The use of education theory to guide the implementation of participatory rural appraisal in the Kingdom of Tonga

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6 THE FINDINGS

This chapter presents the findings in order of phases. Within each phase, evidence is presented to show how the facilitator/researcher applied the conditions of learning to encourage participant engagement and then evidence of learner engagement is presented. Thus, the first section of each phase discusses the steps taken by the facilitator/researcher to encourage participant engagement in learning. As the project was implemented, the facilitator/researcher had to adjust the order of some events during the phases to suit the local context. At times two or more phases may have been occurring simultaneously in order to take advantage of local events that would reinforce the program.

The data were based upon analysis of the artefacts collected by the researcher/facilitator during the community talks, group meetings, training workshops, and home gardening visits. These artefacts included field notes, photographs, newspaper articles and semi-structured interview transcripts. After verification as described in Chapter 5, field notes and interview transcripts were coded according to the specific tasks performed in each phase. They were then re-coded if it was clear that a particular condition(s) of learning was applied. Thus, the coding identified and described specific tasks that applied specific conditions of learning. The researcher used email to verify codes with his academic supervisors.

In general, the events followed the phases that matched those recommended by a PRA approach, and, during these events, the facilitator/researcher sought to apply as many of Cambourne’s conditions of learning as feasible as this had the potential to increase learner engagement and evoke greater commitment to the project (Cambourne, 1988). Full details of all data are presented in Appendix Five. Further, as discussed in Chapters 4 and 5, the facilitator/researcher took steps to ensure that he paid respect to the culture of the participants and their community. In addition, he was always mindful of the particular life contexts of each group of participants.

The conditions of learning that were applied to encourage learner engagement were mainly immersion, demonstration, expectation and response. However, it needs to be
acknowledged that all of the conditions of learning can be present or absent, in varying degrees, during learning and this reflects the synergistic nature of these conditions (Cambourne, 2009).

Evidence of participant engagement in learning and also links of these to the conditions of learning that applied such as learner expectation, approximation responsibility, and response are presented after the steps taken by the facilitator/researcher have been described. Once again it needs to be acknowledged that all of the conditions of learning can be present or absent, in varying degrees, during learning and this reflects the synergistic nature of these conditions (Cambourne, 2009).

### 6.1 Steps taken by facilitator/researcher to encourage participant engagement during Phase One

Table 6.1 provides a summary of the events and data collected during Phase One.

**Table 6.1: Summary of the events and data collection in Phase One**

<table>
<thead>
<tr>
<th>Phase</th>
<th>Events - the time frame allowed for each phase was 4 to 6 weeks Phase one - June to early July 2004</th>
<th>Data collected</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Individual interviews Group meetings and community talks</td>
<td>Responses recorded as notes that were verified by subjects Observations and key ideas recorded as field notes</td>
</tr>
</tbody>
</table>

**6.1.1 Consultation**

Between June 2\(^{nd}\) - 3\(^{rd}\) 2004, the facilitator/researcher consulted the chairwoman of the Fe’ofa’aki ‘a Kakau group of women at ‘Isileli community and both the village officer and the leader of young farmers at Nukuhetulu village about an opportunity to set up sustainable gardens for their families in their respective areas.
6.1.2 Preparatory meetings

On June 8\textsuperscript{th} 2004, the young farmers’ preparatory meeting at Nukuhetulu village was started at 8.00pm.

![Figure 6.1: The participants at preparatory meetings – note the relaxed atmosphere](image)

The facilitator / researcher welcomed the participants before talking about sustainable agricultural practices such as home gardening, companion planting, and composting, mulching and seed conservation.

After the facilitator/researcher’s presentation, none of the young farmers asked questions or made any further comments. Initially, young farmers were unsure as to whether to participate or not. In addition, they showed limited understanding and experience of SUOP or ESAP.

6.2 Evidence of participant engagement in learning during Phase one

6.2.1 Consultation

The group of women and the young farmers needed to discuss in their respective groups before confirming their participation. The young farmers confirmed their participation after the group meeting. The group of women also invited the facilitator/researcher to talk more about the project during the next group meeting.

