Public Schools NSW

Kitchen Garden Pilot program

Evaluation Report

NSW GOVERNMENT Education & Communities

Public Schools NSW

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Contents

Tables

Figures

Summary of key findings and recommendations

School kitchen garden programs are increasingly popular in schools both in Australia and overseas. Australian schools are embracing the benefits of teaching and learning around sustainable living. Biodiversity, nature and climate change are increasingly important topic areas for Australian school students.

In NSW in 2011 as part of a pilot program, nine government primary schools were each given a grant of $40,000 to establish a kitchen garden program within the school. It was determined that funding was to be used to establish herb and vegetable gardens and kitchen facilities. As part of the pilot, schools were to implement a cross-curricular approach to developing teaching and learning activities, with students growing and preparing produce.

In 2012, an evaluation of the pilot was commissioned. The evaluation examined:

1. The extent to which schools have linked syllabus outcomes to student understanding of food production, nutrition and health including:
    - how students have been engaged in an interdisciplinary or cross-curricular approach
    - how teachers have included sustainability education in their teaching and learning programs.
2. The extent to which the NSW Public Schools *Kitchen Garden Pilot* program has changed the knowledge, understanding and behaviour of students regarding healthy food choices.
3. The identification of professional learning programs and other potential resources that would be needed to support future programs
4. The effectiveness and sustainability of the NSW Public Schools *Kitchen Garden Pilot* program in relation to:
    - school resource capacity – human and financial
    - professional learning activities
    - student learning resource needs
    - community participation.

Introduction to the findings

The evaluation of the NSW Public Schools *Kitchen Garden Pilot* program found that primary school students are being encouraged to connect with their food, to understand where it comes from and how it is produced.

Teachers valued the professional learning provided through the *Kitchen Garden Pilot* program. In addition to environmental and sustainability education, the professional learning activities enable them to develop a cross-curricular approach that includes English, science and technology, mathematics, creative arts, human society and its environment.

Student learning was applied in home settings, with families planting vegetable gardens where space was available, and many parents reporting that students were eating more fresh food.

In most schools visited, the community played an integral role in developing and maintaining the *Kitchen Garden Pilot* program, with community members feeling they were part of the education process. Where all stakeholders were involved and a whole-school shared-team approach was undertaken, principals were confident that their kitchen garden program could be successfully maintained for years to come.

This section provides a summary of the impact of the *Kitchen Garden Pilot* program, as found through the evaluation. Quantitative and qualitative data obtained throughout the course of the evaluation was analysed and findings have been drawn together to address each of the Terms of Reference.

Key findings

The key findings have been linked directly to the Terms of Reference for the evaluation, as shown below in bold.

1. **The extent to which schools have linked syllabus outcomes to student understanding of food production, nutrition and health including:**
   - **how students have been engaged in an interdisciplinary or cross-curricular approach**
     - Kitchen garden activities in all schools have been linked by participating teachers to syllabus outcomes in all learning areas.
     - All students interviewed were able to recognise and articulate subjects that were linked to kitchen garden activities.
     - All students interviewed expressed positive comments about the program, stating they enjoyed participating in the activities and had developed a sense of pride and ownership as a result of the garden activities in the school.
     - According to all staff, students, parents and community members interviewed, the *Kitchen Garden Pilot* program works effectively in engaging students, particularly students with special needs.
   - **how teachers have included sustainability education in their teaching and learning programs**
     - Teachers who undertook the program have incorporated a wide range of sustainability education activities delivered across several syllabus areas. The topic areas of energy, waste, water, biodiversity and nature and climate change were evident in kitchen garden teaching programs.
     - Staff advised that sustainability education activities aligned with the kitchen garden programming.
2. **The extent to which the *Kitchen Garden Pilot* program has changed the knowledge, understanding and behaviour of students regarding healthy food choices**
   - According to teachers and parents, most students demonstrated a good knowledge and understanding about food - where it comes from and how to cook and prepare fresh foods from the garden.
   - According to teachers, students demonstrated understanding of the cycle of food production.
   - To some degree, students demonstrated healthier food choices.
   - Many staff perceived that the program contributed to the development of student leadership skills, with older students mentoring younger students about healthier food choices, and assisting with garden and kitchen activities.
3. **The identification of professional learning programs and other potential resources that would be needed to support future programs**
   - The majority of teachers see colleagues as the best resource and recommend that a network of schools be established for sharing ideas and resources.
   - Professional learning for all staff was seen as essential, with Environmental Education Centres currently seen as providing the most effective training programs.
   - Most teachers indicated that they relied heavily on resources obtained online, as well as units of work and introductory materials designed by other teachers in the school.
   - Teachers reported that they were accessing the Kitchen Gardens web page (NSW DEC, 2012), which provides a comprehensive range of resources and references to websites.
   - The Sustainable Schools NSW webpage (Office of Environment & Heritage, 2012) was highly recommended as a useful source of support.
4. **The effectiveness and sustainability of the *Kitchen Garden Pilot* program in relation to:**
   - **school resource capacity – human and financial**
     - The *Kitchen Garden Pilot* program was a government funded project. NSW CLIC allocated $40,000 to each of the nine pilot schools to construct garden beds and a kitchen facility, including the purchase of necessary equipment and resources, and professional learning for staff. School principals indicated that this amount was sufficient to ensure the setting up of an effective kitchen garden program irrespective of size.

- All schools adopted a 'phased' approach to implementation, starting with the garden and specific class groups. School staff agreed that a phased approach to implementation was effective.
- The majority of teachers prefer a model of implementation based on timetabled periods for class groups to work in the garden and in the kitchen.
- School principals and staff in all pilot schools were confident that the *Kitchen Garden Pilot* program has been, or will be embedded in school plans, and were enthusiastic about continuing the initiative.

- **professional learning activities**
  - Ensuring that all staff were involved in professional learning activities provided greater opportunities for maintaining the program and creating a whole-school commitment to the program.
  - Work Health and Safety training was undertaken by most staff and procedures were implemented in all pilot schools.

- **student resource needs**
  - The original funding provided sufficient financial capacity for the initial purchase of class sets of equipment for gardening and cooking activities.
  - Some schools identified the need to obtain additional funding from outside agencies, or from within existing school budgets, to ensure ongoing maintenance of the program. This was seen as particularly important for the purchase of additional food products that cannot be grown in the garden.

- **community participation**
  - Parent and community support for activities assisted teachers to implement the program and contributed to the achievement of student outcomes.
  - Involvement of parents and the local community is important to ensure support and ongoing regular maintenance of the garden, in addition to the provision of local cultural food ideas.
  - Parents and the community have the capacity to offer suggestions for different types of plants to grow and culturally diverse dishes to be made from the garden produce.
  - Smaller schools, in particular, relied heavily on parents and the community for assistance in construction, fund raising and direct support for activities with students.
  - Many teachers and principals reported that as a result of the *Kitchen Garden Pilot* program, students developed respect for community volunteers, and a greater respect for each other and the school.
  - As a flow on from their involvement in the *Kitchen Garden Pilot* program, parents and the local community have increased their support for and participation in school activities in general.

Effective Program Matrix (EPM)

In terms of gaining an overall impression of the effectiveness of the *Kitchen Garden Pilot* program, the evaluation team developed an effective program matrix identifying success factors as reported by students, school staff, parents and the local community, as shown in Table 1.1.

The matrix identifies effective outcomes of the program. It also identifies specific operational needs to ensure the program's success.

Kitchen Garden Pilot program: Effective Program Matrix

☼ Overall effectiveness

✓ Identified benefit

Table 1.1 Effective program matrix

Effectiveness of program	Very effective	Moderately effective	Slightly effective	Not at all effective
Individual student benefits	☼			
Student learning	✓			
Healthier food choices		✓		
Engagement of students	✓			
Classroom/ teacher benefits		☼		
Engagement of teachers			✓	
Linking of cross-curricular syllabus outcomes	✓			
Whole-school benefits	☼			
Community support	✓			
Community involvement	✓			
System provisions		☼		
Information support	✓			
Professional learning availability		✓		
Financial support (initial funding)	✓			
Financial support (ongoing funding)				✓

The evaluation found that to date, the *Kitchen Garden Pilot* program has been successful in achieving its aims.

The short time frame of one school year for the implementation of the pilot meant that some schools had not implemented a kitchen area for student use by the time the evaluation commenced. Consequently, the evaluators were unable to rigorously assess the effect of food preparation activities on healthy eating outcomes for students. Further evaluation is needed in the nine pilot schools over time, to ascertain the longer-term impact of kitchen garden programs.

There are a number of equally important factors that influenced the success of the *Kitchen Garden Pilot* program within the pilot schools. The following factors are seen as necessary for implementation of the program beyond the pilot:

- support from school leaders for the ongoing maintenance of the program
- whole-school involvement in the program
- nomination of a Kitchen Garden coordinator to support implementation across the school
- team approach to the establishment of the garden and kitchen, and ongoing decision making (rather than relying on a single expert)
- linking of syllabus outcomes to kitchen garden activities
- provision of ongoing professional learning for teachers
- equitable access to equipment and other resources for all classes
- community support and involvement in implementation
- incorporation into the School Environment Management Plan to ensure ongoing commitment to the program
- succession planning, including identification of ongoing program costs and funding sources.

Recommendations

The future of kitchen garden programs in NSW government schools will depend upon the availability of funding to build and maintain the garden and kitchen.

Successful implementation in classes will depend upon school staff, their enthusiasm and commitment to environmental and sustainability education, as well as support from the parents and local community.

Recommendations for schools

1. In order to ensure success when establishing a kitchen garden program, schools should consider the following:

- **Funding**

  Schools interested in establishing kitchen gardens will need to allocate appropriate funding to construct garden beds and a student-friendly kitchen. While the pilot funding covered the initial establishment costs of the kitchen garden program, schools identified the need to budget for additional ingredients which are not available from the garden.

  Recommendation 1.1: Schools need to consider the cost of establishment of the garden and kitchen facilities when identifying funding for a kitchen garden program.

- **Implementation**

  All pilot schools adopted a phased approach to implementation. This involved ensuring the garden construction was in place and operational before beginning work on establishing the kitchen. In addition, many of the pilot schools opted for implementing a class-phased approach, with Stage 3 students undertaking program activities prior to their mentoring and assisting with younger Stage groups.

  Recommendation 1.2: Schools should consider adopting a phased approach to implementation.

  All schools in the pilot had a kitchen garden coordinator, although this was not a requirement of the *Kitchen Garden Pilot program*. One school had two coordinators, with one being an executive member of staff.

  Recommendation 1.3: Schools should consider appointing a program coordinator to manage the program.

  Ensuring that all staff develop the knowledge and skills necessary to feel confident to lead kitchen garden class activities, was seen as vital to encouraging whole-school commitment to the program. Adopting an 'expert model', in one school, resulted in many staff feeling frustrated and lacking the necessary knowledge to effectively engage with the program.

  Recommendation 1.4: Schools should consider adopting a team approach where all staff feel involved.

- **Professional learning and resources**

  Environmental Education Centres and local councils were seen by teachers as organisations providing the best professional learning resources for school kitchen gardens.

  Recommendation 1.5: Teachers should consider the benefits of programming and activity support provided by organisations such as Environmental Education Centres.

  Online resources, particularly from the *Kitchen Gardens* and Sustainable Schools NSW websites, were also seen by teachers as useful in programming for their classes.

  Recommendation 1.6: Program coordinators should promote the *Kitchen Gardens* and *Sustainable Schools NSW* web pages as useful sources of online resources.

  Networking with colleagues was seen as the most effective type of professional learning, with teachers recommending that a kitchen garden online network should be established.

  Recommendation 1.7: Teachers should seek out other schools implementing kitchen garden programs with a view to creating a professional learning network.

2. In order to ensure success in sustaining the *Kitchen Garden* program, schools should consider the following:

- **Planning**
  Long-term planning for the kitchen garden program assists in maintaining the program beyond the pilot phase.
  Recommendation 2.1: The kitchen garden program should be linked to the school plan.

- **Budgeting**
  There are ongoing costs for resourcing both the kitchen and garden.
  Recommendation 2.2: School program budgeting must consider ongoing costs of program resourcing.

- **Professional learning**
  Teachers need to feel well-informed regarding kitchen garden activities and how best they can engage their students.
  Recommendation 2.3: Professional learning should be funded, ongoing and available for all staff to ensure effective implementation across all classes and stages.

- **Staff involvement**
  Teachers indicate a preference for school groups, including staff, students and the parent community, being responsible for program implementation, rather than one 'expert' facilitator.
  Recommendation 2.4: School groups need to be organised to encourage whole-school commitment to the program.

- **Parent and community involvement**
  Parent involvement in the program helps to ensure local needs are recognised and garden maintenance is in place during non-school hours (weekends and holidays).
  Recommendation 2.5: Schools should consider various strategies to involve the parent community in all aspects of the program, and in particular to help maintain the garden during non-school periods.

Recommendations for the Department

The success of the *Kitchen Garden Pilot* program in terms of student engagement, cross-curricular approaches, healthy food choices and environmental sustainability outcomes, indicates that there is merit in continuing this program under the umbrella of Sustainability Education, Early Learning and Primary Education.

- **Funding**
  Initial funding of $40,000 to each school was seen by principals as sufficient to set up a workable kitchen and garden.
  Recommendation 3.1: Schools that intend to implement a kitchen garden program may need support in developing a project plan. It is recommended that this support be coordinated by the Sustainability Advisor, Early Learning and Primary Education.

- **Implementation**
  Flexibility and a sense of ownership for school communities are vital to the success of the program.
  Recommendation 3.2: The program guidelines should continue to advise schools that the program design and implementation should be based on local needs.

- **Professional learning and resources**
  Professional learning suggestions as well as programming and resource ideas provided on both the Kitchen Gardens web page and the *Sustainability Education NSW* website are valued by teachers.
  Recommendation 3.3: These web pages should continue to provide support with updates made as required.

  Teachers recommended that a kitchen garden online network should be established.
  Recommendation 3.4: The Department should consider establishing an online network of kitchen garden schools with a view to creating a professional learning network.

- **Evaluation**
  The evaluation of the *Kitchen Garden Pilot* program occurred in the year following initial implementation. Evaluation of the program over time will provide greater insight into overall outcomes for both students and schools.
  Recommendation 3.5: Further evaluations should be undertaken in the nine pilot schools over time to ascertain the long-term impact of kitchen garden programs within schools.

Part 1 Introduction

This report is presented in three parts:

- Part 1 provides the background to the *Kitchen Garden Pilot* program evaluation.
- Part 2 details the findings and conclusions of the evaluation.
- Part 3 details the methodology used for the evaluation.

1 Evaluating the *Kitchen Garden Pilot* program

1.1 Policy context

In 2010, the Department of Premier and Cabinet (DPC) developed a proposal under the *Championing Childhood - A Better Start for Our Kids* initiative to fund a pilot of kitchen gardens in nine schools. The aim was to *"allow kids to grow, prepare and learn about healthy food from the ground up"* (Department of Premier and Cabinet, 2010).

In 2011, the NSW Curriculum and Learning Innovation Centre (NSW CLIC) took over the management of the pilot. They established and maintained the *NSW CLIC Kitchen Gardens* web page, and provided professional learning for teachers and learning resources for students.

In 2013, the *Kitchen Gardens Pilot* program management was transferred to the Early Learning and Primary Education Unit.

1.1.1 National initiatives

There are a number of school kitchen garden programs in each state in Australia, some connected to state or local government initiatives. Examples include the *Junior Landcare School Garden Grants* and the high-profile *Stephanie Alexander Kitchen Garden Program*.

1.1.2 Programs implemented in NSW schools

There is a range of school kitchen garden programs currently being delivered in NSW public schools, including:

- NSW government supported programs that promote fresh food, e.g. *Healthy Kids*
- programs supported by local government, e.g. *Ready, Set, Grow*
- school-developed programs, including those run collaboratively between schools and their communities and often supported by business e.g. Bunnings Warehouse
- community garden programs, often run by local councils e.g. Waverley Community Garden
- private programs, such as Teachers Mutual Bank grants, *Stephanie Alexander Kitchen Garden Program.*

Kitchen garden programs have been introduced in NSW schools with the support of the Public Health Association of Australia. Associate Professor Heather Yeatman (Blake, 2013) concludes that:

> *"We know from the kitchen garden program that children are more likely to eat fruit and vegetables if they have prepared them themselves and even more likely if they have grown it themselves."*

1.2 *Kitchen Garden Pilot* program in NSW Public Schools

The nine public primary schools involved in the *Kitchen Garden Pilot* program were identified through recommendations made by Environmental Education Centres (EECs).

Each school received $40,000 to build gardens, establish a kitchen, provide professional learning as needed and purchase necessary resources.

The criteria for expending funds were flexible, allowing schools to make financial decisions based on local needs. Schools were encouraged to promote student learning about how to grow a variety of vegetables, herbs and fruit, and then prepare the produce for the table. In so doing, students learn about healthy food choices.

In 2011, the nine schools undertook initial investigations, planning and garden establishment activities. A variety of implementation models were adopted depending on the needs of the individual school.

A detailed description of the *Kitchen Garden Pilot* program, including the different models adopted by schools is provided in Part 1, Section 2.

1.3 The purpose of the evaluation

It was a requirement of the program funding that an evaluation be conducted.

The evaluation considered the effectiveness of the different approaches to implementation of the *Kitchen Garden Pilot* program, and the impact on student learning. It explored changes to student knowledge of, and attitudes towards fresh foods, food production and preparation.

The evaluation also examined the professional learning activities available to staff, as well as resources used to enable teachers to achieve outcomes with their students. Advice is provided for schools about the development and implementation of a kitchen garden program.

1.4 Terms of Reference for the evaluation

The evaluation examined:

1. The extent to which schools have linked syllabus outcomes to student understanding of food production, nutrition and health including:
   - how students have been engaged in an interdisciplinary or cross-curricular approach
   - how teachers have included sustainability education in their teaching and learning programs.
2. The extent to which the NSW Public Schools *Kitchen Garden Pilot* program has changed the knowledge, understanding and behaviour of students regarding healthy food choices.
3. The identification of professional learning programs and other potential resources that would be needed to support future programs.
4. The effectiveness and sustainability of the NSW Public Schools *Kitchen Garden Pilot* program in relation to:
   - school resource capacity – human and financial
   - professional learning activities
   - student learning resource needs
   - community participation.

Section 2 of the report provides an overview of the program, including its goals and major features.

The details of the methodology used to address the Terms of Reference of the evaluation are included in Section 7 of this report.

The evaluation fieldwork instruments are included in Appendix 5, and online survey results are presented in Appendix 6.

1.5 Presentation of the evaluation findings

The evaluation findings are presented in Part 2 of the report in the following sections:

Section 3. Implementation
Section 4. Teacher perspectives
Section 5. Effects for students
Section 6. Impact in schools.

2 NSW Public Schools *Kitchen Garden Pilot* program details

This section provides an overview of the program and has been drawn from discussions with officers from the CLIC and from the *Sustainable Schools NSW* website (Office of Environment & Heritage, 2012).

2.1 Aims

The NSW Public Schools *Kitchen Garden Pilot* program aims to:

- encourage children to grow, prepare and learn about healthy food from the ground up
- improve the fresh food knowledge, eating habits and food choices of young people, and the resulting health benefits
- ensure that students learn how to grow a variety of fruit and vegetables and prepare the produce for the table by using healthy cooking methods
- assist in the expansion of environmental education opportunities in schools by including program activities within existing curriculum learning areas and syllabus requirements.

2.2 Background

Nine primary schools were nominated to establish a kitchen garden program, with each given a grant of $40,000. The grant was to be used to build (or extend) gardens and provide kitchen facilities to allow students to grow vegetables and herbs, prepare a variety of food items and learn about healthy eating.

NSW CLIC provided initial background information, program support, online resources and advice, as and when required, to the nominated schools.

As part of the *Kitchen Garden Pilot* program, teaching staff were required to undertake professional learning, including an introductory video conference organised by NSW CLIC.

Teachers developed classroom programs with teaching and learning activities which addressed NSW syllabus outcomes for K-6, and, where possible, made cross-curricular links.

The *Kitchen Garden Pilot* program in NSW Public Schools aligns with:

- individual School Environmental Management Plans (SEMP) as mandated by the Department's Environmental Education Policy for Schools (Department of Education and Communities (DEC), 2006)
- sustainability education, which includes an understanding of issues, and the development of skills, in relation to the environment and sustainability
- healthy lifestyle choices.

2.3 Features of the NSW Public Schools *Kitchen Garden Pilot* program

In order to develop improved knowledge of food production and preparation in a school setting, the program aimed to support schools to:

- establish a school food garden and kitchen facility in the nine nominated schools
- link the program to curriculum outcomes.

The NSW CLIC aimed to provide:

- ongoing advice for best practice in the context of the school garden and kitchen
- an evaluation of the program with recommendations that could maximize the successful participation of schools in future kitchen garden programs.

