readily made links between the SAKGNP and the AuSSI than they did to health initiatives in schools. One possible mechanism to embed the SAKGNP in schools is to explore the establishment of direct links with and support via the infrastructure that already exists to support the AuSSI within the Department of Sustainability, Environment, Water, Population and Communities.

5.3.2 Level 3: System-related impacts and outcomes
What has been the return on investment to the Australian Government, students and the school community?

Analysis of the overall impact of the SAKGNP across the four domains and using triangulation of evidence has led to the conclusion that the SAKGNP can be attributed with significantly improving the kitchen lifestyle behaviour and food choice domains by students. This evaluation provides a strong indication that the SAKGNP as a health promotion and prevention program has worked in achieving stated objectives in terms of attitude changes to food choices and cooking, and the development of cooking skills.

5.3.2.1 Return on investment

The investment analysis undertaken has provided evidence of a large multiplier impact from the initial Australian Government capital funding of the SAKGNP on school and community activity in donations and particularly community volunteer involvement. The average recurrent expenditure by schools up until two years was $71,488, 1.60 times greater than the average Australian Government direct SAKGNP capital investment of $44,758. Hence there is an average multiplier of 2.60 for combined Australian Government and school SAKGNP activity ($116,246) up to two years relative to the initial investment. Refer to Table 19 for details.

Table 19 Average expenditure on SAKGNP throughout two year agreement period

Expenditure	Total	Garden	Kitchen
Australian government capital grant investment	$44,758	$15,147	$29,610
Recurrent staff specialist expenditure	$48,824	$19,397	$29,428
Program co-ordinator expenditure*	$6,968	$2,768	$4,200
Total school staff expenditure	**$55,792**	**$22,165**	**$33,627**
Maintenance and disposables	$15,696	$5,388	$10,308
Total school expenditure	**$71,488**	**$27,553**	**$43,935**
Total (school and grant expenditure)	**$116,246**	**$42,701**	**$73,546**

* Program co-ordinator expenditure allocated to garden and kitchen using the same proportions as specialist staff expenditure

5.3.2.2 Staff costs

Staff expenditures in the garden and kitchen varied. Kitchen staff expenditure ($29,428) contributed a significantly higher proportion (60.3%) of specialist staff costs than garden staff expenditure ($19,397 or 39.7%) up until two years. The garden and kitchen specialists on average ran 159 hours of SAKGNP garden lessons and 252 hours of SAKGNP kitchen lessons per year, respectively. Hence the staff specialist average costs per hour of lessons including on-costs were $63.18 per hour for garden lessons and $60.75 per hour for kitchen lessons (or $72.19 and $69.42 per hour for the garden and kitchen SAKGNP classes taking into account costs associated with SAKGNP co-ordination). Refer to Table 20 for details.

Table 20 Average staff costs per SAKGNP class throughout two year agreement period

Cost per SAKGNP	Total	Garden	Kitchen
Average class hours per school to two years	787.4	307.0	484.4
Average class hours per year *	411.40	159.2	252.2
Specialist staff hours per hour of classes		1.78	1.53
Staff specialist cost per class		$63.18	$60.75
SAKGNP Staff costs per class including program coordinator costs		$72.19	$69.42

* Schools were on average observed for 1.94 years up to two years, with a total of 29.05 years observed for 15 schools and 2 of 15 schools having less than two years observed.

Kitchen staff were employed, on average, at a higher wage rate than garden staff and worked more hours but the ratio of hours worked to class contact hours was different (1.78: 1 and 1.53: 1 for garden and kitchen respectively, up to two years), explaining the cost differences. Importantly, these class costs per hour and ratios of total relative contact hours are equivalent to and less than the minimum of those typically found in conventional contemporary Australian primary school classroom settings. Typically in primary schools there is a maximum of 21 hours 50 minutes of class hours per week and 38 paid hours, hence a minimum ratio of hours paid to class hours of 1.74 (Department of Education Western Australia 2012).

5.3.2.3 Community volunteer time and donations

The average hours of community volunteer contributions per school were 2,641 hours up to two years of the Program, with 1,352 hours in the garden and 1,289 hours in the kitchen. This is equivalent to an average contribution for each school of 698 hours per year to the SAKGNP gardens and 666 hours per year to the SAKGNP kitchens, or a total of 1,364 hours per year. This

represents a multiplier of more than twice (2.05 times) the number of garden and kitchen specialist hours per year up to two years. In addition, the average donated community capital and disposables up to two years of the Program was $11,252.