6.2.2 Preparatory meetings with the group of women and the young farmers

The group of women

As mentioned previously, the preparatory meeting of the group of women was held on June 07, 2004 (Figure 6.1). The group of women asked many questions about
composting, companion planting, recycling and seed saving before the secretary wrapped up the discussion with a few words of thanks.

Examples of the questions asked included:

   How much land will I need? How much time will it take? Why is this useful? Who will help me to do this?

The facilitator/researcher then left the meeting while the members continued with the rest of the agenda.

The young farmers

The town officer started the meeting with a short prayer followed by some welcoming remarks. Figure 6.1 shows some of the participants during phase 1 when the focus was on immersion and activating engagement.

The leader of the young farmers thanked all the participants for their participation before closing the meeting with a short prayer. The young farmers did not say a great deal at this meeting and did not ask questions.

6.2.3 Community Talks

The community talks with the group of women were held in their houses. This allowed them to ask more questions if they wished. The group of women reported that they fully supported the project. In addition, husbands fully supported the project and would also assist when they had time.

Most of their community talks with the young farmers were held in their gardens. Often the talks were held outside the house or under a tree. All of the young farmers agreed to participate in the project and indicated that their parents would support the project by providing land and planting materials. Almost immediately they started to plan how they could share resources such as seeds, plants and tools with each other. For example:

- Palavilala, ‘I. (aged, 28), a member of the young farmers said:
  
  I think that if we work together and share our equipment we can be more effective.
6.2.4 Initial Interviews

The group of women were interviewed in their houses. The topics identified by the respondents for the workshop were composting and home gardens, tree planting, seed saving and traditional pest control. All participants had, on average, eight persons in their household. They were all married and had children. Fishing was the main source of income for their families. They wanted to grow vegetables, multi-purpose trees, cultural trees, taro and sweet potatoes in their gardens. They also wanted to attend more local training workshops.

The young farmers, who were interviewed in their gardens, gave short answers during the interview. Only 40% of the respondents were married. Most lived with their parents in the same house. The number of people per household averaged five. The main source of income for their families was farming, followed by fishing and part-time paid labour. They had grown crops of cassava, banana, vegetable, yam, taro, vanilla and sweet potatoes. About 60% of the respondents used chemicals, especially herbicides, for weed control. They were brought up and lived in rural parts of Tongatapu. None of them had attended any training before.

The young farmers wanted to learn more about composting, companion planting, seed saving, replanting and organic liquid fertiliser as well as improving their farming practices. A one-week workshop was suggested to cover these topics and to learn more about the safe use of pesticides SUOP. They suggested that group work, field visits, handouts and drama were the appropriate teaching approaches for the workshop.