2.4 Previous kitchen garden evaluations

NSW CLIC reviewed and drew on a number of evaluations of school-based kitchen garden programs, both nationally and internationally to inform the development of the Kitchen Garden Pilot program. These included:

- *Stephanie Alexander Kitchen Garden Program*
  An evaluation of the *Stephanie Alexander Kitchen Garden Program* was undertaken jointly by Deakin University and the University of Melbourne, between 2007 and 2009. The findings indicate that the Stephanie Alexander Kitchen Garden Program encourages positive health behaviour changes in participating students. The evaluation also found that there was a transfer of benefits to the home and the broader community (Block, 2009).

- *Gardening in Schools, Royal Horticultural Society* (United Kingdom)
  In 2010, the Royal Horticultural Society in the United Kingdom published the report ***Gardening in Schools – A vital tool for children's learning*** (Royal Horticultural Society, 2010). The Society surveyed over 1,300 teachers and conducted an in-depth study of 10 diverse schools ranging from large, urban primary schools to small village schools. The evaluation found that gardening in schools encourages children to be active learners, capable of thinking independently and adapting their skills and knowledge to new challenges in the future. It also found that children embraced a healthier, more active lifestyle, and understood that this was important for success at school and beyond.

- *Revisiting garden-based learning in basic education,* United Nations
  A report commissioned by the United Nations in 2004, Revisiting garden-based learning in basic education (Desmond, Grieshop, & Subramaniam, 2004), examined the effectiveness of garden-based learning in education globally. They found that garden-based learning appears to offer an effective strategy for basic education and sustainable development in any socio-economic setting.

Part 2 Evaluation findings

The following sections present the findings of the program evaluation, organised in terms of the priority areas identified in the evaluation's Terms of Reference and in response to issues that emerged through the data collection.

3 Implementation

This section provides information about the type of schools involved in the pilot, the models that schools adopted, how they approached the design of both the garden and kitchen, and how they provided access for students and classes. Implementation timelines are also included.

Key findings

- **School staff agreed that a phased approach to implementation was most effective.**
- **Involvement of parents and the local community is seen as important in ensuring support and ongoing regular maintenance of the garden, in addition to the provision of localised cultural food ideas.**
- **Ensuring all staff were involved in professional learning activities regarding kitchen gardens, provided greater opportunities for maintaining the program and creating a whole-school commitment to the program.**

Nine schools were involved in the implementation of the *Kitchen Garden Pilot* program. All schools are located in the Sydney metropolitan area. Schools varied in size from small P5 schools (with 26-159 students) to larger P2 (451-700 students) schools. Some schools are located in the inner city area, others located in surrounding suburban areas. Location and size played a part in terms of organisation of personnel and implementation time frame.

Schools were encouraged to develop the *Kitchen Garden Pilot* project in whatever way suited their local needs, responding to the:

- establishment or improvement of school gardens for growing fresh produce
- building or repurposing, and equipping, of a kitchen facility
- preparedness of their teaching staff, students and school community
- availability of professional learning opportunities.

The evaluation found that each school followed this advice and developed their kitchen gardens in line with resources initially held by the school. Some schools had a pre-existing garden. One school had access to a high school food technology kitchen.

Across the nine schools, a number of common features were apparent in the ways that they:

- developed the garden and kitchen
- introduced the program to classes within the school
- involved the community
- ensured the program was embedded in the curriculum.

These features will be explained in more detail in the following sections.

3.1 Funding

The nine pilot schools were each given a grant of $40,000 to establish an edible garden and working kitchen.

At the time of the evaluation, most schools had not expended the full funding. Some schools had yet to establish a fully operational kitchen area for use by students due to construction timelines.

Schools budgeted according to local needs. Principals and coordinators commented that the $40,000 was sufficient to establish the program. Resourcing both the garden and kitchen areas will be examined in sections 3.3.2 and 3.4.2.

An example of a school kitchen garden program budget can be seen in Appendix 2a. General costs associated with resourcing can be seen at Appendix 2b and 2c.

3.2 Models

A variety of approaches to implementation were used in the nine schools. These fell into three categories:

- a team approach (a committee formed with specific roles and responsibilities)
- an expert facilitator model (with a staff member employed specifically to lead the program using outside funding)
- a community-based model (sharing the garden with the local community).

Kitchen Garden Pilot **schools**

For evaluation report purposes, schools will be referred to as follows in Table 3.1.

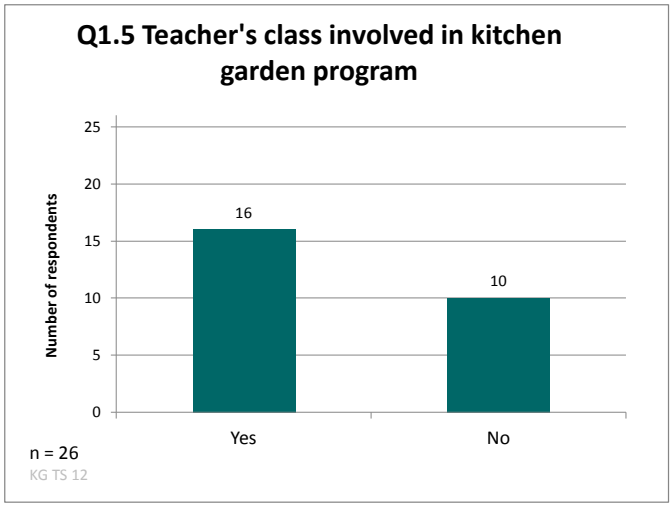
Table 3.1 NSW Public Schools involved in the Kitchen Garden Pilot

Description (all nine are Sydney metropolitan schools)	Model used (as described in section 3.2
Medium size, inner city school	Community
Medium size, suburban school	Community
Medium size, suburban school	Expert
Small, suburban school	Expert
Small, inner city school	Team
Small, inner city school	Team
Small, suburban school	Team
Large, suburban school	Team
Large, suburban school	Team

The majority of pilot schools adopted a phased approach to implementation. A number of principals indicated that it had been decided to implement the program across the school in staged phases. This often meant that not all staff, nor all classes, were involved in the pilot stage of the program; however, future planning indicates all staff and all classes in the pilot schools will be involved in future phases.

Of the 26 teacher survey respondents, 16 indicated their class was currently involved in the Kitchen Garden Pilot program at their school, as seen in Figure 3.1. The other 10 respondents had a vested interest in the program. They may have had classes that had not been included in the early implementation phase, or may have been part of the teaching executive without a class of their own.

Figure 3.1 Class groups involved in the Kitchen Garden Pilot program



The phased approach also featured logical sequencing starting with garden construction and use. The construction of a kitchen followed, providing opportunities for the students to learn how to use the produce in cooking. One principal of a small, inner city school justified the phased approach as follows:

> *"As a small school of just under 100 students, with four classes, no executive and a staff of only 6, including a part-time general assistant (one day per week), we decided upfront to manage the program in small practical phases to ensure success."*

Regardless of model, all schools had a kitchen garden coordinator. One school had two coordinators, one teacher for programming, and an executive staff member for extra-curricular events.

3.2.1 Team approach

Five of the nine schools opted for the team approach. Team members varied, as did their roles and responsibilities within each school. Some teams consisted of teachers only, while others included the community and one included students.

The team approach was seen as a positive for staff in terms of involving all school stakeholders. A teacher at one of these schools commented that the kitchen garden was:

> *"...a real highlight of the school and its community. It has enabled plenty of partnerships and connections with students, teachers, parents and community."*

One of the larger schools formed a committee of both teaching and administrative staff. Each member of the team had a specific role to play, drawing on their expertise in the development and implementation of the *Kitchen Garden Pilot* program. These roles included responsibilities for:

- overseeing the physical build of the garden and kitchen
- ensuring the program kept on budget and within the timeline set
- communicating with other school staff and the local community to encourage involvement
- locating or creating teaching resources to support the program.

One committee member from this school commented:

> *"I probably would not have gone into this with the same enthusiasm if not for the enthusiasm of the other team members."*

This enthusiasm transferred to all teaching staff and, as stated by one committee member:

> *"...there is friendly competition between the teachers to become involved in the project."*

Committee members from this school felt that, integral to their success as a team, was the strong support from the principal. The principal confirmed this by stating:

> *"Other competing priorities might have got in the way, but my job was to support them."*

At one of the smaller schools with only six teaching staff, full staff agreement was required before any of the funding was spent. This was designed to ensure all staff members knew what was happening and felt part of the decision-making.

3.2.2 Expert facilitator

Two schools adopted an expert approach, designating a specialist to run the program by facilitating lessons for the classes of the other teachers.

At one of the medium-sized, suburban schools, students and staff from across the school worked with the kitchen garden coordinator (KGC) in the garden and kitchen for one term each year. The activities and lessons undertaken depended on the stage of students. The principal indicated classes were organised as follows:

> *"The KGC takes each class for the term, once a week, whilst the classroom teacher takes his students, delivering CAPA, sport and science lessons as a 'swap'. Class teachers [are] released to watch the work being done with their class twice in their designated term to aim for ongoing up-skilling of all staff."*

Teachers met with the kitchen garden coordinator at the start of each term to decide which aspects of units were suitable for the coordinator to deliver and which would be supported in class by class teachers. The principal indicated that they had two coordinators: one to work with classes and one to identify and organise upcoming events, parent volunteers and working bees.

Stage-based executive took responsibility for watering rosters. A staff member worked with the garden club during lunchtimes. The chaplain worked with students and parents on gardening and cooking projects and the canteen coordinator worked with staff to obtain produce for student lunches.

The implementation in this school has the characteristics of the expert facilitator model; however the other teaching staff and school community members play a vital role in the planning and delivery of activities.

One of the smaller schools adopted an approach similar to the *Stephanie Alexander Kitchen Garden Program* model, employing a kitchen garden coordinator, after obtaining additional funding from an industry partner. The principal at the time had made the decision that the small numbers of teachers in the school did not have the interest nor capacity to get the program up and running. A casual teacher with training in food technology and an enthusiasm for gardening was employed on a 'relief from face to face' basis to ensure all students across the school would gain some experience with the *Kitchen Garden Pilot* program.

While the coordinator was seen by the community as *"...the glue that keeps the garden kicking over"* a number of issues became evident throughout the course of the interviews with other stakeholders.

These issues included:

- the role of the classroom teacher in facilitating the program
- a common understanding of the role of the kitchen garden coordinator
- succession planning (when funding is no longer available)

- the knowledge base of the kitchen garden coordinator – no sharing of expertise and contacts
- a lack of routine in scheduling kitchen and garden activities
- access to the garden when the kitchen garden coordinator was unavailable (the garden was fenced and locked).

It was generally felt by teachers that, while important and a great way to start the program, having a designated kitchen garden expert failed to extend their knowledge base and prevented them from full involvement in the program.

3.2.3 Community-based

Two schools identified their kitchen garden as being a community-based garden. Both gardens were established before funding for the *Kitchen Garden Pilot* program became available. The additional funding provided by the pilot enabled the schools to extend the garden and, importantly, to establish a kitchen.

The principal of the medium-sized, inner city school explained that the teaching staff were using the garden more now because of the facilities established through the *Kitchen Garden Pilot* program, but that the garden itself has always been a community garden.

As a consequence of the program funding, the staff felt the need to ensure that there was increased involvement for teachers and students. School staff organised a Sustainability Student Representative Council (SSRC) with representatives from each class and a teacher representative to coordinate activities in relation to the garden. One teacher stated:

> *"Students are responsible for areas of the kitchen garden, they also plant, grow and harvest food and are engaged in selling food in a garden stall."*

Kitchen activities at this school, however, are facilitated by classroom teachers and the community has little involvement in this part of the program.

Similar to the inner city school with the community garden, the community at the medium-sized, suburban school were involved in the garden on a regular basis. They participated in planting, harvesting and maintaining. Their only involvement in the kitchen, however, was through volunteering for Breakfast Club three mornings per week.

3.3 The garden

Designs for the garden varied, with most schools opting for an above ground structure to ensure easy access for all students.

Factors influencing the garden location included:

- available space within the school grounds
- a pre-existing garden
- ensuring the site received enough sun for the vegetables
- access for the school community
- being close to other gardens and away from main classrooms
- access for watering and maintaining the garden
- visibility to the community.

Two schools felt it was vital to keep the garden visible to all. One school opted for a position near the school car park, the other chose close to the front entrance of the school.

3.3.1 Design

One small, inner city school surveyed parents and determined that a landscape designer would be employed to scope the project and install the garden. The principal discussed the best height and width for garden beds and stressed the need for easy access for all students. Seating for students was also seen as necessary to the design. The completed garden had raised wooden beds, with a lip for bench seating and an irrigation system, as can be seen in Figure 3.2.

Figure 3.2 Raised wooden beds

Raised wooden beds with a wide lip are used to provide student seating.

One of the large, suburban schools involved students in the design of the garden. Students from Years 5 and 6 used *Google SketchUp* to plot and design the layout of the garden beds. Initially eight garden beds were installed; however they found the corrugated iron frames to be too high for easy access and so they halved them to create enough beds for each class as shown in Figure 3.3.

Figure 3.3 Raised metal beds

The height of the metal garden beds was eventually halved to aid student access.

They labelled each bed with the class name to establish a connection and promote ownership as seen in Figure 3.4.

Figure 3.4 Labelling beds

Each garden bed is allocated to a specific class.

One of the team members at this school commented that,

"We did it all together at first, but now I think it is better if they have their own area to look after – nurture."

The model of designating specific beds for individual classes was used by most schools, either from the outset, or when it became apparent that expecting students to assume responsibility for the garden beds in general, was not effective.

One small, suburban school provided a student section and a community section in their garden. During the holidays, the parents tend to the garden and use any produce they want.

Most gardens are seen as an outdoor learning space. One of the small, inner city schools with minimal land space, utilised sandstone blocks excavated from the site as benches for seating, clustered around an old chalkboard situated within close proximity to the garden. The area was seen by students as a learning space and a place to relax and play during lunchtime.

Two other small schools decided not to have any garden fence boundaries so that students could access the garden whenever they wanted to visit. The kitchen garden was seen as part of the school playground by both teachers and students.

All schools either had an operating worm farm and compost heap or were in the process of establishing them. One of the large schools is planning a greenhouse so the students can grow their own seedlings. In most schools visited, there was an area where seedlings were being maintained, usually situated in each classroom.

One of the small, inner city schools was the only school in the *Kitchen Garden Pilot* program which extended the concept of sustainability to keeping chickens. While also providing fresh eggs for use in the kitchen, keeping chickens has many benefits, including:

- the reduction of kitchen and food waste
- their scratching turns over compost and aerates the soil
- a reduction in the number of insects and bugs
- chicken manure which is an excellent fertiliser.

3.3.2 Garden resources

All schools visited, maintained material resources necessary for the effective operation of the *Kitchen Garden Pilot* program. Lists of necessary resources were provided by NSW CLIC. Staff in the schools visited indicated that they had used funding to purchase resources from local hardware companies.

At most schools visited, students were seen wearing gloves and hats. Schools had used the funding provided to purchase class sets of gloves, as well as a number of gardening implements for student use such as spades, watering cans, vegetable wash tubs and cutting implements.

In line with sustainability education, schools are using worm farms, compost bins and water tanks to ensure the successful maintenance of their gardens. One kitchen garden coordinator recommended that tumble compost bins are much more effective and safer than the dug-in plastic bins, particularly in high winds. She also advised that tumble bins are easier for the students to handle, and do not require the necessity of a pitch fork to turn the composting material.

Scarecrows and plant labelling were constructed by students at many schools visited, adding to the local school culture and providing a sense of ownership for students.

An example of costs associated with building and resourcing an edible garden area are provided in Appendix 2b.

3.3.3 Produce

The timeframe for receiving the grant (Term 4, 2011) meant that most of the term was spent planning for the implementation of the program. One school, however, decided on an "early start" by planting a quick crop of carrots and cherry tomatoes to be harvested before the end of the school year *"to make it look good".*

Gardens were planted out with:

- herbs
- vegetables
- fruit trees
- bush tucker
- companion flowering plants.

One of the small, inner city schools with space limitations used every available growing space. Bromeliads, succulents and cuttings from the students' gardens were used effectively to show how plants can grow in the shade, in water and even in recycled toys as seen in Figure 3.5.

Generally the produce harvested in the pilot schools was either used in the kitchen as part of the *Kitchen Garden Pilot* program or eaten by students "on the go". One school sold excess produce to the parents, while another sent produce home with the students. One teacher commented that:

> *"They take produce home and tell me (teacher) that mum cooked with it."*

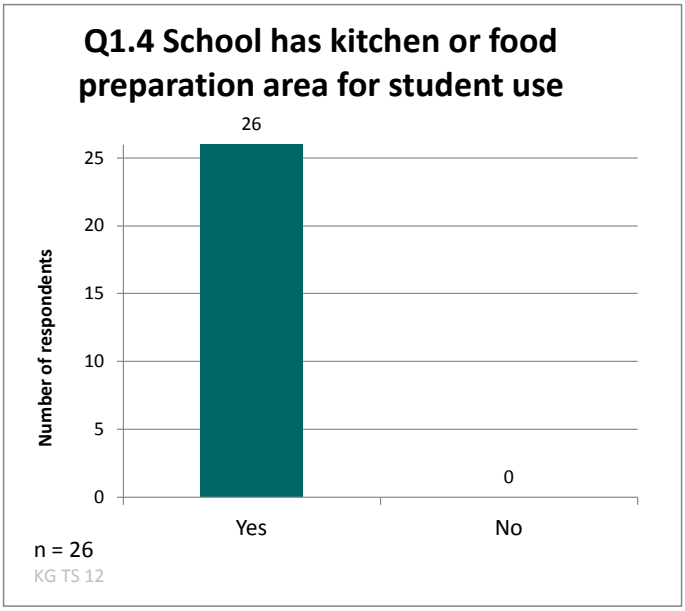
Figure 3.5 Recycled toys used as pots

Broken and unwanted toys are used by Kindergarten students as pots for their garden.

3.4 The kitchen

There was a greater variation in the design and implementation of the kitchen component of the program. Generally the kitchen was last to be developed. All pilot schools had access to a kitchen or food preparation area, as seen in Figure 3.6.

Figure 3.6 Schools with a kitchen or food preparation area



The design, location and set-up of the kitchen was driven by the local needs of each school.

Location for the kitchen was determined by available space. Schools utilised:

- unoccupied classrooms
- staff rooms
- the kitchen attached to the school's pre-school
- the neighbouring high school's food preparation areas when available
- demountable accommodation
- a 're-invention' of the old school canteen, as shown in Figure 3.7.

Figure 3.7 Kitchen construction in progress

The old school canteen being refurbished as a working kitchen for classes for the *Kitchen Garden Pilot* program.

3.4.1 Design

The kitchen design not only depended upon the space available in each school, but also expertise in planning and construction. At one school, the kitchen was designed by an architect, who happened to be a parent at the school. At another school, the kitchen was designed and built by two staff members with expertise in renovations. A number of schools were utilising staff room areas for food preparation until their kitchen area is established.

The kitchen appeared to be the major area of expense for schools, not only in terms of space and whitegoods but also in terms of class sets of food preparation equipment.

Some schools used funding sources to build a self-contained kitchen area that can be used by students as well as staff. Group working areas, with a demonstration area incorporated for the teacher, were seen by staff as the best model for teaching and learning.

Kitchen set ups included:

- a purpose built kitchen with workstations (tables) and teacher workstation (bench in kitchen area) and a separate dining and wash up area
- a four burner stove and mobile set of resources including two mini pizza ovens, electric wok and a mini bar fridge stored nearby, as well as class sets of plates, bowls, breadboards and utensils. (The kitchen was situated in the staff room.)
- a three bay stainless steel kitchen
- planned future expansion of angled mirrors behind the main teacher bench for observing demonstrations and an interactive white board.

3.4.2 Kitchen resources

The kitchen equipment needed for food preparation depends on the kitchen area available. In addition to major white goods, kitchen utensils were often organised in bundles for groups to work with. A teacher at one school described the introduction to kitchen utensils by opening up the cupboards and then talking about each piece of equipment.

An example of costs associated with resourcing a kitchen or food preparation area are provided in Appendix 2c.

3.5 Access and timetabling

While all schools have a garden and food preparation area for student use, in two of the schools not all classes were participating at the time of the evaluation. All pilot schools indicated the intention of including all classes as the program developed.

In most schools, staff interest in gardening and cooking was the key factor in choosing a kitchen garden coordinator. In turn, this influenced which staff and classes would be engaged in the pilot program.

The model of implementation also impacted on access to the garden or kitchen. One school using the 'expert model', encountered access problems due to difficulties locating keys. One teacher commented that:

> *"We can have access to the garden and kitchen, but I don't have keys yet."*

Classes in each model had greater access to the garden than the kitchen. In most instances this was accentuated by the late establishment of the kitchen, though generally teachers expressed an eagerness to start using the kitchen with their students when it became available.