The multiplier on Australian Government grant investment of $44,758 up to two years from observed school and community (volunteer and donations) activity would be 5.07, with an equivalent value of $226,737; $71,488 from schools and $110,491 from community donations and volunteer time (Table 21).

Table 21 Average community SAKGNP volunteer time, capital and disposable donations throughout two year agreement period

Activity (hours) and value ($)	Total	Garden	Kitchen
Average hours of community donated time per school up to two years	2,641.1	1,351.7	1,289.4
Ratio of volunteer to staff specialist hours	2.05	2.48	1.740
Value of community volunteer time*	$99,238	$48,029	$51,209
Donated capital	$11,252	$6,992	$4,261
Total community contribution up to two years	**$110,491**	**$55,021**	**$55,470**
Total school contributions	**$71,488**	**$27,553**	**$43,935**
Total grant contributions	**$44,758**	**$15,147**	**$29,610**
Total (volunteer, school and SAKGNP Aust. Govt. funding contributions)	**$226,737**	**$97,721**	**$129,015**

* Volunteer time valued using the same rate per hour as garden and kitchen staff specialists in determining the multiplier of school and community activity relative to Australian Government investment under the SAKGNP.

This compares with a multiplier for government investment of 2.93 observed in the Victorian evaluation of their SAKG program over two years (Block and Johnson, 2009). However it should be noted that the Victorian government investment averaged $72,080 per school, $38,984 in the initial establishment year and $33,096 in the implementation year and contributed towards recurrent as well as capital expenditure. Hence these multipliers up to two years would likely have been similar if the components of investment had not been different in the Victorian SAKG program and the SAKGNP.

5.3.2.4 School and community activity and expenditure beyond the two year agreement

Eight of the 15 schools reported beyond the initial two year period (five schools had evidence to two years and two schools less than two years), reporting on an average of 2.40 years. From an Australian Government perspective the multiplier over the observed 2.40 years of total activity generated relative to initial grant investment ($44,758) increased under the same assumptions to 5.91, with an equivalent value of school ($87,290) and volunteer contributions ($132,376) leading to a total of $264,424 of overall activity (Table 22).

Table 22 Total average per school community, school and grant contributions to the SAKGNP

Activity (hours) and value ($)	Total	Garden	Kitchen
Value of community volunteer time*	$120,607	$57,956	$62,651
Donated capital	$11,769	$7,345	$4,424
Total community contribution up to 2 yrs	$132,376	$65,301	$67,075
Total school contributions	$87,290	$34,023	$53,267
Total grant contributions	$44,758	$15,147	$29,610
Total (volunteer, school and SAKGNP Aust. Govt. funding contributions)	**$264,424**	**$114,471**	**$149,953**
Multiplier – $264,424 / $44,758 = 5.91			

* Volunteer time valued using the same rate per hour as garden and kitchen staff specialist in determining the multiplier of school and community activity relative to Australian Government investment under the SAKGNP.

In considering the long term viability of the SAKGNP, comparison of school expenditure, volunteer time and lesson times per year up until two years and beyond two years provides an indication of the continuing sustainability of the Program.

5.3.2.5 Evidence of the SAKGNP continuing and modifying beyond two years

In the eight schools that had more than two years evidence at time of evaluation since beginning the SAKGNP, garden and kitchen classes continued in all of them, while teachers rather than garden and kitchen specialists ran classes in one of the schools. Across these eight schools the average hours of garden and kitchen lessons per year was 165 and 209 respectively during the first two years and increased to 182 and 254 hours per year beyond two years (Table 23). This represents a 10.3% increase in hours of garden classes per year and 21.1% increase in hours of kitchen classes per year. Overall total garden and kitchen class hours per year increased from 375 to 436, a 16.3% increase. This provides clear evidence of schools continuing classes and extending the Program while also evolving to have an even greater proportion of kitchen class hours beyond two years.

One of the schools stopped employing garden and kitchen specialists beyond two years, while continuing the Program by employing school teachers with these skills and integrating the garden and kitchen classes as part of the school curriculum. Hence comparison of average specialist hours up to and beyond two years was problematic and was not undertaken.