A summary of the interview data is presented in table 6.2 on the following page.
<table>
<thead>
<tr>
<th>Criteria</th>
<th>Young farmers (n = 5)</th>
<th>The group of women (n = 5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Family status</td>
<td>2 married and 3 single</td>
<td>all married</td>
</tr>
<tr>
<td>Family type</td>
<td>Extended</td>
<td>Immediate</td>
</tr>
<tr>
<td>Average persons per household</td>
<td>Five</td>
<td>Eight</td>
</tr>
<tr>
<td>Duration of a training program</td>
<td>One week</td>
<td>One day</td>
</tr>
<tr>
<td>Prioritising of training topics</td>
<td>i. composting</td>
<td>i. composting and home garden</td>
</tr>
<tr>
<td></td>
<td>ii. companion planting</td>
<td>ii. tree planting</td>
</tr>
<tr>
<td></td>
<td>iii. proper application of pesticides</td>
<td>iii. seed saving</td>
</tr>
<tr>
<td></td>
<td>iv. seed saving</td>
<td>iv. traditional pest control</td>
</tr>
<tr>
<td>Prioritising of methodology</td>
<td>i. field visits</td>
<td>i. field visit</td>
</tr>
<tr>
<td></td>
<td>ii. group work</td>
<td>ii. group work</td>
</tr>
<tr>
<td></td>
<td>iii. handouts</td>
<td>iii. handouts</td>
</tr>
<tr>
<td></td>
<td>iv. drama</td>
<td>iv. drama</td>
</tr>
<tr>
<td>Ranking sources of income</td>
<td>i. farming,</td>
<td>i. fishing</td>
</tr>
<tr>
<td></td>
<td>ii. fishing</td>
<td>ii. children &amp; husband wages,</td>
</tr>
<tr>
<td></td>
<td>iii. part-time labour</td>
<td>iii. handicraft</td>
</tr>
<tr>
<td></td>
<td>iv. exchanging of fish with root crops</td>
<td></td>
</tr>
<tr>
<td>Ranking of crops grown</td>
<td>1. cassava</td>
<td>i. home vegetable gardens</td>
</tr>
<tr>
<td></td>
<td>2. banana &amp; vegetable</td>
<td>ii. tree planting for cultural/medicinal/nutritional use</td>
</tr>
<tr>
<td></td>
<td>3. yams &amp; taro</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4. vanilla</td>
<td>iii. taro</td>
</tr>
<tr>
<td></td>
<td>5. sweet potatoes</td>
<td>iv. sweet potato</td>
</tr>
<tr>
<td>Language spoken</td>
<td>Tongan with basic English</td>
<td>Tongan language</td>
</tr>
<tr>
<td>Knowing chemicals’ names</td>
<td>Very limited</td>
<td>Almost no names known</td>
</tr>
<tr>
<td>Using pesticides for farming/gardening</td>
<td>3 said yes and 2 did not</td>
<td>None at all</td>
</tr>
<tr>
<td>Wearing protective gear during chemical application</td>
<td>3 said yes and 2 no</td>
<td>Nil</td>
</tr>
<tr>
<td>Island of origin</td>
<td>Rural – urban migration</td>
<td>Outer island migration</td>
</tr>
<tr>
<td>Attended training program before</td>
<td>Never</td>
<td>Few attended</td>
</tr>
<tr>
<td>Age</td>
<td>25 to 45 years old</td>
<td>31 to 61 years old</td>
</tr>
</tbody>
</table>
6.2.5 Demonstration

During the initial interviews, community talks and group meetings, the participants identified the topics they wanted to learn more about in SUOP and ESAP during the training workshop. They suggested that they needed demonstrations of techniques.

- **Mr Livai, T. (aged, 27),** a member of the young farmers said:
  
  *I could understand SUOP better if they show me (demonstrate) how to mix the pesticides correctly with a standard tablespoon than talking.*

- **Moala, ‘O. (aged, 40),** a chairperson of the group women said:
  
  *I need to learn how to sort out domestic waste for composting and recycling in order to keep my home environment clean and safe.*

The participants identified the crops to grow; the amount of time to work in their gardens; the sources of the planting materials; a good site for gardening etc., after participating during community and group meetings and attending the training workshop on SUOP and ESAP. They also wanted to learn more about crop pest control in Tonga and the safe use of pesticides.

- **Vailea, M. (aged, 42),** a member of the young farmers said:
  
  *Local pests and diseases could be reduced if two or three more crops are planted together, i.e., one crop could chase naturally the pests and diseases of an adjacent crops.*

- **Palavilala, ‘I. (aged, 28),** a member of the young farmers said:
  
  *Onions is a traditional way of chasing the bugs and invasive insects from long yams such as kahokaho, kaumeile, etc., and cabbages*

When the participants visited the Pesticides Awareness for Sustainable Agriculture (PASA) demonstration plot, they learnt more about SUOP and ESAP. The participants also shared and practised the knowledge and skills learnt during the field trips, community talks, group meetings and visits to home gardens. During the drama presentation, the participants saw demonstrations of SUOP and this reinforced the importance of ESAP in their lives.

- **Vailea, M. (aged, 45),** a member of the young farmers said that:
Drama is a good method of learning about SUOP in local communities because I could not fall asleep but had to listen and pay attention to get the message across. It keeps me awake.