In one 'expert model' school, it was unclear how classes could use the kitchen for activities other than those run by the coordinator.

According to one staff member, students were only able to access the kitchen or the garden when the expert facilitator took the class, or groups of students. There was no timetable or regular schedule of lessons. One teacher at the school stated that:

> *"I haven't taken the kids in yet, because of the uncertainty of the roles."*

Several schools allowed students to access the garden during break times. One teacher explained that not having a fenced boundary to the garden permitted access by anyone at any time. A parent at one of the schools indicated that this open access was positive for students, stating:

> *"The garden is a great place for the kids to meditate and relax 'Chill out' or 'CHILLAX' in the garden area - especially for kids that struggle or who have special needs."*

The students confirmed that they could visit the garden at any time.

At another school the students indicated that they go to the garden every day for 10-20 minutes, but they would prefer to go for half an hour.

Working in the garden is seasonal, according to some teachers, with most produce being planted at the beginning of spring and harvested at the end of Term 4. At one of the small, suburban schools, the program, including timetabling of classes into groups, was arranged to include rotational activities. Stage teachers found that the buddy system of pairing and timetabling primary classes with infants classes worked well in promoting mentoring and leadership skills.

A teacher at one of the small, suburban schools, indicated that the garden is sometimes used for time-out. Another school allows extra access to students as part of the reward system. At another school, a gardening club runs on Friday afternoons after lunch for a maximum of 10 students. Several schools created the garden area as an outdoor learning space for a range of curricular activities.

Several principals indicated that parents and the community are able to access the garden areas outside school hours. The Parents and Citizens Association at one of the inner city schools hold keys for the garden area. The parents work on the garden on the weekends, often with their children.

No pilot schools granted access to the kitchen area outside school hours, although two schools mentioned that the community often have barbeques on the weekend using produce from the garden. This activity, according to principals, helped encourage community involvement.

4 Teacher perspectives

In this section, the focus is on teachers' experiences with professional learning, cross-curricular program delivery, making it work in their particular classes and school settings, and the effects it had on their own practice.

Key findings

- **Professional learning for all staff was seen as essential in schools, with the Royal Botanic Gardens and Environmental Education Centres providing effective and connected training programs.**
- **Colleagues were valued by teachers as a resource for planning and programming.**
- **The Kitchen Gardens website provides a comprehensive range of information, resources and websites.**
- **Work Health and Safety procedures were implemented in all pilot schools.**
- **All kitchen garden activities have been effectively linked to cross-curricular and syllabus outcomes.**
- **Parent and community support assisted teachers in implementing the program and achieving outcomes for their students.**

4.1 Professional learning

This section examines teacher perceptions of the effectiveness of professional learning activities recommended by the NSW CLIC and the *Sustainable Schools NSW* website. Teachers identified effective professional learning activities as well as recommending areas that would have been beneficial to their understanding of a kitchen garden program.

At the time of the initial funding to the nine pilot schools, there was limited teacher capacity to effectively implement the *Kitchen Garden Pilot* program. As stated by one teacher:

> *"[I] haven't done any gardening with kids before. I've chopped fruit, and demonstrated making sandwiches. It is all very new to me, very exciting, but new."*

The number of teachers in each of the pilot schools varied from five to 50. Most schools, therefore, relied heavily on the available expertise of parents and the local community, as well as on support and training suggestions provided by the NSW CLIC.

In one school visited, the 'expert model' adopted was seen as efficient at the beginning of the pilot. Additional funding was provided by a local business to employ a full time kitchen garden coordinator as well as providing funding for the coordinator to attend two *Stephanie Alexander Kitchen Garden Program* training modules. During the implementation, however, it became clear to the principal and other staff members that this 'expert' approach to professional learning was not sustainable. Relying on the knowledge of one person led to staff feeling disempowered and lacking the necessary skills to independently program for their classes.

4.1.1 Effective professional learning

Throughout the course of the evaluation, teachers identified a number of professional development experiences that they had found useful in programming for kitchen garden activities, including:

- the NSW CLIC introductory video conference
- formal professional learning programs from organisations such as the Botanic Gardens and Environmental Education Centres
- in-school training provided by the kitchen garden coordinator, other staff, parents and the community
- networking with other schools participating in the *Kitchen Garden Pilot* program
- Work Health and Safety guidelines
- numerous websites.

Introductory video conference

Initial background training was provided through a video conference. This covered theoretical aspects of the program such as delivery across learning areas, and practical suggestions such as best use of garden plots. Most teachers who attended the video conference indicated that this was a good introduction. One teacher, however, commented that they *"did not get enough information to follow through".*

Formal professional learning

Formal professional learning based around school kitchen gardens included any activity that was organised by outside agencies as well as in-school training by more qualified colleagues. The majority of teachers indicated in interviews and survey responses that they undertook such training.

Teachers indicated that sustainability and environmental organisations, including the Royal Botanic Gardens and EEC's, provided the most effective professional learning related to garden design, cross-curricular approaches, and sustainability education.

The Royal Botanic Gardens was mentioned by a number of teachers as providing *"excellent"* professional learning in biodiversity and sustainability. One school principal indicated she had initially sent one teacher in 2011, and had sent four staff members in 2012.

The Royal Botanic Gardens also provides excursion events for pre-school to Year 12 classes, including lessons about the environment, bush foods, garden animals and insects, the life cycle of plants, and garden design. Each lesson is linked to syllabus outcomes. Teachers indicated that they gained much valuable programming information from the excursion activities.

Environmental Education Centres were also referred to by teachers as organisations useful in providing teacher professional learning and student-based excursions on sustainability and biodiversity. The staff at a number of schools commented on the strong links they had developed with their local EECs. In one area, schools organised for all K-6 teachers and executive staff to attend professional learning at the EEC.

Other agencies that provided professional learning support included local councils, universities and TAFE colleges. Many local councils deliver regular community workshop sessions about kitchen gardens and sustainability, and some school staff attended these activities outside school hours. The staff at one of the large, suburban schools stated that they had benefited from their involvement in a university research project about student engagement and outdoor activities.

Teachers indicated that they relied heavily on online resources for enhancing their professional knowledge. One school recommended *The Clever Kid Health & Wellbeing Program* (Circles of Learning, 2013) as a comprehensive teaching and learning resource. This program aims to encourage healthy eating through creation of an organic vegetable garden. It links the growth and nurturing of plants to the growth and nurturing of students themselves. It is a hands-on, full term program packaged for schools to self-manage with their own people as trained facilitators. The cost of the program in 2013 was $1290. Schools in Sydney's eastern suburbs, Balmain or Glebe areas, may be eligible to receive the program for free.

Parents and community members were also mentioned by a number of school staff as providing valuable information and advice on choice of garden produce and food preparation techniques. The community garden coordinator of one school, for example, stated that they were:

> *"... lucky to have a full time TAFE horticulturalist as a parent, and a parent who works in a garden/landscape outlet."*

The principal of one of the small, inner city schools stated that they had formed a good relationship with the members of the local community garden. The school was provided with local garden knowledge through a community garden member who visited the school once a week for garden sessions with students.

Parent and community involvement in the *Kitchen Garden Pilot* program will be discussed in more detail in section 6 of the report: Impact in schools.

In-school training

Limited funding meant that in most schools only the kitchen garden coordinator was formally trained in order to efficiently provide in-school training for the other staff.

The principal of one of the large, suburban schools remarked that although the funding for professional learning was limited, the staff tried to put it to the best use possible. In-school training on professional development days and during staff meetings was undertaken by most staff in most schools. This was seen by principals as an effective means to ensure that all staff have the necessary knowledge to implement the program.

The principal of another school stated that:

> *"[The coordinating teacher] does the professional learning with staff, so all the staff have the knowledge and can implement, rather than just one person."*

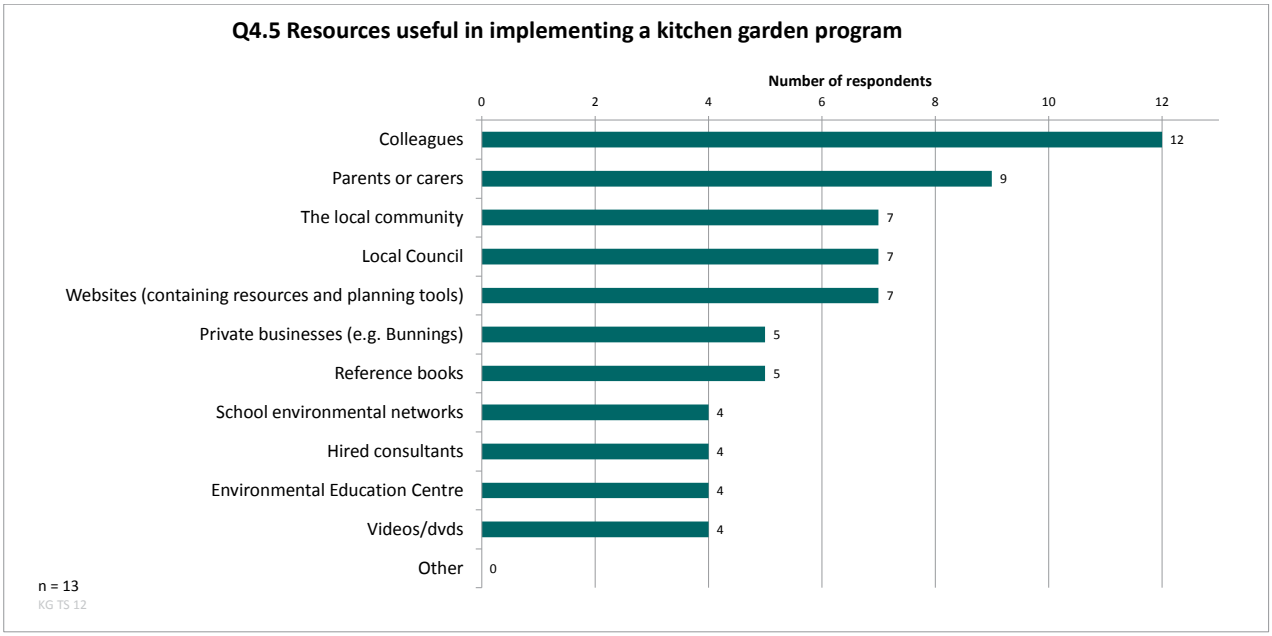
The principal of one of the small, inner city schools stated that because of the high turnover of staff each year, they have an induction for new staff each year and stress the importance of the garden to the school.

Teachers receiving in-school training commented that they learned much from the information provided by the coordinator and from the shared knowledge of their colleagues. One teacher, as an example, commented that she had undertaken three in-school workshops relating to planning a garden, composting and worm farming.

A team member of one of the large, suburban schools was able to provide evidence of an in-school professional learning resource created by a team member. She advised that each grade has a copy of the 'how to' book for the garden to guide their programming. This booklet will be made available on the Kitchen Gardens web page (DEC, 2012).

Staff surveyed indicated that the most valuable resource was colleagues, as can be seen in Figure 4.1, followed closely by parents and the community. Where people were passionate about the garden or food preparation, teachers learned many skills through observation and sharing knowledge.

Figure 4.1 Useful resources identified by teachers in implementing a kitchen garden program



Other schools with kitchen gardens

Networking with other schools was recommended by a number of teachers in both interviews and survey responses. The staff at one school had been involved in a number of visits to *"a whole lot of gardens [at other schools] to get some ideas"*. Many teachers commented that this kind of networking would provide ideas for effective teaching strategies as well as indications as to best practice and program planning.

Two of the schools visited, adopted this approach within their professional learning plans. One of the schools acknowledged the help of two other public schools in their area which had already implemented a kitchen garden program. One of the team members indicated:

> *"What would be good is schools sharing what they have done; this is what we do at our school."*

A number of other schools indicated they had plans to connect with other schools in their area that were running successful kitchen garden activities such as seed saving, bush tucker, and fresh food recipes.

Work Health and Safety

Staff in each pilot school saw the need to ensure that all Work Health and Safety (WHS) requirements were met.

It was pointed out by the teacher during a food preparation observation that it was important to ensure that:

> *"All the chemicals were placed in a safe place [locked away] and knives placed on a high shelf locked cupboard."*

The principal noted that where pesticides were required every attempt was made to use organic rather than chemical controls.

At one of the large, suburban schools where the 'team model' was adopted, all staff had undertaken WHS training.

The principal of one of the inner city schools advised that:

> *"No kid works alone in the garden due to OH&S and child protection issues."*

Staff at this school provided WHS training and behaviour management strategies for parents to assist them during weekend work parties.

It was observed that Stage 1 students used less sharp implements than Stages 2 and 3. In most schools, teachers were confident that students had the necessary skills to use all kitchen implements if shown their proper use and taught proper safety. In only one school visited students were not permitted to use sharp knives. The coordinator stated that:

> *"When it comes to using the knife, I always wrap it up in a tea towel and only have it out when it is needed. Students don't use the sharp knife."*

There were a small number of teachers who felt less comfortable with WHS procedures. Where the 'expert model' had been adopted, one teacher commented that:

> *"Teachers are not confident with basic kitchen rules, OHS issues, understanding of the equipment and becoming familiar with the equipment."*

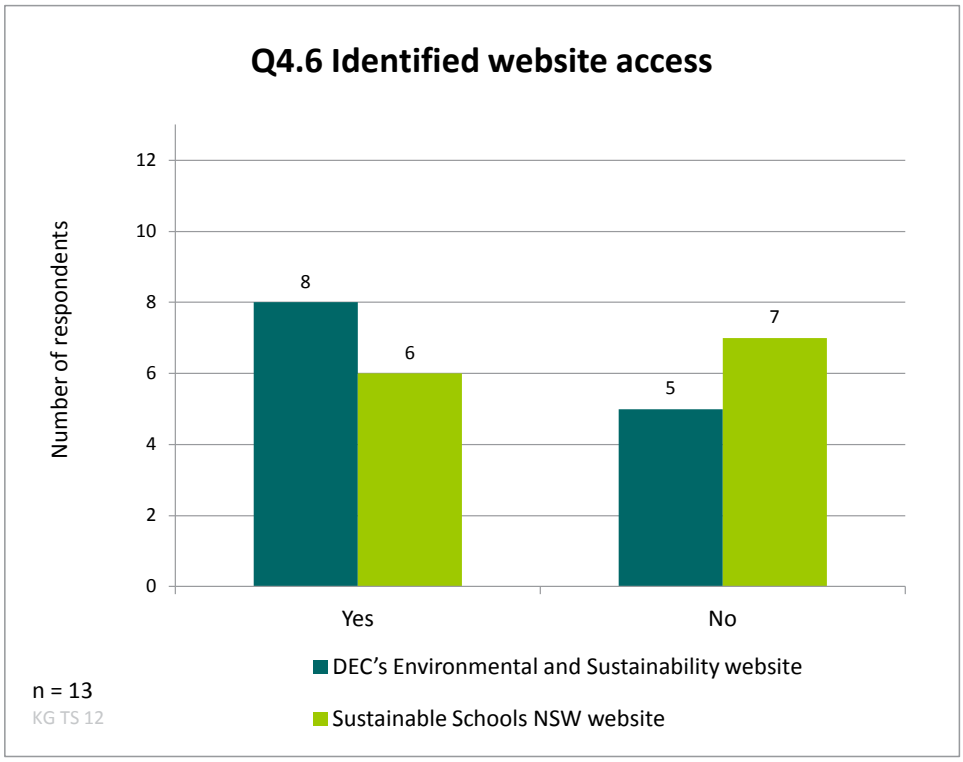
Access to websites

Teachers in pilot schools were issued with a list of websites that provide a variety of resources. Two particular websites were recommended:

- *Environmental Education* (NSW Curriculum and Learning Innovation Centre, 2012)
- *Sustainable Schools* NSW (Office of Environment & Heritage, 2012).

Survey responses from teachers indicate that eight out of 13 staff accessed the Environmental Education website and six accessed the Sustainable Schools NSW website, as shown in Figure 4.2.

Figure 4.2 Identified websites accessed by teachers



Throughout the course of the evaluation, the Sustainable Schools NSW web page was continually updated as a result of teacher feedback and suggestions.

During the evaluation, the NSW CLIC launched the *Kitchen Gardens* web page for schools providing links to school stories. Figure 4.3.shows the home page.

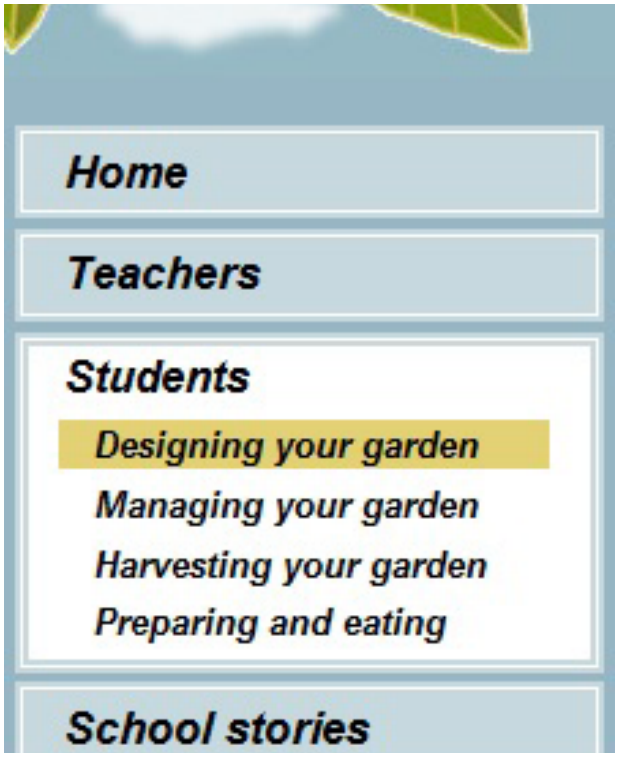
Figure 4.3 Kitchen Gardens web page

On this website, teachers may access information regarding:

- learning resources
- syllabus links
- policy advice
- programs
- funding
- research
- submissions.

Students are provided with information on how to design, manage and harvest the garden as well as preparing food in healthy ways, as seen in Figure 4.4.

Figure 4.4 Student web links



In addition to the *Sustainable Schools* web page which provides teachers with numerous links to professional learning and resources, a number of teachers recommended:

- ABC Gardening Australia
- Board of Studies NSW
- *Stephanie Alexander Kitchen Garden Program*
- Australian Association for Environmental Education.
-
- The *Sydney Markets* website and Youtube were also mentioned as providing a number of good resources.

A list of useful websites for teachers can be seen in the references section of this report.

Many teachers advised that they had accessed numerous websites, nationally and internationally, to gain information on garden and kitchen related activities with links to different learning areas.

4.1.2 Future professional learning needs

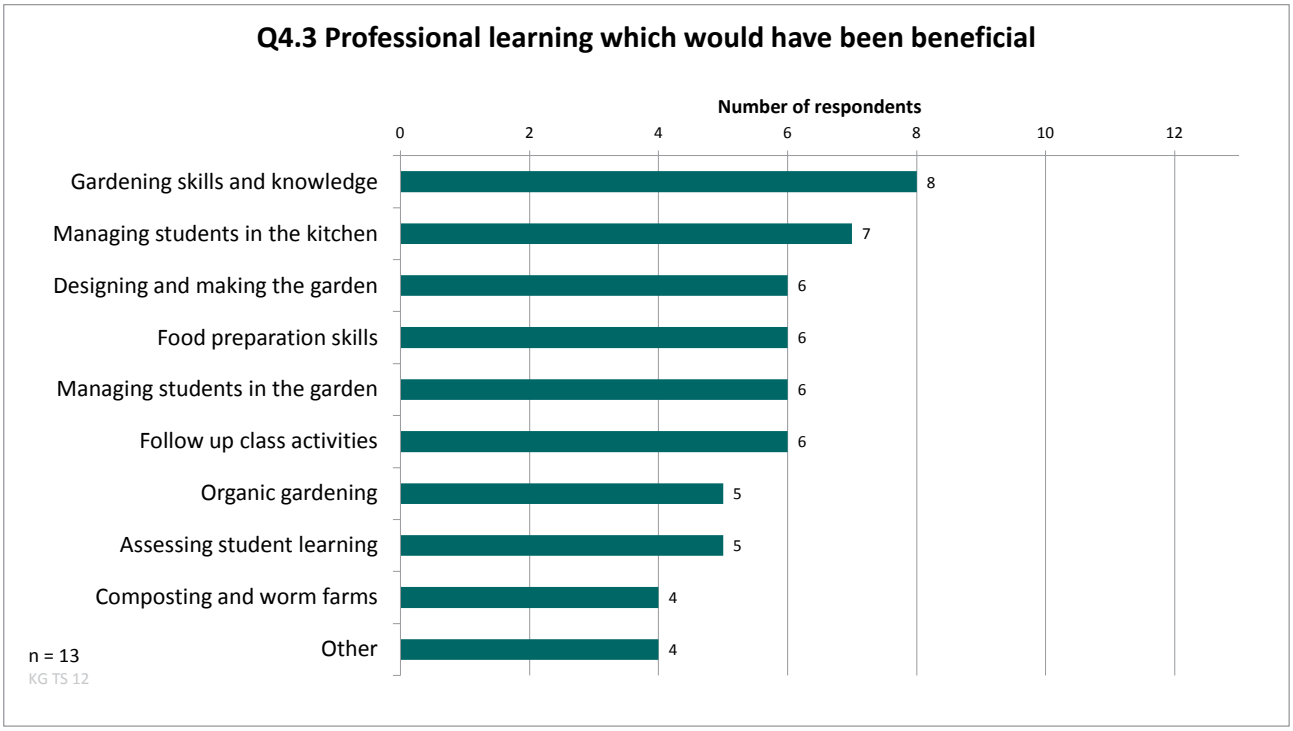
Throughout the pilot, teachers had been involved in professional learning activities supported by NSW CLIC, and had accessed professional development activities provided by other organisations as well as in-school training. Networking with colleagues and evaluating what has been achieved was seen by teachers to be of benefit. When interviewed, one surveyed teacher commented that:

> *"Some of your survey questions made me think about what we are doing. I learnt from it."*

The majority of staff recommend gardening and food preparation skills as an important component of professional learning. Managing student behaviour in both settings was also seen as a necessary topic to assist in running a hands-on practical activity in an alternate classroom setting.