Table 23 Comparison of average SAKGNP class hours and community volunteer hours per year during and after the two year SAKGNP agreement period*

Average per year across schools ^	Total	Garden	Kitchen
Year 1,2 garden and kitchen class hours	374.6	165.3	209.4
>2 years garden and kitchen class hours	435.8	182.2	253.5
% change	+16.3%	+10.3%	+21.1%
Year 1,2 volunteer hrs	1,346.7	683.1	663.7
>2 years volunteer hrs	1,309.6	564.9	744.7
% change	-2.7%	-17.3%	+12.2%

* Comparison is restricted to the 8 of the 15 schools were observed beyond the two year SAKGNP agreement period.
^ Averages per year were calculated across schools rates per year in comparing up to two years with beyond two years to remove the impact of weighting differences with censoring beyond two years. During the initial two years all 8 schools observed for two years while beyond two years observed time ranged form an additional 6 months (4 schools) to 24 months (2 schools).

The average volunteer hours per year across the eight schools observed beyond two years were 683 in gardens and 664 in kitchens during the first two years, which respectively decreased and increased to 565 and 745 per year beyond two years. Hence, volunteer hours reduced by 17.3% per year in the garden while kitchen hours increased by 12.2% (Table 23). This further underlines the evolution of the SAKGNP with an indication of increased emphasis on kitchen classes and activities beyond two years. Total volunteer hours per year decreased marginally by 2.7% from 1,347 to 1,310 hours per year.

5.3.2.6 Model based estimation of long term health and cost impacts

An alternative, intervention based health economic assessment and interpretation of the impacts investment multiplier observed in the SAKGNP could be undertaken, with expected outcomes of the Program modelled, based on the observed impacts and compared with the total resources devoted to the SAKGNP. However, in attempting to model the long term impacts it should be clear that they depend on the ownership by the school community and wider community of the Program and associated attitude and behavioural changes. The key drivers of modelling a complex health promotion and prevention strategy delivered in a school setting are the integration with school and community networks, building of social capital at a community level and reaching a community threshold level where healthy behavioural change takes place (Shiell, Hawe and Gold, 2008). Hence, for such a model to reliably predict the long term outcomes of the SAKGNP strategy and health system related (and other public sector) cost savings that might ensue, it principally needs to consider these factors. School and wider community ownership and building of social capital are key in translating the attitude and behavioural impacts observed to final outcome and cost implications.

Consequently, it should be clear that provided there are net positive impacts on attitudes and behaviours established with the SAKGNP, the multiplier observed in school and community activity provides a good indicator of whether the Program is expected to be successful. The long term success of the Program in terms of health outcomes and health system costs will also clearly depend on the integration of garden and kitchen lessons into the school curriculum. If the evolution to including these classes in the school curriculum can be successfully undertaken, the long term attributable health impacts and downstream health system cost savings at a community level are expected to be significant. This is expected given current literature on the positive impacts of community involvement and attitude and behaviour changes at a community level. For example, positive impacts have been shown:

(i) on healthy eating from children developing skill to cooking their own food (Walters et al., 2009) and

(ii) their knowledge, attitudes and fruit and vegetable consumption from growing their own food, particularly with community gardening in schools (Morgan et al., 2010; Robinson-O'Brien et al., 2009; Somerset and Markwell, 2008; Libman, 2007; McAleese and Rankin, 2007; Morris et al., 2001).

The second set of findings has also been supported more generally with community gardening in adults, where for example Litt et al. (2011) recently showed community gardeners have a significantly higher vegetable and fruit consumption (5.9 per day) than other gardeners (4.6 per day) or non gardeners (3.9 per day).

Hence long term integration in the school curriculum and community can be expected to have health impacts both:

(i) directly for students from these community gardens in schools under the Program; and

(ii) indirectly in the wider community given student and community skills and social capital built to enable the establishment of and use the food from, such community gardens (improving local awareness, demand and supply factors).

Consequently, the demonstrated statistically significant improvement in kitchen lifestyle behaviour and food choice domains attributable to SAKGNP, successful integration in school and the wider community networks (reflected in high multipliers on initial government capital investment), combined with current literature points to longer term health impacts and associated cost savings provided the garden and kitchen class programs can be continued with integration into the curriculum.

6 Conclusion and recommendations

This evaluation provides clear evidence that the SAKGNP had enabled primary school students in Years 3 – 6 across Australia to participate in enjoyable food experiences that have included how to grow, harvest, prepare and share seasonal fresh food.

Strong evidence was found for significant improvements in students' food choices and kitchen lifestyle behaviours as a result of participation in the SAKGNP. Participating students, staff and school communities all reported positive observations of a range of contributions of the Program and the impact it had on the school and students.

The SAKGNP model is reflective of the health promoting schools approach of the World Health Organization and learning and teaching best practice. The Program is consistent with the Australian Government's strategic policy agendas of preventive health, social inclusion, a national curriculum and environmental sustainability.