- Halauafu, K. (36), a member of the young farmers said:

  A drama presentation dramatised how local cover crops such as peanuts, cassava and velvet bean (mucuna pruriens) could maintain the fertility of their farming lands rather than buying synthetic fertiliser year after year from the chemical shops.

6.2.6 Responsibility

During the group meeting, the participants discussed what they needed to learn about SUOP and ESAP and topics and teaching methods for the workshop were identified. Group meetings helped to build their trust in the program on topics, such as, sorting of domestic waste for composting, saving of seeds from local vegetables, etc.

- Tu’iono S. (aged 52), the district officer of the Tongatapu eastern villages said:

  I understand more the SUOP and ESAP programs because village meetings and discussions are carried out in our local language. Therefore I could follow and participate in the discussion. I can see that we must be more responsible or we might harm our district for the next generation.

- Finaulahi P. (aged 36), a member of the women’s group said:

  Group meeting is an opportunity to discuss community development projects such as home gardening, recycling and tree planting to improve our standard of living. We want to make sure that we do things that will improve the environment.

During the training workshop, the participants were actively involved during group discussions and field visits. They were responsible for and “owned” the training workshop held at the local community and the resource materials were prepared in Tongan language.

The responsibility was theirs to learn more knowledge and skills about companion planting, moon planting guides, composting, seed saving activities when they visited the
PASA demonstration plot. They reported that “demonstration plots organised many options to learn more about the SUOP and ESAP”.

- ‘Okilani Jr. (aged, 25), a member of the young farmers said:
  
  Many lessons I learned during field visits to the demonstration plots included companion planting, moon planting guides, seed saving, insect repellents and composting. These showed me that I have to be responsible for using safe methods of insect control otherwise I will harm the environment.

The participants reported to the local newspapers and also had radio and television interviews to say what they learned about companion planting, seed saving, moon planting guides, etc., during the field visits and garden visits. They said community talks, meetings and training workshops helped them to acquire knowledge and skills about SUOP and ESAP.

- Moala, ‘O. (aged, 40), a chairperson of the Fe’ofa’aki ‘a Kakau women’s group said:
  
  Community talks help the participants to discuss the SUOP and ESAP in detail before applying what they learned into their home gardens. I now realise that we are accountable for our environment and we need to work together to preserve it. We can do this if we apply what we learn.

- Palavilala, ‘I. (aged, 28), a member of the young farmers said:
  
  Community meetings and adult education are good to identify needs and problems about SUOP and ESAP programs because we (young farmers) left classroom learning about ten years ago. I used to blame others for the problems of the environment but I can see that we need to help to fix the problems that we have.

### 6.3 Steps taken taken by facilitator/researcher to encourage participant engagement during Phase two

Table 6.3 displays the events and data collected during Phase two.
Table 6.3 Summary of the events and data collection in Phase two

<table>
<thead>
<tr>
<th>Phase</th>
<th>Events - the time frame allowed for each phase was 4 to 6 weeks</th>
<th>Data collected</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Group meetings and training workshops</td>
<td>Observations and key ideas recorded as field notes, photographs</td>
</tr>
<tr>
<td></td>
<td>Visits to demonstration sites and home gardens</td>
<td>Observations and photographs</td>
</tr>
<tr>
<td></td>
<td>Drama presentations</td>
<td>Newspaper article and recordings of radio and television interviews</td>
</tr>
<tr>
<td></td>
<td>Newspaper articles and radio and television interviews</td>
<td></td>
</tr>
</tbody>
</table>

During the Phase 2 activities, the demonstration, immersion, expectation, responsibility, and response (of researcher/facilitator and community leaders, participants) conditions of learning were the focus with the intention that these would contribute to the engagement of participants. These conditions were met in group meetings and training workshops, visits to demonstration sites and home gardens, drama presentations, newspaper articles and radio and television interviews which all contributed to learner engagement.