Figure 4.5 lists the specific topics that teachers recommended as beneficial in setting up a school kitchen garden.

Figure 4.5 Professional learning recommended by teachers



4.2 Cross-curricular approach

The formal curriculum of primary schools in NSW is defined in the statutory provisions of the *Education Reform Act* 1990 and in the requirements determined by the Board of Studies NSW.

The primary curriculum is described in six separate syllabus areas:

- English
- Mathematics
- Science & Technology
- Human Society and Its Environment
- Personal Development, Health and Physical Education
- Creative Arts.

As the statutory authority responsible for the development of curriculum in NSW, the Board of Studies must ensure that primary syllabuses are accessible and useful for teachers. When examined as a whole, the primary curriculum should be both relevant and manageable in the context of the primary classroom (Board of Studies NSW, 1996). As such, literacy and numeracy outcomes are embedded across al six syllabus areas.

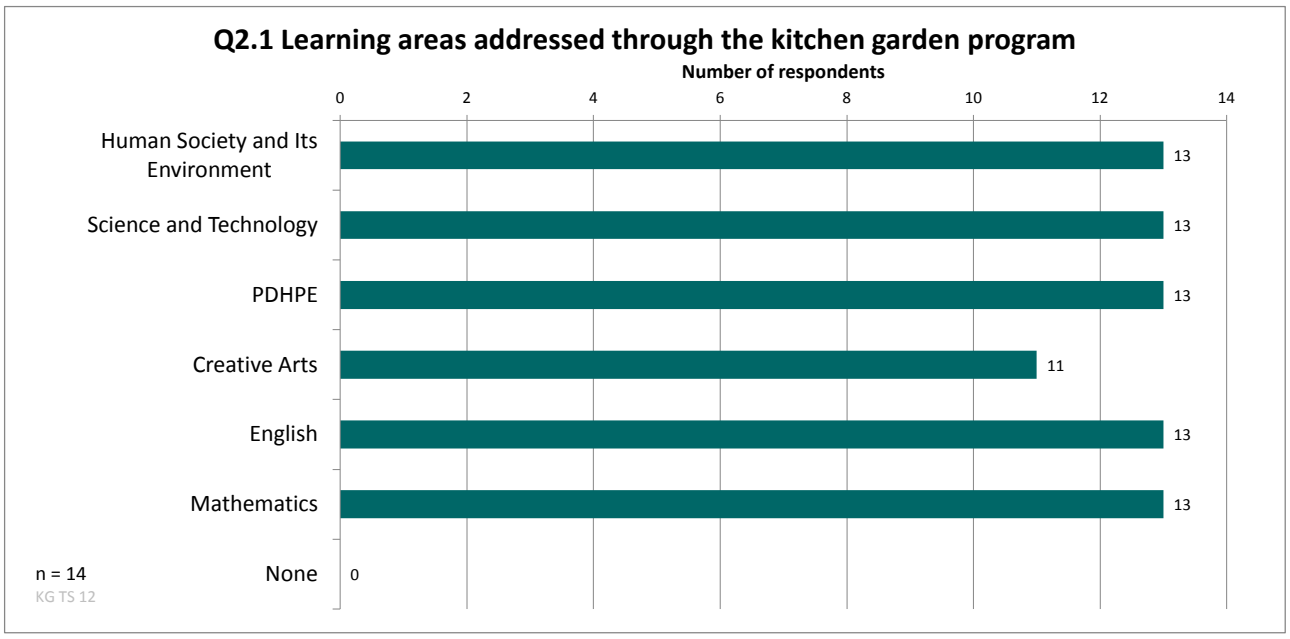
To ensure a strong link with the curriculum, programming for food gardens is vital. To this end, the NSW CLIC mapped current syllabus outcomes from Early Stage 1 through to Stages 4 and 5 against common kitchen garden activities, as seen in Appendix 1.

4.2.1 Curriculum links to NSW K-6 syllabuses

All schools provided evidence of linking kitchen garden outcomes to more than one learning area.

Teachers involved in the pilot program reported that they designed activities that contributed to the achievement of a number of learning area syllabus outcomes, as seen in Figure 4.6. In their response about programming, teachers were able to indicate links to more than one syllabus.

Figure 4.6 Links to NSW K-6 syllabuses



Syllabus links are more particularly evident in the garden activities at present, as all schools in the pilot now have a fully developed garden. In those schools yet to have an operational kitchen, teachers indicated activities would be developed to specifically link to cross-curricular outcomes.

The coordinator at one school, as an example, advised that *"every grade plan MUST include the garden in every KLA".*

Teachers commented, in both the survey and during interviews, that the *Kitchen Garden Pilot* program has really *"opened up the curriculum"*. One surveyed respondent commented that:

> *"The kitchen garden is a fantastic tool to engage students in rich learning activities across all KLAs."*

All staff interviewed were able to articulate how the *Kitchen Garden Pilot* program could be linked to syllabus outcomes. The principal at one school stated:

> *"Students are involved in all aspects of the kitchen garden and it is integrated in all key learning areas. The KG has provided students with rich opportunities to explore the growth and development of plants, develop an understanding and skills of how to care for plants and enables real learning experiences to occur. Students have developed metalanguage of plants and gardens, deep knowledge and opportunities to have significant, purposeful learning activities."*

Students affirmed this approach and were able to articulate cross-curricular learning. One student stated he had participated in science-related activities:

> *"[We do] science, learn the water cycles, plant cycles, what plants go with each other."*

Syllabus outcomes identified by teachers in the evaluation were linked to the six learning areas, with science and technology being the one most commonly identified by teachers.

Science and Technology

School gardens provide an authentic context for exploring, investigating and understanding chemical, biological, physical and Earth and space systems.

Links to Science and Technology syllabus outcomes were observed in teacher programs and during school visits and reflected in the following garden-related activities:

- planning and establishing garden beds
- measuring soil chemistry
- identifying plants and plant families
- planting seeds and seedlings
- identifying parts of a plant
- identifying and removing weeds
- identifying insects and birds
- removing insect pests
- preparing and distributing compost
- watering efficiently
- propagating plants: taking cuttings, pollinating plants
- determining when fruit and vegetables are ready to harvest.

As indicated by one teacher, class groups:

> *"...investigate leaf litter, what's under rocks, soils, life cycles - worms, butterflies - and learn the role of pollination, whether it be by wind, birds or bees."*

The cycle of food production, beginning with seed germination as depicted in Figure 4.7, was seen as an effective means of developing understanding of life cycles.

In two schools visited, seed germination progress was being monitored by students in their classrooms.

Figure 4.7 Seed germination

Some schools established a small working area so that students could plant seeds, then care for and watch them grow until they were ready for planting in the garden beds.

Teachers commented that students germinated their own seeds and liked to compare growth with other students. One teacher indicated that her class had conducted scientific experiments on germination and growth through the control of sunlight, water and fertiliser.

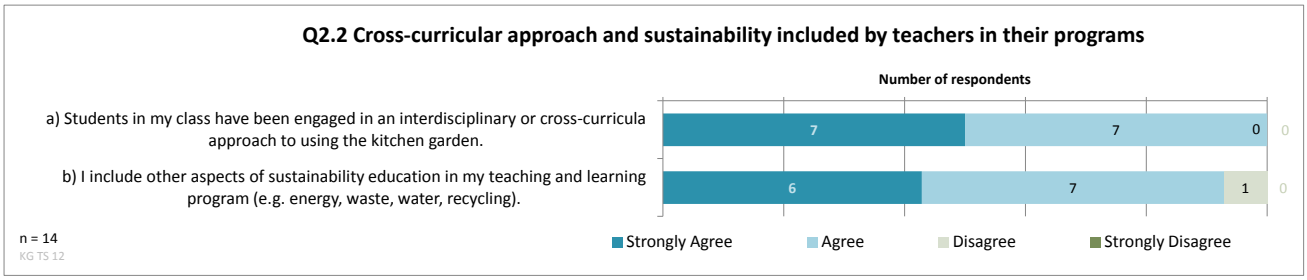
Sustainable food practices were observed in all schools visited with compost bins and worm farms being utilised to reduce, reuse and recycle as seen in Figure 4.8.

Figure 4.8 Worm farms

Worm farms are present in eight of the nine schools involved in the pilot. Some schools have purchased more than one to meet their needs. The remaining school is in the process of implementing worm farming as part of the *Kitchen Garden Pilot* program.

Survey responses indicated that the overwhelming majority of staff have included sustainability education in their teaching and learning program in addition to engaging in a cross-curricular approach as shown in Figure 4.9.

Figure 4.9 Cross-curricular and sustainability education approach



One school provided a sample class program overview, linking sustainability classroom activities with the garden, as can be seen at Appendix 3.

English

School gardens and sustainability education provide rich and engaging contexts for developing students' abilities in listening, speaking, reading, viewing and writing. English assists students to develop the skills necessary to investigate, analyse and communicate ideas and information related to sustainability, and to advocate, generate and evaluate actions for sustainable futures (ACARA, n.d.). Achievement of English outcomes was consistently reported by teachers and activities in gardens were observed by evaluators, including:

- recording plant development in a journal
- labelling plants
- using language specific to gardens
- reading texts relating to gardens; e.g., *The Very Hungry Caterpillar* by Eric Carle, planting guides, sowing instructions.

In both surveys and interviews, teachers stated that the *Kitchen Garden Pilot* program provides opportunities for students to develop literacy skills through research activities and writing procedures. Students at several schools have published recipe books. The coordinator at one school stated:

> *"We have a Stage 3 cookbook which focuses on citrus. All the kids had to do a recipe and had to incorporate citrus in it. They had to do a lot of research."*

Masterchef-style competitions were organised in several pilot schools, with students having to persuade their audience as to the culinary and health benefits of the dishes created. The coordinator at one school stated that:

> *"[They] organised Masterchef every second year with Stage 3 students. Students learn to design logos and advertising; in effect 'selling' their produce to the judges [teachers]. [They also] produce a video."*

Mathematics

School kitchen gardens provide a context for developing students' abilities in number and algebra, measurement and geometry, and statistics and probability. In this learning area, students can observe, record and organise data collected from primary sources over time.

Teachers indicated that they have linked outcomes in Mathematics with the *Kitchen Garden Pilot* program through activities such as data gathering regarding numbers of plants, height, varieties and location, as can be seen in Figure 4.10.

Figure 4.10 Measuring plant growth

Students measure the growth of plants, collect data and analyse, providing hands-on practical activities linking to the Mathematics syllabus.

Teachers advised that fractions, decimals and percentages can be taught through measuring quantities of ingredients for use in recipes, as seen in Figure 4.11.

Figure 4.11 Recording mass of vegetables

Students recorded the mass of vegetables compared to other objects.

The ability of students to transfer skills to other curricular areas as well as generalise their learning to their home lives was frequently mentioned as a common outcome for students. An example was given by one teacher about a mathematics lesson:

> *"We had been doing work on predicting the growth of plants. One girl brought in photographs of herself at various stages of growth - so she was generalising learning."*

A teacher of special education students stated that she was able to effectively utilise comparative mathematics activities around the growth of plants.

One parent commented that her son was calculating household cost savings when they went shopping, as a result of mathematics activities he had engaged in at school:

> *"When we go shopping my son (Year 5) checks the weight and cost and looks at the value as compared to what they can get from the kitchen garden. He calculates how much is being saved by eating what they grow."*

The coordinator at one school advised that they had planned a whole-school numeracy initiative based on the community garden, incorporating garden maths activities in all Stage programs.

As part of the project for Stage 3, students were given a budget of $8 per group to buy all the ingredients they needed to prepare a healthy dish. They could use whatever they needed from the garden. All budgeting was completed using *Microsoft Excel.* Ultimately, the students had to 'sell' their product by designing a poster and a jingle. Prizes were awarded at a school assembly.

At one of the small, inner city schools, a chicken coop formed part of the *Kitchen Garden Pilot* program, and the eggs produced were used as part of cooking activities. Links to the Mathematics syllabus were made through recording egg size and chicken growth and development.

Creative Arts

Creating artworks using the garden as inspiration was evident in a number of schools visited, as exemplified in Figure 4.12.

Figure 4.12 Links to Creative Arts

A student group created a mandala artwork using leaves, flowers and other vegetation.

Many teachers advised that the creative use of vegetation from the garden was an effective method of teaching students about plant identification and labelling. The creative outcomes were seen to be achieved with garden produce not only being used for food consumption, but also for table decoration in the food preparation phase.

Teachers had also engaged students in making scarecrows, painting and designing labels for the crops as well as other decorative additions to the garden landscape as seen in Figure 4.13.

Figure 4.13 Students making a scarecrow

Students used their creative arts skills in making class scarecrows for each of their class garden plots.

Human Society in Its Environment

A small number of teachers specifically indicated kitchen garden links to Human Society and Its Environment.

Teachers commented that the *Kitchen Garden Pilot* program provided an opportunity to raise issues about world climate and global warming. In addition they advised that students were able to learn about respect for the land and the environment.

Several teachers interviewed, when prompted, were able to identify the multicultural aspects to the program, including the incorporation of bush tucker and the diverse cultural mix of types of crops grown and food preparation techniques used.

Staff at all five schools visited, commented on activities associated with bush tucker gardens. The Botanic Gardens was frequently mentioned by staff as one provider of strategies to incorporate bush tucker in school gardens. Aboriginal plant names, for example, were being used on crop labels at one of the medium-sized, inner city schools.

One of the small, inner city schools, with a high proportion of Aboriginal students, has effectively embedded Aboriginal cultures and bush tucker produce within their kitchen garden program. The principal stated that it was *"extremely important for the 35% Aboriginal population in the school"* to incorporate Aboriginal perspectives in the curriculum. She commented that:

> *"Learning happens in the classroom. They know about warrigal greens, lemon myrtle etc… and the correlation between cultures – warrigal greens and spinach in the vegetable garden."*

Although this school found it difficult to encourage the parent community to become involved in the school, school plans indicated the intention to actively involve the Aboriginal parents in future bush tucker garden activities.

The coordinator at one of the small, suburban schools advised evaluators that at the beginning of the program, two Aboriginal students talked a lot about bush tucker. As a consequence, they decided to plant berries. The next stage in garden development was to extend their bush tucker crops behind the new kitchen. One parent interviewed, indicated that the school had organised for her Aboriginal partner to cook indigenous food with the students.

The coordinator at one of the large, suburban schools commented that their crop planning decision was determined by the cultural backgrounds of the student population: 10% Aboriginal and Torres Strait Islander students and 52% of students from Language Backgrounds Other Than English (LBOTE). With over 40 different nationalities at the school, the coordinator perceived it was a priority to grow and cook with produce that was familiar to the students. She indicated that:

> *"We were thinking of a bush tucker garden and thought it would be better to use things the kids have experience with."*

There was also an emphasis at the school to provide support for families coming from culturally and linguistically diverse backgrounds. The school ran a series of workshops for newly arrived Australian residents during 2011, including a workshop on nutrition.

The more culturally diverse schools were able to utilise the expertise of parents and the local community to broaden the experience of their students, and more particularly provide new knowledge for the teachers.

The principal of one of the small, suburban schools stated that the *Kitchen Garden Pilot* program helped with cultural diversity because of the different types of vegetables grown and food produced. One of the volunteer community members at this school said:

> *"They are making local food. One parent is Arabic, so we are now learning the Arabic words [and] using vine leaves."*

A community member recalled the multicultural day during 2012 where the students cooked a variety of dishes, using culturally appropriate herbs and vegetables grown in the school kitchen garden.

Personal Development, Health and Physical Education

The social and personal development of students engaging in the program was identified by all principals, coordinators, teachers, students and parent community members interviewed. Teachers referred to student outcomes relating to:

- sense of own worth and dignity
- responsibility for own health and healthy food choices
- willingness to participate in regular physical activity
- understanding of basic hygiene.

Outcomes for students will be examined further in Section 5: Effects for students.

Cross curricular links to the NSW K-6 syllabus have been effectively incorporated in planning and programming in schools involved in the *Kitchen Garden Pilot* program.

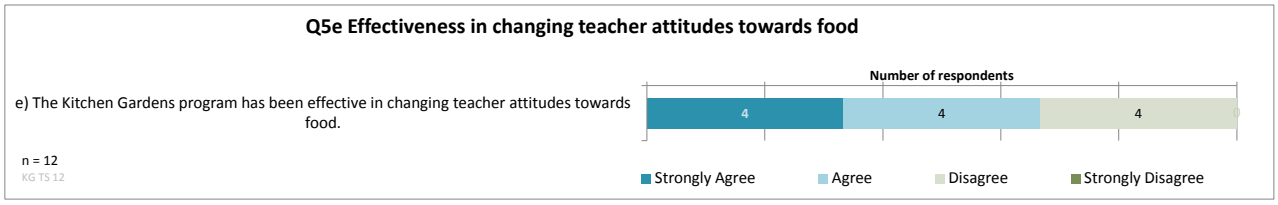
One teacher surveyed succinctly described a cross-curricular approach to kitchen gardens:

> *"Learning and caring for the environment. Planting and caring for garden beds. Planning and cooking produce. A variety of activities across all KLAs related to gardening and plants, including literacy, numeracy, art, COGS, science, HSIE."*

4.3 Changed attitudes of teachers

Of the 12 respondents to the survey, two thirds agreed or strongly agreed that they had changed attitudes towards food as a result of the *Kitchen Garden Pilot* program, as shown in Figure 4.14.

Figure 4.14 Changed teacher attitudes



During interviews, many teachers indicated that they had practised healthy eating prior to implementing the program. Some teachers advised that they had established their own herb and vegetable gardens at home as a result of the program, and were more willing to use fresh rather than frozen foods.

Since schools have a responsibility to encourage and teach students to eat healthily and exercise regularly, the ongoing education of teachers is required to ensure real change in attitudes and practices. The longer term impact of school kitchen garden programs for staff may need to be assessed in the future to accurately gauge any real changes.

5 Effects for students

This section explores the effects for students of participating in kitchen garden activities, and focuses on the areas of student engagement and learning outcomes. Syllabus outcomes have been addressed by teachers in their programming, as shown in Section 4.

Key findings

- **All students expressed positive comments about the *Kitchen Garden Pilot* program in their school.**
- **According to teachers, the *Kitchen Garden Pilot* program works effectively in engaging all students, and particularly students with special needs.**
- **Teachers report that students are developing greater respect for each other and the school, as well as respect for community volunteers.**
- **Students exhibit a good knowledge and understanding about food; where it comes from and how to cook and prepare foods fresh from the garden.**
- **Teachers report that students understand the cycle of food production and the importance of sustainable food practices.**
- **Parents and teachers commented that students are beginning to make healthier food choices for themselves.**
- **Student leadership skills are being developed in many schools as a result of the *Kitchen Garden Pilot* program.**

The impact of the *Kitchen Garden Pilot* program on students within the pilot schools depended upon the extent of Stages and classes involved in the program at the time of the evaluation, as well as progress made on the establishment of a kitchen food preparation space.

Schools involved in the *Kitchen Garden Pilot* program have student enrolments ranging from under 50 to over 400. The pilot program has involved students from Early Stage 1 through to Stage 3. Not all schools have implemented the program directly with all stages, but staff have indicated that all students appear to have gained from the introduction of the *Kitchen Garden Pilot* program.

Teachers who responded to the *Kitchen Garden Pilot* survey taught students across the range of classes from Early Stage 1 to Stage 3. A number of staff in smaller schools taught cross-stage groups.