Program implementation was enabled through: educational and program support from a dedicated unit (the SAKG Foundation); the role of the school principal or Program champion; stimulating and maintaining support from the school community; a supportive school ethos; adequate facilities; employment of dedicated and appropriately skilled school staff; facilitating and maintaining engagement of community volunteers; and maintaining appropriate funding.

Program implementation encountered the following barriers: limited flexibility of the Program model to account for different school circumstances; difficulties in recruiting and retaining a sufficient number of appropriate volunteers; maintaining specialist staff support; managing funding delays; and the specific circumstances and needs of the range of schools involved.

Program sustainability was supported by: the integration and adaptation of the Program in the school; the enthusiasm and contributions of volunteers; local funding and budgeting; networking with other schools; and the snowballing effect of success.

Program sustainability encountered the following barriers: limited staff and / or principal support; insufficient numbers of volunteers; ensuring ongoing funding; staff turnover; curriculum issues (such as integrating the Program with an already crowded curriculum, competing pressure from implementing the national curriculum at the same time and lack of time and funding for planning); and support of the SAKG Foundation.

Recommendations have been made that are directed to the maintenance and improvement of the provision of SAKGNP in schools, and to inform other health promotion initiatives in schools.

A comprehensive evaluation of the SAKGNP was undertaken to address five key evaluation questions covering its implementation, impact and lessons learnt. Thirteen data sources were compiled to obtain both quantitative and qualitative data that were analysed individually and collectively to inform the evaluation questions.

A number of important findings were identified that have implications for the Program and health promotion programs more broadly, and will inform the Australian Government's preventive health initiatives.

This evaluation found that the SAKGNP had been implemented as intended. Across Australia 177 schools had received funding to establish gardens and kitchens with the view to providing at least two years of garden and kitchen classes run by specialist staff, in collaboration with teaching staff and community volunteers. Demonstration schools had been established in the capital cities of each of the states and territories, with the purpose 'to increase accessibility for interested schools to visit and a training centre for schools joining the Program'. The Foundation actively supported schools to establish and implement the Program through a variety of mechanisms including state-

based project officers, training, workshops and networking activities and an interactive website. The Foundation also had produced resource materials for specialists and teachers and ensured that the Program's public profile was promoted.

The aim of the SAKGNP to create and provide pleasurable food education for children was found to have been achieved. All schools reported implementing linked garden and kitchen class activities and student participation in eating the foods they had prepared. The aim of embedding the garden and kitchen classes within the school curriculum had been strongly embraced by Program schools but they faced a range of challenges in achieving integration with the curriculum.

Schools in the Program also identified the challenges they faced during the establishment and implementation of the Program and ways of overcoming such barriers were described.

6.1 *Program design*

The SAKGNP model provided a philosophical frame for whole of school involvement in garden and kitchen classes and contained core elements that provided structure to the provision of garden and kitchen initiatives. There was strong support from the participating schools for the Program model, but also early evidence that schools were adapting the elements of the model to suit their circumstances and to enable them to continue to offer the Program into the future. To enable schools to adapt the Program but still maintain the core elements of the Program model, these elements should be clearly articulated.

Recommendation 1:
It is recommended that the following core elements of the SAKGNP model be considered essential to the success of the Program.

- Students participate in hands-on, enjoyable food experiences in the garden and kitchen.
- Students, staff and volunteers participate in a shared meal time following the preparation in the kitchen of foods from the school's garden.
- Whole of school commitment and engagement in the Program.
- Leadership and support by the school principal (or designee).
- Dedicated staff with specialist garden and kitchen expertise.
- Engagement, support and maintenance of volunteer support.
- Regular classes throughout the school terms for designated grade levels.
- Integration with the curriculum and involvement of classroom teachers.

The SAKGNP model was variously regarded as an 'ideal' and the 'gold standard' but also 'unachievable' for some schools due to their socioeconomic or other factors. Notwithstanding the previous statements regarding the need to maintain the integrity of the SAKGNP model and all of its elements, there should be scope for interested schools to join the Program with some initial commitments and then 'work toward' its full implementation. For this to be effective, a system needs to be developed that identifies 'minimal entry points' and designated stages of implementation. Newly commenced Program schools could be matched with more advanced Program schools for support and insights regarding ways to maximise enabling opportunities and overcoming likely barriers to implementation. Recognition should be provided to schools as they move from one level of implementation to the next.