6.3.1 Field notes related to immersion and response

Radio and television interviews were conducted with the facilitator/researcher, with the chairperson of the group of women, one other member of the women’s group, the chairperson of the young farmers’ group, and with one other member of the young farmers group.

The radio and television interviews informed local communities about the knowledge and skills learnt by the participants in composting, recycling, companion planting, etc., in SUOP and ESAP and how important these programs are for their lives. The participants, as well as other members of their local community, were immersed when visiting the participants’ gardens where they could see demonstrations and then practice techniques through hands-on experience and guided instruction. As a follow-up to these visits, the facilitator/researcher wrote a newspaper article about the project and this is reproduced in Figure 6.2. This article helped to further immerse the participants and the local community in the project.
6.3.2 Summary
The participants were keen to practise and demonstrate what they had learnt during the group meetings and interviews in their gardens. The demonstrations by the facilitator/researcher and field officers showed the participants how to set up their own
gardens to practise and demonstrate to others what they had learnt about SUOP and ESAP.

Figure 6.3 shows participants at a demonstration site during Phase 2. Most of the participants appeared to be highly engaged (Photograph chosen by participants as discussed in strategies used by facilitator to remove bias - Chapter 5).

![Field trip to PASA demonstration site](image)

Figure 6.3: Field trip to PASA demonstration site helped to provide ‘hands-on training’ to participants about nursery activities.

6.4 Specific events organised by the facilitator/researcher that encouraged learner engagement

6.4.1 Field notes from training workshop

An intensive training workshop was conducted on June 25, 2004 to familiarise participants with the issues and to build up knowledge, skills, and positive attitudes toward ESAP in Tonga. The workshop included the activities described below.

Arrival of participants

The group of women came early to the workshop using their own transport. They were wearing formal national dress with ta’ovala (Figures 6.1 & 6.2). (Ta’ovala is a piece of fine mat worn by local people around their waist on top of their dress to show respect to others especially when they attend meetings). They were sharing stories and shaking hands with other participants.
The young farmers arrived about ten minutes before this workshop started. They were wearing long pants and t-shirts. The tables and chairs were arranged in a semi circle. The group of women were seated at the front. They started reading the program and training materials when they arrived. Young farmers collected their training materials from the researcher/facilitator.

Opening prayer /Opening remarks
The opening hymn and prayer were led by a local church pastor. The district officer opened the meeting by stating the purpose of the training session.

Pesticides use in Tonga
During session one, the topics discussed included pesticides use in Tonga, health effects of pesticides, signs and symptoms of poisoning, safety equipment, labels, and proper mixing and alternatives to pesticides, followed by general discussion and suggestions for safe pesticide use.

Simulation game
This activity took about five minutes to perform and reinforced the need to pay attention to labels. Participants were also reminded that the workshop was a community adult education session, not formal classroom learning. They were encouraged to share their views and ideas during the discussions and did so enthusiastically.

Group presentation
After group discussions, each participant made comments about the safe use of pesticides in Tonga. Then each group made a presentation and took an extra five minutes for further discussion.

Field trip
The field trip visited the Pesticides Awareness Sustainable Agriculture (PASA) demonstration block of the Tonga Community Development Trust (TCDT) at Fua’amotu.

When the groups arrived at the demonstration plot, the tour guide welcomed everybody. He then showed how the demonstration plot had been divided into subplots of vegetable
gardens, companion planting, composting, use of liquid organic fertilisers, nursery and seed-saving activities.

The groups were very attentive during the demonstration, asking numerous questions about ESAP carried out at the demonstration plot. They freely shared their ideas about and experience in sustainable agricultural practices during the field trip. The participants also learned about the importance of growing different vegetables such as carrots, capsicum, lettuces, onions, and tomatoes together. Once again the demonstrations and opportunity to practice new skills that the participants could see would improve their crops were received with considerable enthusiasm. Thus the participants were immersed in the language and the practice of ESAP and this further reinforced the notion that they were capable of learning new knowledge and skills that were of future benefit to them. Later in the day, the groups visited the PASA plot nursery to learn about simple methods of seedling gathering and propagation for vegetable gardens and once again the responses indicated that the participants viewed these demonstrations as valuable learning experiences.