During school visits, evaluation officers were able to conduct group interviews with students, in addition to observing their participation in garden and kitchen activities. Students reported they felt engaged in activities, and were learning. Students saw a tangible result for their efforts in activities. School staff advised that because of the practical engagement of students, the *Kitchen Garden Pilot* program has assisted in addressing behaviour issues, as well as providing leadership roles for their students.

5.1 Student engagement

Engagement is a concept described as having three dimensions: "…behavioural (involvement); affective (personal attachment to others, such as teachers and classmates); and cognitive (application to learning)" (McRae, 2005, p.2). Students are engaged when they are involved in their work, persist despite challenges and obstacles, and take visible delight in completing their work and accomplishing their goals. Bomia (1997, p.294) describes student engagement as:

> *"…a student's willingness, need, desire and compulsion to participate in, and be successful in, the learning process, promoting higher level thinking for enduring understanding."*

This section examines the extent to which students are engaged with the *Kitchen Garden Pilot* program. Students identified a number of 'feelings' associated with the program including a sense of fun, excitement, pride and respect. Teachers identified a number of engagement outcomes including student leadership and improved behaviour.

All students interviewed expressed positive comments and feelings about their involvement in the *Kitchen Garden Pilot* program. Participation in activities outside the usual classroom setting, as shown in Figure 5.1., was one of the major positives identified by students. As two students stated:

> *"The best thing is getting out of the classroom."*

> *"It gives us an excuse to get dirty."*

Figure 5.1 Students participated in hands-on gardening activities

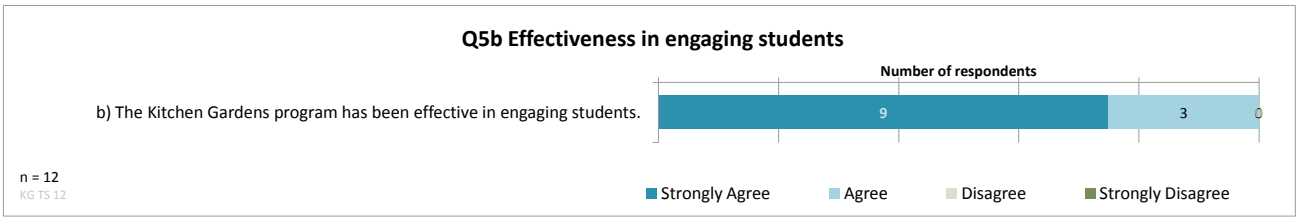
Students plant seedlings in raised garden plots which are often maintained by individual classes. Students make decisions in collaboration with teachers about what crops to grow.

When asked to identify activities that they found enjoyable, students listed many activities that were part of the program. One student summed it up as follows:

> *"My favourite things [are] watering, growing, planting, peeling, eating, looking at animals and creatures, pulling out carrots and eating them."*

Teachers strongly agreed that the *Kitchen Garden Pilot* program has been effective in engaging students, as seen in Figure 5.2.

Figure 5.2 Effectiveness of the program in engaging students as perceived by teachers



5.1.1 Benefits achieved for all students

When asked what they liked or did not like about the *Kitchen Garden Pilot* program, the overwhelming majority of students indicated that the garden made them *"feel good"*. Students commonly referred to the garden as a peaceful and calm place, a place where it was *"good to learn"*, and a place where you could feel *"excited"*, *"happy"* and have *"fun"*. This is exemplified by one student who liked:

> *"... [the] good time, fresh air, learning about plants, getting dirty; when you are bored you can get out there and do something."*

Other students expressed fascination with plants, bees and butterflies. The majority of students expressed how much *"fun"* it was seeing the plants grow. One student indicated she would like to spend five days a week in the garden if she could.

Pride in the school environment was a common feeling expressed by students. One student commented that the school looked like a *"junk yard"* before the garden was introduced but now the playground area was an organised and enjoyable space that could be used by students at any time.

Students raised no negative comments or issues about garden activities and lessons. One Stage 3 student indicated that he would rather stay at his current school because of the garden than have to move to high school.

Teachers and principals of several schools indicated the socio-economic disadvantage of many of the families in their area. Many students live in units or small houses which do not provide enough space for vegetable plants or fruit trees. According to staff, the garden program successfully engages these students.

Positive attitudes towards learning were evident in discussions with students. One student stated that at the beginning of the program, she was excited by the learning sequence:

> *"I was excited 'cause I was going to plant and pick some fruit and vegetables and eat them."*

A number of students indicated that the cooking and the eating was the best part of the *Kitchen Garden Pilot* program. One student commented that talking about it *"makes me hungry,"* and another enthused "*and you get aprons!"* One parent noted that when the school had the kitchen opening:

> *"I walked in and saw the kids with the aprons, smiles everywhere, they were happy to show off, not shy, 'This is what we made, what we did'."*

Students with special learning needs

A number of principals commented on improved behaviour and, as a result, improved engagement from students with special needs, in particular those with problem behaviours. Principals agreed that time in the garden put students with learning and behaviour problems in a calmer and more focused frame of mind. Providing hands-on activities for students facilitates a sense of responsibility and achievement because *"they are engaged"*.

Two schools began the *Kitchen Garden Pilot* program by targeting the special laerning needs students in their school. Staff at one of the large, suburban schools stated that IO and IM classes had helped construct the garden beds. Teachers were surprised that many of their students had never put a nut on a bolt. Learning such practical skills generated interest from other students, resulting in the program quickly being extended to all classes.

In terms of assisting with the behaviour of students with difficulties, one student disclosed that it had changed his life:

> *"It changed my life, cause I used to be heaps bad, and now I'm good."*

The changes in behaviour and attitude of this student were also noted by the boy's parent, who said:

> *"My guy is so much more calm and settled when he works in the garden."*

One principal commented that a student in Year 2 who had severe behaviour problems, now looks after the chickens and is engaged in all kitchen garden tasks. A teacher at another school indicated that one of their autistic students was extremely engaged in the *Kitchen Garden Pilot* program, whereas previously he showed little engagement with school at all. She went on to say that:

> *"The kids are really enthusiastic, especially the high risk students and the kids with special needs."*

Another principal agreed with statements made by colleagues, summing up that *"the program is really good with special needs kids".*

Developing student leadership

Students commented on the leadership opportunities they had been offered since the introduction of the program. Leadership teams were organised in many schools to ensure that students felt part of decision-making processes around the garden and to develop a sense of responsibility in students.

A number of schools organised teams of students to take responsibility for specific activities such as watering, collecting compost material from classrooms and providing collaboration in meetings regarding garden and kitchen plans and programs.

More formal initiatives were identified in several pilot schools, such as:

- formation of a cross-stage group of students called the Green Team, who were responsible for ensuring the garden was maintained. A community member at this school identified the development of leadership skills for students, saying:

  > *"The kids are getting lots of leadership experience too - the Green Team - who meet every Thursday - are responsible for the garden and recycling."*

- members of the Student Sustainability Representative Council undertook a number of initiatives including composting in each classroom, establishing and maintaining worm farms, and installation of water tanks. They also contacted local councils to ensure their school had the appropriate recycling services.
- cross-stage buddy systems were seen operating at a number of schools. Older students worked with their younger peers and mentored their learning. The coordinator of one school relied heavily on the support of Stage 3 students to assist Early Stage 1 and Stage 1 students, particularly in the kitchen, as shown in Figure 5.3. A number of Stage 3 students commented that they enjoyed working with a younger buddy and teaching them how to plant and fertilise and make the garden.
- participation in the Youth Eco Summit. One student indicated that she had learned about "*sustainability, growing plants, leadership"* at the summit.
- Years 5 and 6 at one school being involved in a 'persuasive introduction' for new enrolments and parents, entitled "What is good about our school." The principal stated:

  > *"They let everyone know that ALL kids will be gardening."*

Principals highlighted that these types of activities brought with them responsibility and encouraged leadership within the student body.

Figure 5.3 Older students buddied up with younger students

Students enjoyed being mentored by older students. Older students gained leadership skills through teaching their younger peers.

5.2 Learning outcomes

When asked to identify positives about the *Kitchen Garden Pilot* program, one student replied:

> *"It's the best thing 'cause we learn something new every five minutes."*

Interviews with students and teachers provided evidence of the knowledge, skills and understanding that had been gained through participation in the program. These outcomes include:

- garden skills and maintenance
- kitchen skills and healthy eating
- changed behaviour regarding healthy food choices.

5.2.1 Garden skills and maintenance

Students were able to accurately identify herbs, fruits and vegetables being grown. During an observation of a lesson in the garden, when asked what was being grown, one student had no hesitation in locating and listing the crops:

> *"We are growing cabbage, beetroot, cucumber, tomatoes, lettuce, celery and rocket."*

Students were able to articulate knowledge gained, such as learning:

- how to build a garden bed
- appropriate ways and times of watering plants
- what flowers to plant to attract the bees to pollinate
- what companion plants to sow together, such as basil, tomato, marigolds
- how to collect and dilute worm farm liquid
- about garden tools and how to use them
- how to harvest and clean produce.

Students were also able to identify specific Mathematics skills gained through measuring vegetable growth over time, or from learning the recommended spacing between seedlings.

A couple of students commented on applying skills learnt at school to home and vice versa.

> *"I read at home and bring some strategies in and use them in the garden."*

> *"We are building a veggie garden at home and I'm helping my neighbour build one - from what I learned here."*

One parent talked about her son's class being in charge of the herbs at school.

> *"At home he says we use this herb to give it flavour. They know what they are doing."*

As a result of the garden program, the parent indicated that they were now growing strawberries and basil at home.

A number of parents were impressed by their children's understanding of why plants grow well in certain conditions. One parent stated that garden activities had not only increased the students' knowledge and understanding but had facilitated a balance between friendly student competition and support for each other. She indicated her son reported:

> *"That's Adam's plant. It's doing really well. Mine isn't doing so well because my plant isn't in the right soil."*

The parent summed up by saying:

> *"So they support each other regardless and they know why things grow well."*

5.2.2 Kitchen skills and healthy eating

While not all schools in the pilot had fully established working kitchens by the time of the evaluation visit, students at several of the schools visited were observed participating in activities involving the kitchen. Students were seen preparing fresh food picked directly from the garden as shown in Figure 5.4.

Figure 5.4 Preparing fresh food from the garden

Students enjoyed preparing and displaying fresh food from their garden.

Students were observed adhering to all Work Health and Safety (WHS) requirements. They accepted teacher direction and were able to assist in explaining procedures to other students.

Students indicated they had learned to make a number of different dishes at school using the fresh garden produce and were subsequently able to independently make these same dishes at home.

Parents commented that their children were learning new things about crops and food preparation, as depicted in Figure 5.5.

Figure 5.5 Students engaged in cooking garden produce

Students were often observed working in pairs or small groups during food preparation. Social skills were developed as a result of working as part of a team.

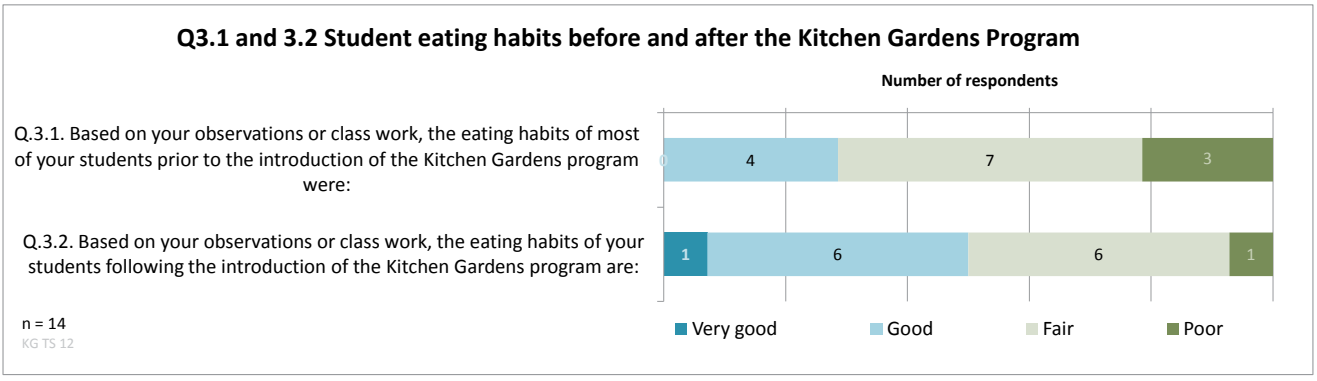
One parent stated that her son frequently brought home produce that he had grown in the garden and cooks a meal which he learned from the program at school. She said he was *"totally in charge".* Another parent reported that *"my kids share their recipes with their friends on FaceBook".*

Nearly all parents interviewed, affirmed that students talk a great deal about what they are doing in the kitchen garden activities at their school.

5.2.3 Changed knowledge, understanding and behaviour in students regarding healthy food choice

Survey responses from teachers indicated that, based on observation or classroom assessments, the eating habits of students have changed for the better, as reported in Figure 5.6. Whilst only four teachers identified students as having good to very good eating habits before the pilot, this had extended to seven after the introduction of the program. Only one teacher reported that student eating habits remained as poor after the introduction of the program.

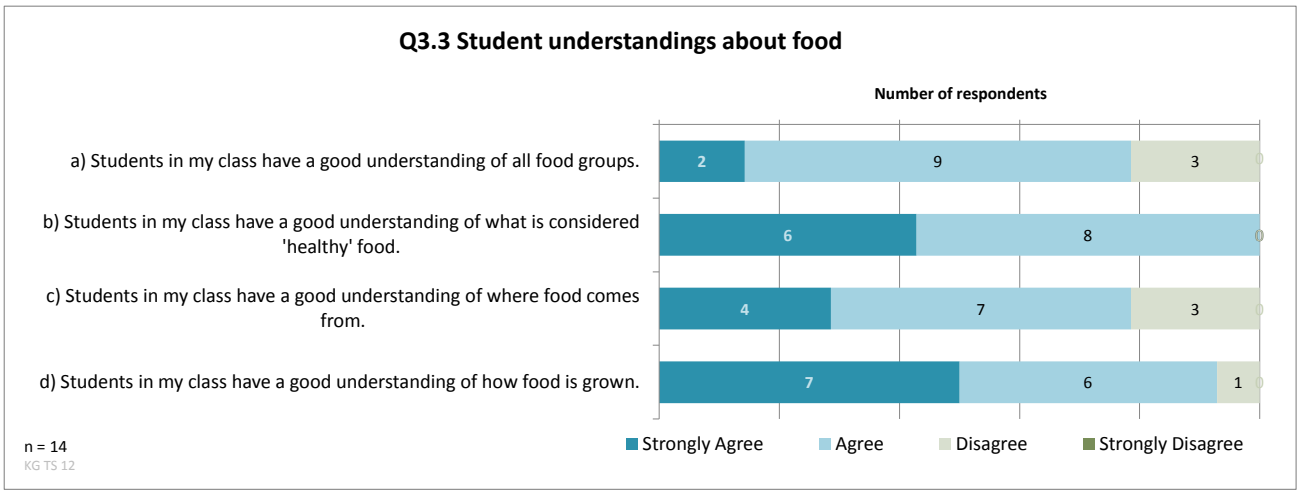
Figure 5.6 Student eating habits pre and post program involvement as perceived by teachers



As shown in Figure 5.7, Q.3.3 b) when asked whether their students had a good understanding of what is considered 'healthy food', all 14 teacher survey respondents either agreed or strongly agreed.

In view of the previous question responses in Figure 5.6, Q.3.2, it could be concluded that, according to teachers, although all students have a better understanding of what healthy eating involves, they may not all be making the choice to put the knowledge into practice.

Figure 5.7 Student understanding about food as perceived by teachers

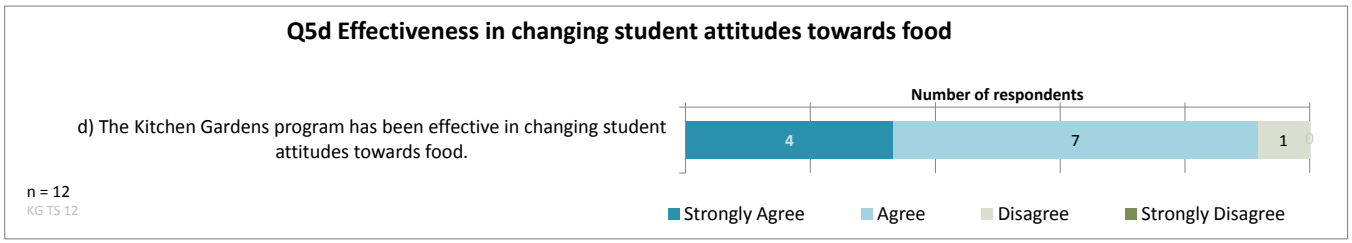


Nearly all teachers agreed or strongly agreed that students have a good understanding of how food is grown.

Most teachers agreed or strongly agreed that their students have a good understanding of where food comes from and in what food groups they belong.

Nearly all teachers surveyed agreed or strongly agreed that the *Kitchen Garden Pilot* program has been effective in changing student attitudes towards food, as seen in Figure 5.8.

Figure 5.8 Changes in student attitude towards food as perceived by teachers



Teachers also reported that they had observed students now bringing in many more recycled containers containing fruit and other fresh food. One teacher commented that:

> *"Kids will bring in raw carrots now where they didn't before."*

In one school where students had discovered the flavour of raw snow peas, issues arose when it came time to cook. The staff realised that the students had eaten all the raw peas direct from the garden, as illustrated in Figure 5.9.

Teachers indicated that healthy eating was discussed nearly all the time. Healthy food choice was seen by teachers and the parent community as an outcome that had been achieved merely by growing fresh produce.

Figure 5.9 Eating straight from the garden

A few schools implemented open access to the garden for students during recess and lunchtimes. A number of teachers reported observing students eating fresh produce direct from the garden beds.

One principal noted that students easily related what was grown in the garden to kitchen food preparation and to positive eating habits. She stated that students recognised the relationship between the soil and the produce as they picked their food directly from the garden beds, as seen in Figure 5.10.

The change in attitudes and behaviour regarding healthy food choices was exemplified by the words of one student who said:

> *"You make sure you cook things properly and you make sure nothing goes wrong."*

A parent at one of the small, suburban schools indicated that he had seen students tasting cups of raw fresh vegetables.

> *"[It's a] very different taste to the supermarket flavour. All the kids ate all the veggies."*

Another parent at the same school expanded on that idea saying:

> *"The kindy kids love tomatoes on their sandwiches now because of that cup tasting."*

Figure 5.10 Relationship of soil to produce

Students understood the relationship between the soil and produce as a consequence of cooking the produce direct from the garden.

One father commented that his son often brought home vegetables that he had grown. When he was visiting the school one day, his son said to him, *"See my bok choy? It's grown."* The father was very impressed by his son's knowledge of food, as he himself didn't know what bok choy was until he was in his twenties.

A number of parents and community people commented on the fact that the students were willing to try new and different things and were learning the nutritional value of the fresh food they were eating. A number of parents commented that their children previously would not eat vegetables at home, but with the introduction of the *Kitchen Garden Pilot* program at the school, their eating habits had changed.

6 Impact in schools

This section explores the impact of the *Kitchen Garden Pilot* program in schools in terms of:

- the school environment and culture, and future planning
- parent and community participation
- the capacity of each school to maintain the program in terms of human and financial resources
- professional learning needs and student resource needs.

Key findings

- **Greater respect for the school environment was seen as a major outcome resulting from the introduction of the program.**
- **Parents and the community offer support in determining types of plants to grow and culturally diverse dishes to be made from the garden produce.**
- **Parents and the community provide necessary support in caring for the garden during school holiday times.**
- **Parents and the local community have increased their support for and participation in school activities as a flow on from their involvement in the *Kitchen Garden Pilot* program.**
- **Some schools identified the need to access additional funding from outside agencies to ensure ongoing maintenance of the program.**
- **School principals and staff are confident that the *Kitchen Garden Pilot* program has been, or will be, embedded in school management plans and are enthusiastic about continuing with the initiative.**

6.1 School environment and culture

With the introduction of the *Kitchen Garden Pilot* program, special event days and innovative activities were introduced, involving the whole school, parents and the local community.

Staff at all schools noted changes to the culture of the school, with increased enthusiasm, motivation for learning, and greater respect shown between students and for school property.

As an example of this sense of ownership and pride in the *Kitchen Garden Pilot* program, teachers, students and parents from one of the suburban schools described the impact of vandalism that had recently occurred at the school. One of the school community members told evaluation officers that:

> *"The high school kids got in one evening and vandalised the scarecrows. And the kids were outraged. The first thing my girl said was 'I would never do that to someone's kitchen garden'."*

The students were eager to show evaluation officers the 'hospital' area where the scarecrows were being healed.

Special event days and inter-related class projects encouraged staff to work together as a team and the parents and community to become involved in the school programs. In one school, the annual 'olive tree shake' is undertaken by the whole-school community and now has a special place in the school calendar.

A small number of the pilot schools had small pre-existing gardens, often created and maintained by a member of the local community. The rejuvenation and refurbishment of these older gardens has encouraged students to be respectful of the original caretaker. Students have developed a working respect for parents and local community volunteers.