Recommendation 2:
It is recommended that a framework for incremental implementation of the SAKGNP model be developed to facilitate schools to join the Program, including designated levels of Program achievement, the support required to move from one level of implementation to the next and strategies to provide assistance to schools to achieve higher levels of Program implementation.

The Program model incorporated many design elements consistent with the Health Promoting Schools framework. Limited research and evaluation has been undertaken in Australia on the

application of these education program characteristics and their contributions to effective program implementation and sustainability, and to student learning and health outcomes. A national network of SAKGNP schools provides an ideal research and evaluation environment to generate evidence for effective health promotion practice in schools.

Recommendation 3:
It is recommended that research and evaluation be undertaken to examine the different contributions of the elements of the Health Promoting Schools framework to student learning and health outcomes, using the SAKGNP as the model.

In undertaking this evaluation it was felt important to align the outcomes achieved by the Program against the Program's aims and objectives, and to understand the program logic of the Program's model and the theoretical framework/s that had informed its development and implementation. Documents to inform such analysis were not available. Consideration should be given to the Australian Government's strategic policy agendas of preventive health, social inclusion, a national curriculum and environmental sustainability, while retaining the core elements of the Program shown to be consistent with health promoting schools and learning and teaching best practice.

Recommendation 4:
It is recommended that Program design elements be developed and agreed through collaboration between the Foundation, state level education authorities and the Australian Government, to enable future monitoring and evaluation of the Program's achievements and contributions. The Program design elements to include:

- A clearly articulated program model that builds on achievements to date and adapts where appropriate to address key evaluation findings.
- A program logic that provides a clear link between the Program's aim and objectives, inputs, activities, outputs and the short term, medium term and long term impacts and outcomes.
- An appropriate theoretical framework to inform the Program's aim, objectives, program logic and model.
- The Program's aim, supported by clear and measurable objectives that take into account the various levels of Program implementation (impacts and outcomes for students, schools and the Program overall).
- An operational plan that designates roles and responsibilities across government portfolios, levels of government and non-government organisations for the achievement of short and medium term Program impacts.

6.2 *Program implementation*

Program schools identified that the Foundation and other agencies had provided considerable support to schools during the establishment and implementation stages of the Program. However, a number of issues were identified where the level or type of support was perceived to be lacking. These issues varied with the school, their circumstances and the issues they were facing. Based on the experience of the schools and the Foundation over the last four years it would now be possible to articulate the support Program schools may need, depending on their stage of implementation and their special circumstances and where it may be obtained. This would reduce dependence on Foundation staff and resources and build schools' capacities to resolve matters in a timely fashion. Significant work has commenced on such matters but not in a structured manner that facilitates ready access by schools.

Recommendation 5:
It is recommended that the support and assistance required by schools to participate in the SAKGNP, including prior experiences of schools, (continue to) be documented and made readily available in a public location. Documentation to include:

- Grant application, establishment, implementation and maintenance guidance required at the different stages of Program implementation;

- The range of issues likely to be encountered by schools, based on their designation (demonstration school, rural / remote / urban, small / large), including building codes, fund raising, volunteers, environmental conditions, networking, using the media and generating sponsorship.

Principals, staff and volunteers made different contributions to the successful implementation of the SAKGNP and various strategies had been implemented to provide support for these varying roles. However, the support provided has been responsive to need, as would be expected in the national rollout of a new program. It is timely to reflect on these experiences and proactively consider the various roles required to be performed to support Program implementation and to proactively identify necessary staff development and support initiatives. In particular the evaluation identified the need for expertise in the recruitment, training, support and retention of volunteers and guidance on generating sponsorship and resources.

Recommendation 6:
It is recommended that the roles within the SAKGNP of the school principal, garden and kitchen staff, classroom teachers and volunteers be documented, together with the resources, network support and training required to undertake these roles.

Recommendation 7:
It is recommended that resources be developed and training provided to SAKGNP schools in the recruitment, training, support and retention of volunteers, as well as guidance on generating sponsorship and resources.

An important challenge facing schools implementing the SAKGNP was integration of the garden and kitchen initiatives with the school curriculum. This was made more difficult by the concurrent rollout of the national curriculum and the limited time available to teachers to undertake the necessary planning and curriculum resource development. In part, the Foundation has commenced addressing this issue through workshops for teachers and the development of teaching resources to complement Stage 1 of the national curriculum. There are currently no plans to develop teaching resource materials to complement Stages 2 and 3 of the national curriculum.