Students at one school advised that they often took produce home from the community volunteer's plot within the school:

> *"We take stuff home to cook - we take stuff from Jimmy's garden because it is ready to be picked. He lets us take stuff home."*

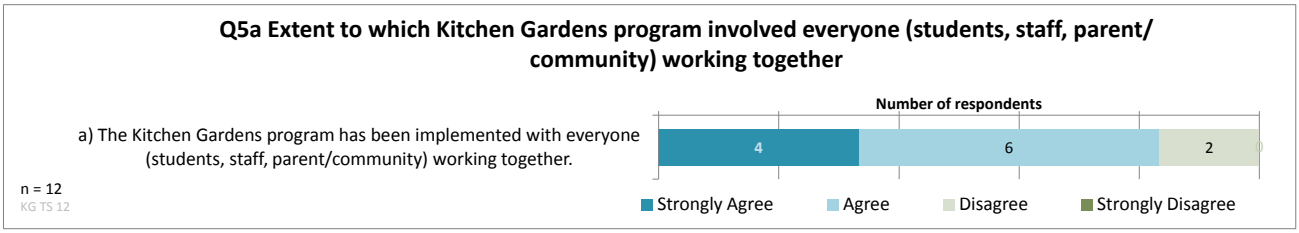
The majority of smaller schools did not have an operating canteen. Students had to bring pre-made snacks and lunches to school. With healthy food choices being a priority within the school program, interviewed parents were happy to provide support and encourage their children to take fresh foods to school. Principals particularly noticed the change in attitudes of the whole-school community towards healthy eating. As stated by one principal:

"This [parental attitude] is changing due to feedback from kids going home."

6.2 Parent and community involvement

All schools in the pilot enjoyed the support of their local community. Most schools in the pilot had active community participation, whether it was parents, local residents, volunteer organisations or local businesses, as shown in Figure 6.1.

Figure 6.1 Extent of whole-school and community involvement in the program



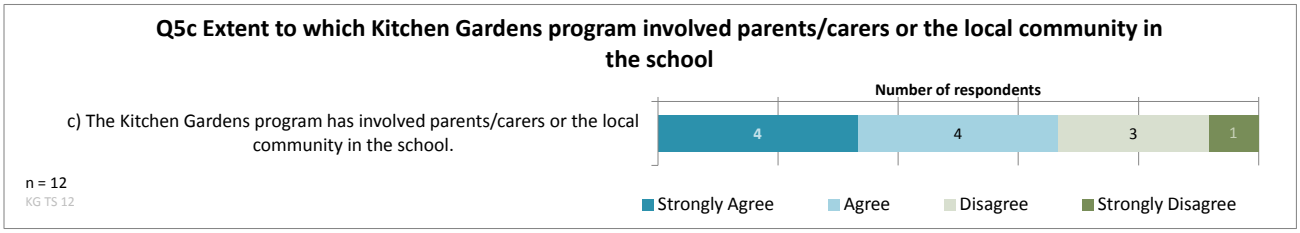
Parent involvement

During school visits, evaluation officers were able to interview parents or carers of students involved in the pilot. Parents were eager to accompany officers on kitchen and garden tours and to assist with providing information they felt would be helpful to the evaluation. All parents were enthusiastic about the program and could see the benefits for the whole school as well as for their own children. One parent commented that it was a whole-school learning experience:

"I think it goes both ways, we are learning together - it goes home."

The majority of teachers surveyed indicated that parents and the community were involved in their *Kitchen Garden Pilot* program, as seen in Figure 6.2.

Figure 6.2 Extent of parent involvement in the program



The medium-sized, inner city school appeared to have the most parental involvement, possibly because it had been the school's parents and community group who had initially set up and provided funding for a number of kitchen and garden initiatives. Structure had also been put in place for effective parent and student involvement on weekends and during school holiday periods.

One of the small, inner city schools struggled to gain parent support for cultural and historical reasons. According to the principal and teachers, not all parents feel comfortable in government settings. Nevertheless, one teacher did comment that the parents who normally did not enter the school grounds were increasingly seen to:

"...come in and ask for a bit of parsley, or other produce from garden."

The principal added that the attitude of parents to the school was:

> *"changing due to feedback from the kids going home... [There is] a glimmer of hope in that they [parents] have started picking the bok choy and parsley through the school front fence."*

The principal also suggested that it was important to first teach the children to work together, and then ask the parents for support. She commented that ideally they would like a group of parents to work with their own children and others each day. The thrust for 2013 included plans to involve the parents more in the life of the school, and the kitchen garden would be the 'carrot' to make that happen. The principal believed that:

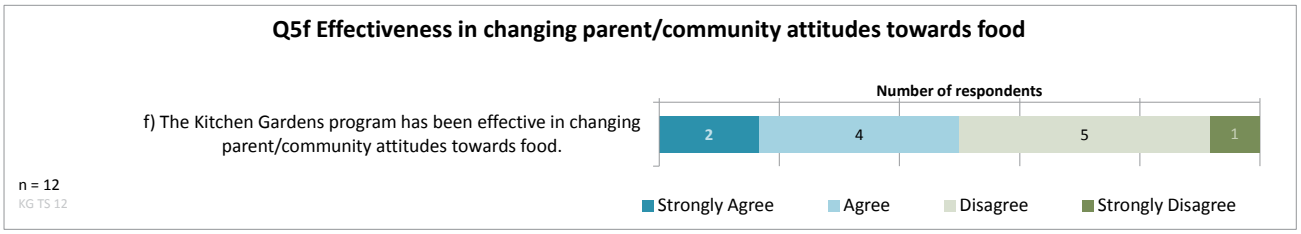
> *"Parents and community are needed for successful kitchen gardens."*

Sustainable practices were often transferred from students to parents. In interviews, parents indicated that knowledge gained by their children during the course of the *Kitchen Garden Pilot* program had been so effective that they were being told to 'do the right thing' in purchasing fresh foods and recycling waste material. One parent noted that:

> *"I get into trouble if I put things in the wrong bin."*

Teacher survey responses were fairly evenly divided regarding the extent to which the *Kitchen Garden Pilot* program had changed parent and community attitudes towards food, as seen in Figure 6.3. One teacher commented that parents were now asking how to cook various vegetables.

Figure 6.3 Change in parent and community attitudes towards food as perceived by teachers



A community member commented:

> *"It's the child that has made the breakthrough. Kids are more calm; they are interested, they are teaching us. Half of the vegetables I didn't know. They tell me I should try this or that. It is a learning curve."*

Nearly all schools consulted with parents on some aspect of the *Kitchen Garden Pilot* program, whether it be garden design, kitchen recipes, or organising school markets for the community to purchase fresh produce, as seen in Figure 6.4.

The coordinator at one school indicated that she tried to actively involve parents in the program. One example was described:

> *"I will go and cook with the mother (Vietnamese) first and then we can do it with the kids in the kitchen - cooking dim sims."*

Figure 6.4 School produce markets

School community markets not only assisted in engaging the community in activities within the school, but also provided profits which enabled the ongoing purchase of seeds and seedlings.

Community participation

Most schools have had a high degree of success in involving local community members in the *Kitchen Garden Pilot* program.

One school refers to the *Kitchen Garden Pilot* program as a 'community garden' program. This has its roots in the initiative originating with their local P&C, and their high degree of involvement in planning, building, resourcing and maintenance.

One of the small, inner city schools also had reasonable success in involving community members due to a pre-existing community volunteer, who now works with each class once a week for one hour in the garden.

One of the small, suburban schools had a number of community members involved in the evaluation interview. The coordinator had effectively involved Rotary to support the program. Rotary provided a volunteer to assist with the *Kitchen Garden Pilot* program, and donated items such as table cloths for tables. Other community members commented that:

> *"We can come and pick veggies, even after school, so long as we look after it."*

All schools agreed that community involvement was preferred, but not essential, for the successful operation of the program. This participation, according to teachers, not only helped to raise the profile of the school within the community, but also assisted with ongoing maintenance, particularly during school holiday breaks.

Local business networking and sponsorship

A number of schools have been successful in obtaining additional funding to support the program. Several made connections with their local councils to gain support and advice, as well as taking advantage of council garden workshops.

One school gained additional funding through a local business. This additional funding allowed the principal to hire a full time teacher coordinator for the duration of the *Kitchen Garden Pilot* program. An executive from the company was interviewed as part of the community group and expressed positive connections to the school:

> *"I really like being involved in the community, doing BBQs etc. We [Payce Consolidated] have become part of the school. We are happy to be supportive."*

Another school was successful in securing a financial literacy grant from the Commonwealth Bank to work with budgeting for the kitchen and garden, including setting prices to sell produce to parents. The profits will be used to buy further produce, seeds and seedlings and growing supplies.

Planet Ark provided $1,000 worth of plants to one school to establish their garden.

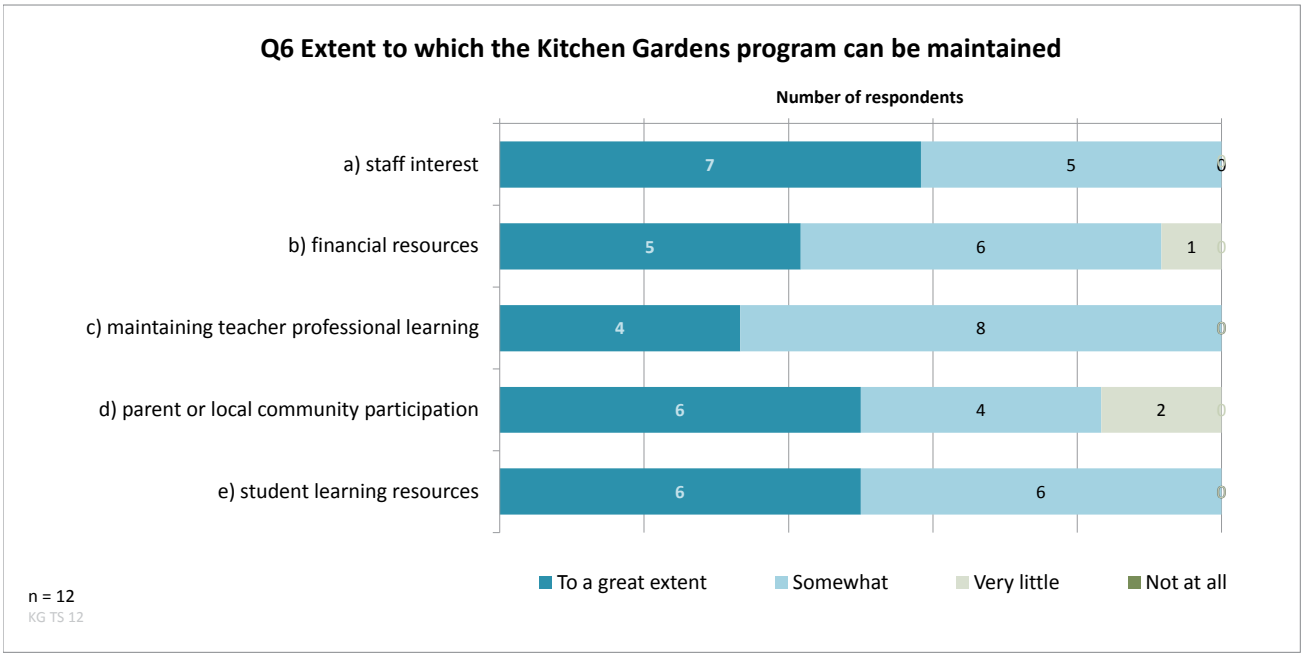
The evaluation established that schools need to take into account the ongoing costs of maintaining the kitchen garden program, and should be advised to incorporate networking with local business to secure extra funding sponsorship.

6.3 School capacity to maintain the program beyond the pilot phase

A number of issues were raised by principals and teachers regarding the maintenance of the program beyond the pilot period. Human resourcing as well as material resourcing requires careful planning on the part of school teams to ensure that a kitchen garden program is not only maintained but advanced.

As can be seen from Figure 6.5, generally teachers believe that the kitchen garden program can be maintained in their school. Staff interest was seen as the major factor in the continuation of the program.

Figure 6.5 Future of the *Kitchen Garden Pilot* program in the school



6.3.1 Human resources

School staff

It is well recognised across all the pilot schools, that sustaining the program will rely on the willing participation of teachers, a coordinator to lead the program at a whole-school level, and all teachers to continue involvement at the class level. Principals of larger schools advised that they were confident they would have no issues finding staff who would be willing to join the organising team into the future. Some smaller schools were concerned that if they lost their coordinator the program may fall apart.

A community member at one of the 'expert' facilitator schools, expressed concern:

> *"What would happen if the kitchen garden coordinator left? It would stop."*

The principal of this school was aware of the long term problems associated with having an 'expert' facilitator model, particularly knowing that funding of the position by the local business could not continue on a permanent basis. Plans have been put in place to ensure that all staff have the necessary training and become active facilitators of the kitchen garden program.

Schools that had embedded the program into school plans and had ensured that a number, if not all staff, had expertise, were confident that the program would continue regardless of teachers leaving or coming to the school. Ongoing professional learning, sharing of ideas and resources and introductory programs for new staff members were seen as the foundation for maintaining the benefits.

Parents and local community members

School staff saw the importance of having community members involved in the program, and were confident that they would be able to continue with the current engagement. All schools provided evidence of future strategies to engage the community at increasing levels. As the principal at one of the community model schools stated:

> *"It won't fall down if someone leaves."*

A teacher in one of the 'team' schools advised that they had negotiated with the local TAFE to provide a 10 week gardening course for parents. This course was included in school planning for 2013.

Comments from two community members at different schools provide evidence of their commitment to the continuation of a kitchen garden program at their schools:

> *"It needs to continue and it is good that we are starting from kindergarten, and it doesn't matter who is doing it, teachers, principal, community, parents."*

> *"It just needs the passion of the teachers and parents. It has to be all the school to keep it going. Commitment to go on is needed from everyone."*

6.3.2 Financial resources

The initial grant provided schools with the necessary finances to set up a working garden and a food preparation area.

School principals, staff and the community were confident that with sustainable practices, such as recycling, and a little creative thinking, such as networking with potential sponsors, the program would be financially viable in the future.

6.3.3 Future professional learning needs

Schools that had provided in-school professional learning were certain that the program was embedded in the school curriculum.

It was up to staff to ensure that inexpensive professional learning would continue and this could be achieved particularly through networking and online research.

Teachers in many of the pilot schools recommended that a school network be established so that schools could learn from each other's experiences.

6.3.4 Student resource needs

Resources for students, including gloves, garden implements and kitchen utensils, have been purchased by schools using the pilot funding.

According to principals, future replacement resources, will have to be funded from the school budget, from donations made by the local community, or from external funding sources.

Part 3 Evaluation Practice

7 Methodology

The *Kitchen Garden Pilot* program evaluation employed a mixed-method design, drawing on both quantitative and qualitative components, as described in the following sections.

The evaluation was undertaken in 2012, during the second year of the pilot's implementation. At this early stage of program implementation the most credible data comes from the experiences of principals, teachers, students and the community, and the results of ongoing school-based assessment of student achievement.

In addition to a survey of teachers, qualitative methods were employed as they allowed greater depth of enquiry, giving value to the accounts of teachers, school executive members, students, and parent and community representatives.

Principals of all nine schools involved in the *Kitchen Garden Pilot* program were asked to complete an online questionnaire in order to capture the background to the local implementation. This provided valuable information used in selecting the range of schools for fieldwork visits. The principal questionnaire is attached at Appendix 4.

The evaluation excludes a comparative analysis of schools involved in the pilot. The evaluation also excludes appraisal of other kitchen garden programs being implemented in NSW government schools.

The methodology was approved by the *Kitchen Garden Pilot* Program Evaluation Reference Group (PERG). Each of the interview and observation schedules was developed in consultation with the expert members of the PERG.

7.1 Qualitative component

The qualitative component of the evaluation comprised:

- a review of program documentation for sustainability education in NSW and a review of national and international literature pertaining to school kitchen gardens
- interview with the *Kitchen Garden Pilot* program developers
- visits to five of the nine schools implementing the pilot, to conduct observations and interviews with school principals, school kitchen garden coordinators, teachers implementing the pilot as well as students and the parent community.

Background document review

Prior to the commencement of the evaluation, team members undertook a thorough review of *Kitchen Garden Pilot* program materials and associated literature, to better inform their understanding of the program, and their interpretation of the evaluation data, especially that drawn from conversations with school staff and students.

Interview with program developers

At the commencement of the evaluation, evaluation team members met with Mark Caddey, Senior Development Officer Sustainability, from the NSW CLIC. Mr Caddey provided insights into the aims of the program, background to funding and initial training for teachers undertaking the pilot.

The NSW CLIC also provided recommendations on the types of questions to direct to teachers, students and the parent community.

School visits

The evaluation team used a purposive selection of schools to be included in fieldwork. Schools were selected to provide a range of implementation contexts, varying in terms of:

- the size and location of schools, ensuring demographic diversity within the sample
- characteristics of student population, including the proportions of Aboriginal students, students from culturally, linguistically and socio-economically diverse backgrounds
- the type of implementation model undertaken in each school.

In most cases, two members of the evaluation team visited each school for one day. Each visit included:

- an interview with the principal
- an interview with the kitchen garden coordinator (often in conjunction with the principal)
- classroom observation of program implementation
- group interviews with students
- individual and group interviews with teaching staff
- group interviews with local Parents and Citizens group representatives, and any local community members involved in the pilot
- document review including analysis of School Environmental and Sustainability Plans and Annual School Reports
- obtaining photographic evidence of implementation and student activities.

Evaluation fieldwork instruments are attached at Appendix 5.

The five sample schools were visited in August and September, 2012. A total of 29 interviews were conducted, with the number of individual or group interviews ranging from four to seven in each school. Table 1.1 provides a summary of data sources across the five schools.

Table 7.1 Summary of participation in school interviews

Methods	No of interviews	No of participants
Principals	5	5
Program coordinators	5	8
Class observations	5	n/a
Student focus groups	3	18
Teacher interviews	8	16
Parent and community interviews	3	10
Total	29	57

The evaluation team was able to interview all stakeholder groups in three of the five schools visited. Only three of the five schools were able to organise parent/community groups due to either lack of involvement or unavailability of the parent community. Student groups were organised at three of the five schools. Teacher duties at one school necessitated the need for three separate student group interviews.

Permission was given by all participants for the interviews to be audio recorded. Audio recordings will be retained by the evaluators for the purpose of accuracy until the evaluation is completed. All interview data is confidential and no individuals have been identified by name. Permissions were also obtained for all students appearing in photos.

Consent forms were obtained from students participating in focus groups.

7.2 Quantitative component

The quantitative component of the evaluation comprised an online survey, available to teaching staff in all nine schools. The survey's aim was to capture teachers' experiences and views on the effectiveness of programming to incorporate a kitchen garden.

The online survey was completed by a total of 21 school staff, including some principals and school executive, from eight of the nine schools implementing the *Kitchen Garden Pilot* program. Full results of the online survey are attached at Appendix 6.

Note that the sample size of 21 is relatively small and this limits the strength of the generalisations which can be made from the survey data. The feedback and opinions of those who did respond, however, provide valuable insights into their experiences of the program.

The charts and graphs used throughout this report present responses to the online teacher survey.

7.3 Data recording and analysis

All interviews and focus group sessions were recorded using both audio recording and note taking. Field notes and recordings were consolidated into a single record of interview, which was quality reviewed before analysis commenced.

Systematic coding commenced with an initial set of categories generated from the evaluation's Terms of Reference and the background document review. Original categories were soon expanded and refined, based on common issues and themes emerging from participants' responses. Counter-examples were sought, with recognition given to dissenting opinions, particularly from within teacher and student group interviews.

The narrative responses to the teacher survey were included in the consolidated data set. The combined data amounted to 744 individual records. It is this material that has been used to provide the qualitative account of the evaluation.

7.4 Limitations of the methodology

A mixed-model research methodology has limitations. It requires that the evaluation team be proficient in both qualitative and quantitative methods.

The use of qualitative methods, as well as performance measures or surveys, provides a balancing effect, allowing the accounts by teachers, students and parents of their experiences with the program to be presented for interpretation by others.

Qualitative methods do not seek to identify a simple consensus or give extra weight to frequent comments or repeated evidence of similar experiences. It is the 'atypical' that also provides insight into the educational situation, especially if events are experienced differently in different contexts, or by a variety of participants. While this may suggest a limitation in the ability to draw general conclusions, what it does offer is recognition of the diversity of experiences within and between school situations.

Specific issues arose in the process of undertaking the evaluation of the *Kitchen Garden Pilot* program including:

- differences in construction timelines for schools (e.g. some schools at the time of the evaluation did not have a fully functioning kitchen)
- the availability of students for 'formal' focus groups
- the level of community involvement.

7.5 Attribution

Concurrent with the introduction of the *Kitchen Garden Pilot* program, each school may have implemented other programs or initiatives that influenced student and community engagement or outcomes related to health, and environmental and sustainability education (e.g. *Live Life well @ School, Sustainable Schools NSW* program).

A challenge exists in attributing outcomes to any one program or intervention exclusively.

Glossary

TERM	DESCRIPTION
Community	Local residents, possibly including parents
Curriculum	The subjects that students study at a particular school
the Department	NSW Department of Education and Communities (prior to 3 April 2011, the agency was known as Department of Education and Training)
Effective	Producing a desired result
Engagement	Involvement in schooling, attachment to teachers and classmates and application to learning
Goals	Specific targets to achieve a defined objective
Kitchen Garden Pilot	The NSW Public Schools pilot program (funded by NSW CLIC, now managed by Early Learning and Primary Education.) being evaluated
KLA	Key learning area. Known also as learning area.
LBOTE	Language Background Other Than English
Literacy	Ability to read and write to defined levels
Local	A shared geographical location
NSW CLIC	NSW Curriculum and Learning Innovation Centre
Numeracy	Mathematical skills needed to cope with everyday life
Parents	The adults who care for the students enrolled in the school (includes carers and guardians)
PERG	Program Evaluation Reference Group
SEMP	School Environment Management Plan
TAFE	Technical and Further Education
Strategy	Action to achieve a goal in a particular program
Sustainability Education	Acquiring the knowledge, skills, attitudes and disposition of meeting human needs in the present while preserving the environment so that these needs can also be met in the indefinite future
Syllabus	Course control document for a subject to ensure consistency between schools, including objectives of instruction
ToR	Terms of Reference
WHS	Work Health and Safety (previously OH&S)

References

Australian Curriculum Assessment and Reporting Authority (ACARA). (n.d.). Cross-curriculum priorities. Retrieved October 2012, from http://www.australiancurriculum.edu.au/English/Cross-Curriculum-Priorities

Blake, S. (2013, 12 April). Fighting Obesity: Healthy food lesson failure, *The Daily Telegraph.*

Block, K., Johnson, B., et al., (2009). Evaluation of the Stephanie Alexander Kitchen Garden Program: Deakin University, The University of Melbourne.

Board of Studies NSW. (1996). Guiding Statement. Retrieved October, 2012, from http://k6.boardofstudies.nsw.edu.au/linkages/Guiding/guiding_intro.html

Circles of Learning. (2013). Retrieved December 2012, from http://www.circlesoflearning.org.au/programs/childrens/klever-kid/p/38

Department of Education and Communities (DEC). (2006). Environmental Education Policy for Schools. Sydney: Department of Education and Communities.

Department of Premier and Cabinet. (2010). Championing Childhood – A Better Start for our Kids. Retrieved October 2012, from http://www.nswalp.com/media/news/a-better-start-for-our-children---championing-chil

Desmond, D., Grieshop, J., & Subramaniam, A. (2004). Revisiting garden-based learning in basic education. Retrieved October 2012, from http://www.fao.org/sd/erp/revisiting.pdf

McRae, D. (2005). Student Engagement, Attendance, participation and belonging. What Works: The Work program Core Issues No. 5. October 2012, from http://www.whatworks.edu.au/upload/1250830979818_file_5Engagement.pdf

NSW Curriculum and Learning Innovation Centre. (2012). Environmental and Sustainability Education. Retrieved October 2012, from http://www.curriculumsupport.education.nsw.gov.au/env_ed/index.htm

State of NSW, Department of Education and Communities. (2012). Kitchen Gardens. Retrieved January 2013, from http://www.kitchengardens.det.nsw.edu.au/index.htm

Office of Environment & Heritage. (2012). Sustainable Schools NSW. Retrieved October, 2012, from http://www.environment.nsw.gov.au/sustainableschools

Royal Horticultural Society. (2010). Impact of school gardening on learning. Retrieved October 2012, from http://apps.rhs.org.uk/schoolgardening/uploads/documents/Impact_of_school_gardening_on_learning_821.pdf

Useful websites

ABC (2013). "Gardening Australia videos." Retrieved January, 2013, from http://www.abc.net.au/gardening/video/download.htm.

ABC Gardening Australia., The Vegie Guide http://www.abc.net.au/gardening/vegieguide

Australian Association for Environmental Education (2012). Retrieved December 2012, from http://www.aaee.org.au

Department of Premier and Cabinet., NSW Government (2010) *Championing Childhood – A Better Start for our Kids.* Retrieved October, 2012 http://www.nswalp.com/media/news/a-better-start-for-our-children---championing-chil

Sydney Markets Ltd. (2011). Fresh for Kids. Retrieved October 2012, from http://www.freshforkids.com.au

Hornsby Shire Council and Northern Sydney Central Coast Health (2011) *Ready, Set Grow Program.* [website] Retrieved October, 2012. http://www.hornsby.nsw.gov.au/services/school-education-programs/waste-programs

National Landcare Directory (2012) Coles Junior Landcare School Garden Grants program. Part of the Australian Government's Caring for our Country Grant. [website] Retrieved October, 2012 http://www.juniorlandcare.com.au/grants-2/coles-grant

NSW Department of Health and NSW Department of Education and Communities. NSW Government (2013) Healthy Kids. [website] Retrieved October, 2012 http://www.healthykids.nsw.gov.au/default.aspx

Appendix 1 Curriculum mapping

Kitchen Garden Program

Kitchen and food gardens are an increasingly popular and effective way for schools to promote environmental and sustainability learning and to connect students with healthy food and lifestyles. By using the table below schools can link student learning outcomes across the curriculum to the various activities and seasonal cycles involved in managing a kitchen garden and the preparation of fresh produce.

Curriculum Links to NSW K-6 syllabuses*

*Teachers were provided with curriculum links to the current NSW syllabus. As of 2014, NSW will begin a phased implementation of the new syllabus based on the Australian Curriculum.

Location	Activity	English	Mathematics	Science & Technology	HSIE	Languages	PDHPE
GARDEN	Planting seeds and seedlings			INVS2.7 LTS2.3 PSS1.5			
	Measuring plants			INVS1.7 INVS2.7 LTS2.3 UTS1.9			
	Identifying parts of a plant			INVS2.7 LTS2.3 LTS3.3		2.UL.1 2.UL.2 2.UL.3 2.UL.4 3.UL.1 3.UL.2 3.UL.3 3.UL.4	
	Identifying insects and birds			INVS2.7 LTS2.3		2.UL.1 2.UL.2 2.UL.3 2.UL.4 3.UL.1 3.UL.2 3.UL.3 3.UL.4	
	Identifying and removing weeds			INVS3.7 LTS3.3			
	Removing insect pests			INVS3.7 LTS3.3			
	Preparing and distributing compost			LTES1.3 LTS1.3 LTS2.3 LTS3.3			
	Watering efficiently			INVS3.7 LTS3.3			
	Propagating plants; taking cuttings, pollinating plants			INVS3.7 LTS3.3			
	Measuring soil chemistry			INVS3.7 LTS3.3			
	Establishing garden beds			BES3.1			
	Identifying plants and plant families			INVS2.7 LTS2.3			

Location	Activity	English	Mathematics	Science & Technology	HSIE	Languages	PDHPE
GARDEN	Determining when fruit and vegetables are ready to harvest			INVS2.7 LTS2.3			
	Recording plant development in a journal	WES1.9 WS1.9 WS2.9 WS3.9		INVS2.7 LTS2.3 ICES1.2 ICS1.2 ICS2.2 ICS3.2	SSS2.7		
	Labelling plants	WES1.9 WS1.9 WS2.9 WS3.9		INVS2.7 LTS2.3			
	Maintaining a worm farm			LTES1.3 ICES1.2 ICS1.2 ICS2.2 ICS3.2			PHS3.12
	Creating artworks using the garden as inspiration						
	Using language specific to gardens	TS2.1 WS2.9 TS3.1 WS3.9		DMS2.8 BES2.1		2.UL.1 2.UL.2 2.UL.3 2.UL.4 3.UL.1 3.UL.2 3.UL.3 3.UL.4	
	Reading texts relating to gardens; e.g., sowing instructions, planting guide	RS2.5 RS3.5		INVS2.7 LTS2.3		2.UL.1 2.UL.2 2.UL.3 2.UL.4 3.UL.1 3.UL.2 3.UL.3 3.UL.4	
	Representing data regarding numbers of plants, height, varieties, location, etc		DS2.1 DS3.1	INVS2.7 LTS2.3			
	Planning and mapping gardens and garden beds			DMS2.8 BEES1.1 BES1.1 BES2.1 PSS1.5 PSS2.5 PSS3.5	ENS2.5		
GARDEN AND CHOOK PEN ACTIVITIES							
GARDEN AND CHOOK PEN	Sustainable food practices			INVS3.7 LTS3.3	ENS1.5 ENS2.5 ENS3.5		
	Life cycles of nutrients, plants and insects			INVS3.7 LTS3.3			
	Classification of plants and insects			INVS2.7 LTS2.3			

Location	Activity	English	Mathematics	Science & Technology	HSIE	Languages	PDHPE
GARDEN AND CHOOK PEN	Seasons			INVS1.7 ESS1.6 ESS2.6	ENS1.5		
	Water cycle			INVS3.7 ESS3.6	ESS1.6 ESS2.6 ESS3.6		
	Planning and mapping chook pen			DMS2.8 BEES1.1 BES1.1 BES2.1 PSS1.5 PSS2.5 PSS3.5	ENS2.5	2.UL.1 2.UL.2 2.UL.3 2.UL.4 3.UL.1 3.UL.2 3.UL.3 3.UL.4	
	Using language specific to raising chickens	TS2.1 WS2.9 TS3.1 WS3.9		DMS2.8 BES2.1			
	Recording chicken growth and development in a journal	WES1.9 WS1.9 WS2.9 WS3.9		INVS2.7 LTS2.3 ICES1.2 ICS1.2 ICS2.2 ICS3.2	SSS2.7		
KITCHEN ACTIVITIES							
KITCHEN	Discussing appropriate cooking techniques	TES1.3 TS1.3 TS2.3 TS3.3		DMS3.8 PSS3.5			
	Identifying and using kitchen utensils			DMS3.8 PSS3.5		2.UL.1 2.UL.2 2.UL.3 2.UL.4 3.UL.1 3.UL.2 3.UL.3 3.UL.4 2.MBC.2 3.MBC.2	
	Washing food			DMS3.8 PSS3.5			PHES1.12
	Measuring ingredients by weight, volume or length		MS2.1 MS3.1 MS2.3 MS3.3 MS2.4 MS3.4	DMS3.8 PSS3.5			
	Following recipes	RES1.5 RS1.5 RS2.5 RS3.5		DMS3.8 PSS1.5 PSS3.5		2.UL.1 2.UL.2 2.UL.3 2.UL.4 3.UL.1 3.UL.2 3.UL.3 3.UL.4	
	Preparing food: peeling, chopping, stirring, crushing, mixing, grating, whisking, slicing			DMS3.8 PSS1.5 PSS3.5			

Location	Activity	English	Mathematics	Science & Technology	HSIE	Languages	PDHPE
KITCHEN	Placing scraps in compost bins			DMS3.8 PSS3.5			
	Cooking food: baking, frying, sautéing, grilling, poaching, boiling, steaming, melting			DMS3.8 PSS1.5 PSS3.5		2.UL.1 2.UL.2 2.UL.3 2.UL.4 3.UL.1 3.UL.2 3.UL.3 3.UL.4	
	Presenting and serving food			DMS3.8 PSS3.5			
	Decorating tables using flowers from the garden			DMS3.8 PSS3.5			
	Cleaning, washing and drying						PHES1.12
	Using language specific to kitchens	TS2.1 WS2.9. TS3.1 WS3.9		DMS3.8 PSS3.5		2.UL.1 2.UL.2 2.UL.3 2.UL.4 3.UL.1 3.UL.2 3.UL.3 3.UL.4 2.MLC.2 3.MLC.2	
	Reading texts relating to kitchens, e.g., recipes, food journals	RS2.5 RS3.5		DMS3.8 PSS3.5			
	Hygiene						PHES1.12
	Cultural beliefs and practices			PSS1.5 ICS3.2	CUS1.4		
	Trade				SSS1.7		
	Fractions, decimals and percentages (comparative quantities of ingredients in recipes)		NS2.4 NS3.4				
	Comparing measurements, e.g., 100ml of water weighs 100gms		MS2.3				
	Healthy food choices						PHES1.12 PHS1.12 PHS2.12 PHS3.12
	A student refers to a sense of their own worth and dignity						IRES1.11 IRS1.11 IRS2.11 IRS3.11
	A student accepts responsibility for personal and community health						PHES1.12 PHS1.12 PHS2.12 PHS3.12

Appendix 2 Resource requirements

Appendix 2a Example budget

Item	Income	Expenditure	Balance
Period 01/12/10 -30/11/11			
Income	$40,000.00		
Balance@ 01/12/10			**$40,000.00**
Expenditure:			
Consumables		$5331.09	
Minor Expenses		$5019.37	
Casual Salaries		$645.88	
Bus Hire		$909.09	
Period 01/12/11- 22/08/12			
Balance@ 01/12/11			$28,094.57
Income:			
B.C.C.	$2750.00		
Expenditure:			
Minor Expenses Labour Plumber Electrician Equipment Hire Materials Wood Chip /Plants Registrations		$ 11,256.28	
Casual Salaries Casual Teacher Casual SASS Project Relief		$3,884.24	
Garden Beautification Plants I Wood Chip I Mulch Fencing Materials Safety Equipment/ Watering equipment		$1,961.68	
Kitchen Renovation Ceramic Tiles I Underlay I Glue Tile cutter Grout Colour /Tape measure/ Spacers		$835.16	
Totals	$42,750.00	$29,842.79	
Balance@ 22/8/2012			**$12,907.21**

Appendix 2b Garden resource needs

Garden needs	Approximate cost (Bunnings)
1 ton soil	$75
2.2 x 1.3 x 0.8m Corrugated Raised Garden Kit (halved = 2 beds)	$298
20L Mulchmaker Compost Tumbler	$188
7L Caddy compost bin (for classrooms) (@$10 each) x6	$60
Can - Watering Plastic 1.5l (@$5 each) x10	$50
Composted mulch (30litres)	$8
Fruit tree seedlings (@$10 each) x 5	$50
Garden Gloves Kids Cotton (@$2.50 each) x20	$50
Garden Stakes pkt 10	$8
Hand tools Weeders/Spades (@ $ 4.50 each) x 20	$90
Hose and fittings	$15
Vegetable Seedlings (@$5 each) x10	$50
Water crate	$20
Wet Treated Pine Sleeper 200 x 75 mm 2.4m (@$17 each) x 4	$68
Worm Farm	$60
TOTAL	$1090.00

It is important for schools to note that this budget does not reflect the ongoing purchase costs of replacement items as needed.

Appendix 2c Kitchen resource needs

Kitchen needs	Approximate cost (from general retailers)
Cutlery (@ $50 set of 6) x 4	$200
Fridge (400L)	$900
Kitchen cooking utensils (@$5 each) X20	$100
Kitchen pots (@ $50 each) x 5	$250
Microwave	$100
Pans (@ $20 each) x 5	$100
Plates and bowls (@$40 set of 4) x 6	$240
Storage containers (@$ 18 set of 5 various) x 6	$108
Stove (54 cm electric)	$600
Tablecloths (@ $20 each) x 6	$120
Tea towels (@$2 each) x 10 and wash up equipment	$20
Work Benches (Fold away marquee @ $40 each) x 4 chairs (fold away @ $20 each) x 20	$16 $400
TOTAL	$3154.00

It is vital for schools to note that this budget does not reflect the ongoing purchase costs of other food products not grown in the garden necessary for recipes in food preparation.

Appendix 3 Class program overview

week	In class focus	Garden focus
1	Everything naturally occurring on Earth - plants (flora), animals (fauna), sunlight, water. Respect the Earth.	• Prepare garden beds for planting • Soil preparation • Determine seasonal plants- incl. herbs, vegetables, aromatics • Organise and familiarise students with gardening equipment
2	The basic components essential for a good organic garden - nutrients, recycling, composting, diversity of plants. Healthy food - cooking.	• Water soil • Plant seedlings • Water seedlings
3	Life cycle of a plant - from seed to harvest. Look at a variety of seeds and seed pods collected from nature eg. snow peas, beans, pine cones, avocado. Look at seed care information.	• Water seedlings • Weed garden • Fertilise • Plant some seeds in the 'nursery beds' to grow seedlings
4	Signature foods resemble different body parts and are beneficial to that specific part.	• Water seedlings • Weed garden • Fertilise • Care for seeds in the 'nursery beds' to grow seedlings
5	Water - How plants absorb water. Water cycle.	• Water seedlings • Weed garden • Fertilise • Care for seeds in the 'nursery beds' to grow seedlings • Fertilise
6	Earthworms - benefits of worms in the garden. Life cycle of earth worms. Setting up/caring for our worm farm.	• Revisit the worm farm • Establish procedures to look after the worms • Use the worm juice to fertilise the garden
7	Roots - Purpose of roots. Root vegetables - parsnips, potatoes. Growing sprouts.	• Water seedlings • Weed garden • Fertilise • Care for the seeds in the 'nursery beds' to grow seedlings
8	Chickens - life cycle of a chicken. Caring for chickens. Cooking with eggs (scrambled eggs, omelette, quiche, boiled eggs).	• Water plants • Weed garden • Fertilise • Care for the seeds in the 'nursery beds' to grow seedlings • Caring for the chickens - clean water, fresh pellets, garden scraps
9	Sun - exposure to the sun allows plants to grow and allows people to produce Vitamin D. Over exposure to plants and people - hydration. Shadows Air - oxygen for plants and self. Pollution. Balloon experiments - unseen particles. Allergies, sun dial.	• Water plants/harvest plants • Weed garden • Fertilise • Care for the seeds in the 'nursery beds' to grow seedlings
10	Bush Tucker - discuss Aboriginal history. Discover variety of plants. Visit to/or by Aboriginal Education Officer at Botanic Gardens.	• Harvest plants • Weed garden • Visit bush tucker garden • Replant where needed • Weed garden • Care for track

Appendix 4 Principal questionnaire

Program Description: NSW Public Schools *Kitchen Garden Pilot* program

(to be completed by Principal or delegate)

School name: **School code:**

Principal's name:

Name of contact person:

Did you have a kitchen garden established before beginning this program?	Yes	No
Does this program appear in your School Plan?	Yes	No
Does this program appear in your School Environmental Management Plan? (SEMP)	Yes	No
Briefly describe your Kitchen Garden program		

The garden

Briefly describe your garden: • location • structure (eg above ground, no dig, in- ground) • produce grown • animals (eg hens) • composting • worm farms	
Who was involved in the design of the garden?	
How is your garden managed?	
In which stage(s) of learning is the garden used?	ES1 Stage 1 Stage 2 Stage 3
How is the garden incorporated into the activities of each class? (eg RFF, buddy classes, whole grade/ stage, cross stage teams)	
How often do classes work in the garden?	
How are decisions made regarding what is grown in the garden?	

The kitchen

Briefly describe the kitchen facility used for this program.	
How is your kitchen facility managed?	
How often do students use the kitchen facility?	

Curriculum

How is the Kitchen Garden included in individual teacher's programs?	
Which syllabus areas are being addressed?	Science and Technology PDHPE English Mathematics HSIE Creative Arts None
Have teachers created units of work or cross-curricula teaching sequences related to the kitchen garden?	Yes No

Professional learning and resources

Have teachers undertaken any professional development for this program? If so, please list.	Yes No
Have you found any resources to be of particular value (e.g. books, websites)? If so, please list.	Yes No

Community involvement

How have parents or community members been involved in the Kitchen Garden Program?	Yes No
Have any workshops been held for parents and community members?	Yes No

Sustaining the Kitchen Garden Program

How will the program be sustained beyond 2012?

Appendix 5 Evaluation fieldwork instruments

Principal/Coordinator Interview

Program: NSW Public Schools Kitchen Garden Pilot	Data Ref:
School:	Region:
Date:	Time:
Principal: Coordinator:	Evaluation officers:

This interview and the information relates to the *Kitchen Garden Pilot* program supported with $40,000 in funding from the Curriculum and Learning Innovation Centre (CLIC).

Reiterate purpose of evaluation:

1. Extent to which schools have linked syllabus outcomes to student understanding of food production, nutrition and health:
   - student engagement in cross-curricular approach
   - teachers including sustainability education in programs
2. Extent to which the Kitchen Garden Pilot program (KG) has changed knowledge, understanding and behaviour of students regarding healthy food choices
3. Identification of professional learning and resources to support future programs
4. Effectiveness and sustainability of KG in relation to:
   - school resource capacity
   - professional learning
   - student resource needs
   - community participation.