Through the evaluation activities it became clear that the SAKGNP provided many opportunities for achieving additional educational outcomes related to social behaviours and social inclusion goals. Many schools provided insights into how the Program had contributed to the development of communication skills, social interactions, leadership, group and team work and problem solving. Some of the Program schools had also identified opportunities to include students at risk of social exclusion based on disability, cultural background or socioeconomic factors. However, the role of the Program in achieving such outcomes had not been systematically acknowledged.

Recommendation 8:
It is recommended that curriculum experts be engaged to develop teaching resource materials and curriculum guidance to enable the garden and kitchen classes be integrated across the national curriculum as it becomes available to schools. Such materials should be freely available to schools and form the basis of pre-service and in-service education of primary school teachers and other relevant school staff.

Recommendation 9:
It is recommended that schools make available adequate planning time for garden and kitchen specialists and classroom teachers to integrate the Program with the school curriculum and include consideration of its role in achieving school goals in the areas of student social behaviours and social inclusion.

Complementary to considerations of integrating the SAKGNP with the school curriculum is consideration of how teaching and learning principles can assist to inform the further development of garden and kitchen activities. Little evidence was provided of systematic articulation of learning

outcomes for the Program and their measurement. The longer term implementation of the Program would benefit from the specification of education outcomes to be achieved through the Program.

Recommendation 10:
It is recommended that teachers, specialist staff and the school community in Program schools develop Program learning outcomes and appropriate strategies for measuring their achievement.

An important element of the SAKGNP model to support schools to implement the Program was the establishment of demonstration schools. These schools provided examples of garden and kitchen strategies, provided a location for workshops and seminars and also aided in the profiling of the Program. However, many of the more distant schools and those facing different challenges in their attempts to implement the Program found the single, capital city based model of demonstration schools of limited assistance. Suggestions were provided for a more dispersed network of support for schools that could provide a greater coverage of support for schools.

Recommendation 11:
It is recommended that support be directed to establishing networks of SAKGNP schools in geographic regions and other innovative mechanisms through which resources could be shared, training provided and mutual support generated.

6.3 *Program achievements*

Despite the absence of clearly designated Program objectives in relation to achievements and impacts on students and the relatively short implementation period of the Program, this evaluation has found evidence of statistically significant improvement in students' kitchen lifestyle behaviour and food choices ascribed to the Program. The Program has also contributed to understanding health promotion practice in schools.

Program achievements have ranged from small 'successes' in relation to program implementation, students receiving local and national awards, contributions to local community events and curriculum changes. In addition, principals and school communities have been seeking independent evidence of the impact of the SAKGNP to confirm their commitment to continuing their school's involvement in the Program, or to expend the considerable effort to apply to join the Program. To gain maximum community benefit from this evaluation activity, it will be important to disseminate the findings to professional organisations, academic institutions, schools and school communities.

Recommendation 12:
It is recommended that a systematic scheme to acknowledge schools' achievements of Program outcomes be developed so that this information can be shared and the school can promote their achievements to their communities.

Recommendation 13:
It is recommended that a dissemination plan for the findings of the evaluation of the SAKGNP be developed and implemented in a timely manner to communicate its important contributions to the Australian Government's preventive health agenda and to reinforce the importance of children participating in enjoyable food education in schools.

Participating schools were eager to participate in the evaluation activities and to be informed about Program achievements but pressures at the school-level impeded full participation and impacted on data collection. Further validation of the Program's achievements is required to underpin future considerations regarding possible expansion and support for the Program. Monitoring and evaluation activities need to be practical and made routine within the Program to facilitate data collection.

Recommendation 14:
It is recommended that a system of internal monitoring and evaluation against designated Program process and outcome objectives be developed and implemented in conjunction with participating schools to facilitate practical and readily accessible data to inform Program implementation and achievements.

6.4 *Program sustainability*

The Australian Government's investment of $12.8 million to implement the SAKGNP has generated a multiplier of 5.07 in total direct school and community activity to date, rising to a multiplier of 5.91 over the longer period of implementation of some schools. This indicates a high degree of acceptance of the SAKGNP and integration into the local school and wider communities and is supportive of longer term health impacts and associated cost savings. However, the current funding arrangement requiring schools to meet the salary and consumables costs of the Program was consistently identified as an inhibitor both to participation in the Program and its sustainability.

Recommendation 15:
It is recommended that alternative ways of integrating and evolving the SAKGNP as part of the school curriculum be pursued as priorities, while retaining the Program's elements of whole-of-school, hands-on learning and community engagement.

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