Confirm procedure for day

1. Principal/KG coordinator interview
2. Class observation (if possible in garden or kitchen)
3. Student group interview
4. Teacher group interview
5. Parent/community group interview

Documents for discussion

- Annual School Report
- School Management Plan
- School Environment Plan
- any self-evaluation reports of the KG program undertaken by the school
- any relevant school-based programs and assessments

	Discussion points	Concept
PA	**Kitchen Garden Pilot program background**	
PA1	Did the school have a garden or a student usable kitchen before implementing the *Kitchen Garden Pilot* program? If so, can you describe the context in which this was set up and maintained? What resources were used? *Prompt: set up by community, set up by P&C, set up by staff*	pre existing
PB	**Kitchen Garden Pilot program implementation**	
PB1	Explain how the $40,000 funding was used to set up or improve the kitchen garden program in your school. Do you have remaining funds for future plans?	funding
PB2	Who was directly involved in the original planning and construction of the kitchen or the garden? *Prompt: P&C, community, businesses (eg Bunnings), staff, AEO, students*	planning
PB3	To what extent was this a collaborative effort by all stakeholders? *Prompt: Who were the main decision makers?*	collaboration
PB4	What professional learning activities were staff/students and the parent community involved in? Prompt: Any that were particularly good?	professional learning
PB5	Comment on the factors that assisted or hindered the implementation of: • the garden • the kitchen • the classroom programs *Prompt: links with syllabus outcomes, environmental management plan, ability to use cross curriculum cross KLA.*	assisted hindered links to school plans and syllabus outcomes
PB6	What grades/stages are involved in the Kitchen Garden Pilot program and what are their responsibilities?	class/stage roles
PC	***Kitchen Garden Pilot* program impact/outcomes**	
PC1	What particular learning outcomes/ syllabus outcomes were or are you targeting with the kitchen garden program? They may be different for the different aspects, so you could describe these separately.	outcomes
PC2	What changes have you seen as a result of implementing kitchen gardens in your school? *PROMPT: changed knowledge, understanding and behaviour regarding healthy food choices, engagement, better student outcomes across KLAs, teaching practices, community involvement*	effective
PD	**Continuation of the program**	
PD 1	How do you intend to maintain the program in its current form without any additional funding? *PROMPT: resourcing (human and material), professional development, student -resource needs, community participation, sponsorship* ***Do you have any ideas of how to meet the future resource needs?***	maintain program

Thank principal for their time

Teacher Group Interview

This interview and the information relates to the *Kitchen Garden Pilot* program supported with $40,000 in funding from the Curriculum and Learning Innovation Centre or CLIC.

Program: NSW Public Schools *Kitchen Garden Pilot*	Data Ref:
School:	Region:
Date:	Time:
Evaluation officers:	Teachers: Stage/s taught

Introduction:

- Reiterate purpose of evaluation:
- Extent to which schools have linked syllabus outcomes to student understanding of food production, nutrition and health:
- Student engagement in cross-curricular approach
- Teachers including sustainability education in programs
- Extent to which the Kitchen Garden Pilot program (KG) has changed knowledge, understanding and behaviour of students regarding healthy food choices.
- Identification of professional learning and resources to support future programs
- Effectiveness and sustainability of KG in relation to:
- School resources capacity
- Professional learning
- Student resource needs
- Community participation.
- Reiterate that this discussion is to supplement the feedback from the online teacher survey.

	Discussion points	Concept
TA	**9BBackground**	
TA1	Did the school have a garden or a student usable kitchen before implementing the Kitchen Garden Pilot program(KG)?	Pre existing
TA2	What has been your involvement in the KG program? *Prompt: co-ordinator, classroom teacher, gardener, designer, writer of curricular resources/programs.*	Pre existing
TA3	Previous to this KG program have you ever involved students in this type of Program (environmental garden or cooking classes) before? *Prompt: at a previous school?*	Teacher experience
TA4	Do you involve your students in any other environmental or sustainability activities? *Prompt: study of energy, water, waste, recycling etc*	Other environmental programs
TB	**10BImplementation**	

TB1	Which KLAs have you addressed through the KG program? *Prompt: What specific outcomes are you trying to achieve in the activities we may see? (which strands are being covered)*	outcomes
TB2	What approach have you used? *Prompt: cross- curriculum, project, specific outcomes targeted?*	teaching and learning
TB3	Have you participated in any professional learning activities specifically to help you implement the KG program? What would have been useful? *Prompt: what type? if so were they effective?*	Professional learning
TB4	Have you involved parent helpers/local community members to assist with the KG program?	collaboration
TB5	Comment on the factors that assisted or hindered your involvement in: 1. the garden 2. the kitchen 3. the classroom programs.	Assisted hindered
TB6	Have you used any resources that you found particularly useful? *Prompt: websites, resource books, colleagues*	
TC	**11BImpact/outcomes**	
TC1	What changes have you seen as a result of implementing the KG program with your students? *Prompt: changed knowledge, understanding and behaviour regarding healthy food choices, engagement, better student outcomes across KLAs, teaching practices, community involvement.*	Effective changes Students
TC 2	Has the program resulted in any changes to your teaching practice? *Prompt: classroom management, environmental learning*	Effective changes teachers
TC3	Has the program helped you, as a teacher, foster stronger ties with the community? If so how? *Prompt: classroom helpers, raised awareness amongst parents about any aspect of the program, parents including better food choices in lunch boxes.*	Community ties
TD	**12BContinuation of program**	
TD 1	How will you be involved in the program next year?	Planning
TD2	Are you involved in any planning for the program into the future?	
	If you left this school would you be likely to establish a kitchen garden program at your new school?	Future practice
TE	**13BAdditional comments**	
TE1	Is there anything else you would like to add?	

Thank participants for their giving their valuable time.

Parent/Community Group Interview

This interview and the information relates to the Kitchen Garden Pilot program supported with $40,000 in funding from the Curriculum and Learning Innovation Centre (CLIC).

Program: NSW Public Schools *Kitchen Garden Pilot*	Data Ref:
School:	Region:
Date:	Time:
Evaluation officers:	Parents:
	Community:

Introduction:

- Introduce evaluation team.
- Ensure they have coffee/tea etc if they want and feel comfortable in an informal setting for a discussion about literacy in the school.
- Ask how many have children at school, how many are members of community without students at the school (quick count).
- This should be a general discussion regarding kitchen gardens and the impact upon the children of those present. Whilst there are specific questions that may need answering, the evaluating officers should guide the discussion around the main headings.

	Discussion point	Concept
CA	**Involvement in the school program**	
CA1	What's your involvement in the school? *PROMPT: sport, community storytelling, reading tutor assistance, Parents and Citizens Association?* If local community (or business sector) – How did you become involved in the project at this school?	participation sponsorship community involvement
CA2	What do you know about the Kitchen Garden Pilot program (KG) in this school? *PROMPT: may need brief explanation*	awareness (4)
CA3	Have you been given any specific information about the KG program? *PROMPT: in newsletters, on school website, from teacher meeting*	Awareness (4)
CA4a	Have you been involved in the development or maintenance of the school's kitchen garden?	Participation (3, 4)
CA4b	*PROMPT: designing the garden, setting up the kitchen, building the garden,* Are you involved in any of the class activities involving the kitchen or garden?	Participation (2,3,4)

CB	Effectiveness of the Kitchen Garden Pilot program	
CB1	Do your children (or the students) talk about their activities in the garden or kitchen? *PROMPT: what they are growing in the garden, what they have cooked,*	engagement
CB 2	Have you noticed any difference in your children's (the students') attitude? to school? to food? others? What are the differences? *PROMPT: awareness of different vegetables, eating habits, when shopping helping pick out fresh produce*	Effective changes Student understanding of food production (1,2)
CB 3a CB 3b	Do you think KG program has benefited your child (the students) at the school? Would you like to see it continue to be used as a program in the school?	Effective changes (1,2) Sustainability Knowledge (4)
CB 5	Anything else you would like to comment on regarding the program?	

Thank participants for their giving their valuable time.

Observation/Tour

The purpose of the observation or tour is to provide confirmation of data collected from principals who provided background project information prior to school visits.

Program: *Kitchen Garden Pilot* Data Ref:

Program: NSW Public Schools Kitchen Garden Pilot	Data Ref:
School	Class/stage observed
Evaluation officers:	Area: (garden or kitchen)
Teacher	Number of students:
Lesson Activity ☐ or Tour ☐: Photo taken ☐ Describe activity (KLA etc):	
GARDEN	KITCHEN
☐ Garden beds below ground	☐ Purpose built kitchen
☐ Garden beds above ground	☐ Staff room
☐ Vegetables	☐ Canteen
☐ Herbs	☐ Utensils (cutlery, pots, pans etc)
☐ Fruit trees	☐ Workstations
☐ Bush tucker	☐ Demonstration area
☐ Compost	☐ Dining area
☐ Worm farms	☐ Wet area (wash up)
☐ Chickens (other livestock)	☐ Signage (posters etc)
☐ Used for other purposes (eg outdoor learning area, special event venue)	
☐ Signage (labels for crops)	
Other observations:	
Date of observation:	Time:

Student Group Interview

(up to 6 students)

Program: NSW Public Schools Kitchen Garden Pilot	Data Ref:
School:	Region:
Date:	Time:
Total students: Male: Female: Aboriginal:	Year levels:
Evaluation officers:	Permissions:

This interview and the information relates to the kitchen garden project supported with $40,000 in funding from the NSW Curriculum and Learning Innovation Centre (NSW CLIC).

Introduction:

1. Thank students for being there.
2. Introduce evaluation officers. Have students write their own names on place cards.
3. Remind students why you are meeting with them (to talk about the KG program they are doing).
4. Bring up something in observation (or prior research on school) where you were impressed with the KG.

This should be a general discussion regarding KG and the impact upon the students present. Whilst there are specific questions that may need answering, the evaluating officers should guide the discussion around the main headings. Allow the students to talk freely about school, gardening, cooking, food choices etc.

Language needs to be modified for age group appropriateness.

	Discussion points	concept
SA	14BEngagement	
SA1	What is the first thing you think about when I say "School Kitchen Garden"?	Attitude
SA 2a SA 2b	What have you grown in the KG? What do you do with the things that are grown? Have you used these to cook with? Or do you sell them? What happens with the veggies etc. you grow? What else do you do in the kitchen garden? *Prompt: chickens, worm farm, composting, water tank*	Knowledge Produce Knowledge cooking
SA 3a	Tell us what you do in your KG lessons (are they KLA based?) *Prompt: Mathematics activities, reading, Science, measuring etc*	Engagement
SA 3b	Are there things you like about your KG lessons?	Like
SA 3c	Are there things you don't you like about your KG lessons?	dislike
SB	Skill development	

SB2	Can you tell us some of the things you may have learned from being involved in the KG? *Prompts:* • *food choice* • *healthy food* • *growing food* • *cooking food* • *composting* • *digging planning garden/crops*	outcomes
SC	Other benefits	
SC1	Think about all the subjects you do at school. How do you think your KG classes help you with these? Prompt: English/literacy Mathematics/numeracy Science and Technology/investigating, experiments PDHPE/ sport Creative Arts/ painting sculptures HSIE/	Cross KLA
SC2	Are your parents or carers involved? Other students' parents? Local community members?	Parent/community involvement
SC3	Has working in the kitchen or garden changed anything you do at home? *Prompt: Do you help shop for groceries?* *Help cook at home?* *Have a veggie garden etc at home?*	Knowledge transfer home
SC3	Anything else you would like to tell us about what you have been doing with the kitchen garden?	

Thank participants for their time.

Note: May be positive for students if evaluators provide a small snack (check for allergies with teacher), or small item to reward students for engaging in focus group (check class/school reward system).

Appendix 6 Online survey results

NSW Public Schools *Kitchen Garden Pilot* program Evaluation 2012

Teacher Survey: Comments on item responses.

Q1.1 Responses by school

Key points: Responses came from eight schools.

Q1.1 Respondents by school	Number of respondents
Erskineville PS	3
Lewisham PS	1
Marayong PS	2
Melrose Park PS	7
Plunkett Street PS	3
Randwick PS	3
Riverwood PS	3
West Ryde PS	0
Willmot PS	4
Total	26

Q1.2 Years currently teaching

Key points: All the Stages listed are evenly represented in the survey. Each of the three Stages from Early Stage 1 to Stage 2 have 13 respondents teaching at that level. There are 14 respondents who teach Stage 4.

Q1.2 Years currently teaching	Number of respondents
Early Stage 1	14
Stage 1	13
Stage 2	13
Stage 3	13

Q1.3 Direct involvement in kitchen garden activities

Details: Q.1.3. Have you been directly involved in planning or doing any of the following activities at your school? (tick one box for each activity)

Key points: For each of the six listed activities, around half of the 26 respondents say they have been directly involved in planning and doing the activity. Less than a quarter of respondents say they only plan or aren't involved at all, with the exception that for classroom activities and special events, a little more than a quarter of respondents say they are not involved at all.

Activity	Planning and Doing	Doing only	Planning only	Not at all
a) cooking classes for children	15	2	4	5
b) garden establishment or maintenance	13	5	2	6
c) garden classes for children	13	5	3	5
d) classroom activities related to the garden	16	2	4	4
e) classroom activities related to the kitchen	12	0	6	8
f) special events (e.g. open days, fetes etc)	12	2	4	8

Q1.4 School has a functioning kitchen or food preparation area for use with students

Key points: All of the 26 respondents say their school has kitchen or food preparation area for student use.

Q.1.4 School has functioning kitchen or food preparation area	Number of respondents
Yes	26
No	0

Q1.5 Teacher's class involved in the Kitchen Garden Pilot program

Key points: Sixteen respondents say that their class is involved in the *Kitchen Garden Pilot* program. Ten say their class is not involved.

Q1.5 Teacher's class involved in *Kitchen Garden Pilot* program	Number of respondents
Yes	16
No	10

Q2.1 Syllabus outcomes addressed through the Kitchen Garden Pilot program

Key Points: There are fourteen respondents to this question. Almost all of them say they address syllabus areas through the *Kitchen Garden Pilot* program.

Q2.1 Syllabus areas addressed through the Kitchen Garden Pilot program	Number of respondents
Human Society and its Environment	13
Science and Technology	13
PDHPE	13
Creative Arts	11
English	13
Mathematics	13
None	0

Q2.2 Cross-curricular approach and sustainability

Key Points: There is a high level of agreement among the fourteen respondents that the kitchen garden engages students in an interdisciplinary or cross-curricular approach. There is a high level of agreement among respondents that they include other aspects of sustainability education in their teaching and learning programs.

Question	Strongly Agree	Agree	Disagree	Strongly Disagree
a) Students in my class have been engaged in an interdisciplinary or cross-curricular approach to using the kitchen garden.	7	7	0	0
b) I include other aspects of sustainability education in my teaching and learning program (e.g. energy, waste, water, recycling).	6	7	1	0

Q3.1 and 3.2 Student eating habits before and after the Kitchen Garden Pilot program

Key Points: The number of respondents rating their students' eating habits as good or very good increases from four out of 14 prior to the introduction of the *Kitchen Garden Pilot* program, to seven out of 14 following the program. The number rating their students' eating habits as fair or poor decreases from 10 out of 14 prior to the program, to seven out of 14 following the program.

	Q.3.1. Based on your observations or class work, the eating habits of most of your students prior to the introduction of the *Kitchen Garden Pilot* program were:	Q.3.2. Based on your observations or class work, the eating habits of your students following the introduction of the *Kitchen Garden Pilot program* are:
Very good	0	1
Good	4	6
Fair	7	6
Poor	3	1

Q3.3 Student understandings about food

Key Points: The 14 respondents have a high level of agreement that students in their classes have good understandings of the food groups, what is considered healthy food, where food comes from and how food is grown.

Question	Strongly Agree	Agree	Disagree	Strongly Disagree
a) Students in my class have a good understanding of all food groups.	2	9	3	0
b) Students in my class have a good understanding of what is considered 'healthy' food.	6	8	0	0
c) Students in my class have a good understanding of where food comes from.	4	7	3	0
d) Students in my class have a good understanding of how food is grown.	7	6	1	0

Q4.1 Formal professional learning related to kitchen gardens

Key points: There are thirteen respondents to this question, of whom nine say they had formal professional learning related to kitchen gardens.

Q4.1 Formal professional learning related to kitchen gardens	Number of respondents
Yes	9
No	4

Q4.3 Professional learning which would have been beneficial

Key points: There are thirteen respondents to this question. All of the kinds of professional learning in the list are selected as beneficial by at least four respondents. Gardening skills and knowledge is regarded by eight as beneficial and managing students in the kitchen is regarded by seven as beneficial.

Q4.3 Professional learning which would have been beneficial	Number of respondents
Gardening skills and knowledge	8
Managing students in the kitchen	7
Designing and making the garden	6
Food preparation skills	6
Managing students in the garden	6
Follow up class activities	6
Organic gardening	5
Assessing student learning	5
Composting and worm farms	4
Other	4

Q4.4 Parents, carers and local community involvement

Key points: Most of the thirteen respondents agree that parents, carers or the local the community are involved in the Kitchen Garden Pilot program at their school.

	Strongly Agree	Agree	Disagree	Strongly Disagree
Q.4.4. Please indicate your level of agreement with the following statement: Parents, carers or the local the community are involved in the *Kitchen Garden Pilot* program at my school.	3	7	1	2

Q4.5 Resources that have been useful in implementing the Kitchen Garden Pilot program

Key points: There are 13 respondents to this question. All of the resources in the list are selected as beneficial by at least four respondents. Most respondents select colleagues and parents or carers as useful. No respondents select other resources than those in the list.

Q4.5 Resources that have been useful in implementing the *Kitchen Garden Pilot* program	Number of respondents
Colleagues	12
Parents or carers	9
The local community	7
Local Council	7
Websites (containing resources and planning tools)	7
Private businesses (e.g. Bunnings)	5
Reference books	5
School environmental networks	4
Hired consultants	4
Environmental Education Centre	4
Videos/dvds	4
Other	0

Q4.6 access to websites

Key points: There are 13 respondents to this question. Eight say they have accessed the Department's Environmental and Sustainability website and six say they have accessed the Sustainable Schools NSW website.

	DEC's Environmental and Sustainability website	Sustainable Schools NSW website
Yes	8	6
No	5	7

Q5a Extent to which the Kitchen Garden Pilot program involved everyone (students, staff, parent/community) working together

Key points: There are twelve respondents to this question. Ten say the *Kitchen Garden Pilot* program has been implemented with everyone (students, staff, parent/community) working together.

Question	Strongly Agree	Agree	Disagree	Strongly Disagree
5a) The *Kitchen Garden Pilot* program has been implemented with everyone (students, staff, parent/community) working together.	4	6	2	0

Q5b) Effectiveness in engaging students

Key points: There are 12 respondents to this question. All say the *Kitchen Garden Pilot* program has been effective in engaging students.

Question	Strongly Agree	Agree	Disagree	Strongly Disagree
5b) The *Kitchen Garden Pilot* program has been effective in engaging students.	9	3	0	0

Q5c) Extent to which the Kitchen Garden Pilot program involved parents/carers or the local community in the school

Key points: There are 12 respondents to this question. Eight say the *Kitchen Garden Pilot* program has involved parents/carers or the local community in the school.

Question	Strongly Agree	Agree	Disagree	Strongly Disagree
5c) The *Kitchen Garden Pilot* program has involved parents/carers or the local community in the school.	4	4	3	1

Q5d) Effectiveness in changing student attitudes towards food.

Key points: There are 12 respondents to this question. Eleven say the *Kitchen Garden Pilot* kitchen gardens program has been effective in changing student attitudes towards food.

Question	Strongly Agree	Agree	Disagree	Strongly Disagree
5d) The program has been effective in changing student attitudes towards food.	4	7	1	0

Q5e) Effectiveness in changing teacher attitudes towards food.

Key points: There are 12 respondents to this question. Eight say the *Kitchen Garden Pilot* program has been effective in changing teacher attitudes towards food.

Question	Strongly Agree	Agree	Disagree	Strongly Disagree
5e) The *Kitchen Garden Pilot* program has been effective in changing teacher attitudes towards food.	4	4	4	0

Q5f) Effectiveness in changing parent/community attitudes towards food.

Key points: There are 12 respondents to this question. Six say the *Kitchen Garden Pilot* program has been effective in changing parent/community attitudes towards food.

Question	Strongly Agree	Agree	Disagree	Strongly Disagree
5f) The *Kitchen Garden Pilot* program has been effective in changing parent/community attitudes towards food.	2	4	5	1

Q6 Extent to which the Kitchen Garden Pilot program can be maintained in the school

Key points: There are 12 respondents to this question. Almost all respondents say the program can be maintained somewhat or to a great extent in terms of the factors listed, in their schools. No respondents say the program cannot be maintained at all.

Program can be maintained in the school in terms of:	To a great extent	Somewhat	Very little	Not at all
a) staff interest	7	5	0	0
b) financial resources	5	6	1	0
c) maintaining teacher professional learning	4	8	0	0
d) parent or local community participation	6	4	2	0
e) student learning resources	6	6	0	0

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