Immediately following the field trip, garden sites were identified and field preparation commenced (June 26-28, 2004). This action showed that the participants were taking responsibility for the project and were starting to use their newly acquired knowledge and skills. In addition, there was an overall community expectation that the project would eventually benefit the whole community.

6.4.2 First Press Release

On June 25th, 2004, a press release about vegetable gardens, companion planting, composting, liquid organic fertilisers, nursery etc., was prepared by the facilitator/researcher for Television Tonga, Radio A3Z of the Tonga Broadcasting Commission and the Roman Catholic Monthly Newspaper - Taumu’a Lelei, Taimi ‘o Tonga Newspaper, Talaki Newspaper, Matangi Tonga Magazine and the Kalonikali Newspaper. This was used to reinforce the learning that taken place during the training workshop.
6.5 Further evidence of participant engagement during Phase two

Sections from field notes and transcripts of participant comments are presented as further evidence of participant engagement.

6.5.1 Increased knowledge of pesticide use

The group of women demonstrated by their responses that they had gained knowledge about pesticide use in Tonga. They realised that pesticides are poisonous, that they could possibly enter their bodies through ingestion, respiration and absorption. They asked for further clarification from the young farmer participants about pesticide use in Tonga. The young farmers discussed with the group of women their use of fungicides, insecticides and herbicides such as gramaxone and roundup.

• Vailea, M. (aged, 42), a member of the young farmers said:

_Upon the completion of the SUOP and ESAP training programs, I learnt that herbicides are the names of the chemicals used to kill weeds. Fungicides are chemicals used to kill fungus. I thought that they were all the same._

• Palavi, L. (aged, 40), a member of the women’s group said:

_Young farmers should be well trained in the SUOP and ESAP programs because pesticides are poisonous to them and the animals and to our children._

• Palavilala, ‘I. (aged, 27), a member of the young farmers said:

_Now that I have heard this I have decided not to use pesticides on my farm because companion planting, composting and recycling of domestic waste are alternatives for sustainable agriculture. This will be safer for everyone._

6.5.2 Group discussion

The group of women had only limited understanding of the safe use of pesticides in Tonga. Their knowledge about pesticides came mainly from their husbands. They paid attention as the young farmers shared their experience in the safe use of pesticides. As a result, the group of women decided that they would not allow their husbands and their children to use pesticides any more.

• Hope J. (aged, 25), a member of the group of women said:
I do not understand why local families keep using pesticides for farming because ESAP are appropriate, environmental friendly and self-help practices. I need to learn more about the good practices of ESAP and tell my husband about this.

- **Palavi, L. (aged, 40),** a member of the group of women said:

  *ESAP program teaches us about the harmful effects of pesticides on our health and the environment therefore I need to encourage my families and local communities to practice ESAP because it has no harmful effects on our health.*

The young farmers had acquired minimal farming experience, especially with direct agrochemicals application in the field. They provided clarification about pesticide use in Tonga during group discussion and shared their knowledge with the groups on the different types of pesticides used for squash farming in Tonga. They also named Gramaxone and Roundup as the two most common herbicides used by farmers for control of weeds in Tonga. Some of them were currently using these herbicides for controlling weeds in their gardens.

- **Tu’iono, S. (aged, 52),** a district officer of the Tongatapu eastern villages said:

  *We learned from the SUOP and ESAP programs that herbicides could kill weeds and other soil organisms where a pesticide runoff could affect our underground water supply system. Our life should not be affected by herbicides.*

- **Halauafu K. (aged, 36),** a member of the young farmers said:

  *Now I am afraid of using pesticides any more because I learned more about its impacts such as health poisoning, soil contamination and water pollution.*

6.5.3 Group presentation

The group of women said they had heard about agrochemicals but never used them before. They shared their experiences of home composting with other participants. They did not know about saving seeds from local vegetables except the seedlings growing from rotten tomatoes thrown out from the kitchens.
• ‘Iloahelotu P. (aged, 28), a member of the group of women said:

_The SUOP and ESAP programs are quite useful for our local communities to learn about the negative impact of pesticides on our environment particularly water resources, coral reefs and land resources of Tonga as well adopting sustainable agricultural strategies such as home vegetable gardens, recycling and compost making from domestic waste._

• Kapona I. (aged, 25), a member of the young farmers said:

_ I need to learn more about ESAP activities such as home vegetable gardens, recycling and compost making because it is free of pesticides, promotes good health and is environmental friendly._

The young farmers’ presentations showed simple ways of saving seeds from vegetables such as tomatoes, capsicums, carrots, etc. This also showed that they had acquired new knowledge and skills. They acquired this knowledge through:

- visits to the composting site at Ministry of Forestry head office in Tongatapu;
- learning about composting at school in an agriculture science course;
- learning from their fathers.

In these examples the young farmers were exposed to demonstrations and in the last two examples they had the opportunity to practise their newly acquired skills and often were provided with feedback from the person who instructed them.

The group of women shared their experience of composting of dry leaves. They found that dry leaves were broken down into smaller pieces faster than green leaves. They also learnt that the smaller the pieces of leaves, the faster the rate of decomposition. As a result, they decided not to burn dry leaves, but to put them aside for compost making.

• Moala, ‘O. (aged, 40), a chairperson of the group of women said:

_ I need more training programs about seed saving activities because local seedlings could be better adapted to local situations than imported seeds. Local seedlings could resist local pests and diseases outbreak._

• Vailea, M. (aged, 45), a member of the group of women said:
I do not want my husband to use pesticides because it is quite poisonous but to learn and practice ESAP activities such as home vegetable gardens, recycling and compost making and seed saving because they all come from trees.

The young farmers shared their experiences in seed saving, composting, companion planting and crop rotation among themselves. They realised that dead organic matter such as papaya, banana and coconut leaves was good material for composting. Compost was perceived to be inexpensive and quite easy to make and they learned that they did not have to spend money to buy chemicals if they carried out composting at home.

- Livai, T. (aged, 27), a member of the young farmers said:

  I should use composting because I do not have to spend extra cost on buying pesticides. Composting is easy enough and appropriate for young farmers to use. Papers and domestic waste will quickly rot away in the dump and return to the soil.

- ‘Okilani Jr. (aged, 25), a member of the young farmers said:

  “I need to learn more and practise composting because local resources such banana leaves and cassava scraps are the basic materials for composting. Both pele (Hibiscus manihot) and taro leaves (Alocasia macrorrhiza) could grow on it and be free of pesticides.”

6.5.4 Response to companion planting at demonstration site

The groups carefully observed the companion planting, vegetable mixed garden, composting, liquid organic fertilisers, nursery, replanting and seed saving activities carried out at the PASA demonstration plot.

The group of women asked about the right crops for companion planting. A companion garden is a type of gardening where different crops are grown together (Figure 6.4). The crops for companion planting could be such things as yam (*Dioscorea alata*), taro futuna (*Colocasia esculenta*), white giant taro (*Alocasia macrorrhiza*), bananas (*Musa clone*), and hopa (*Musa cultivars*). A second question was about growing only one crop at the plot, known as mono-cropping. The instructor said that if only one crop is
growing, pests and diseases could affect it more easily than two or more crops at the plot. This is because different crops can have different infestations.

- **Finau, P. (aged, 36)**, a member of the group of women said:
  
  *I want to learn how companion planting and mixed cropping such as taro and yam crops help each other to grow well and resist local pests and diseases.*

- **Iloahelotu, P. (aged, 28)**, a member of the group of women said:
  
  *I need to learn more how banana, taro and yams support each other and give more sunlight for the process of photosynthesis while maintaining soil moisture and natural weed control.*

The young farmers asked about the time for planting companion crops (Figures 6.5 & 6.6). The planting season for companion planting was based on different stages of the moon. There was extensive discussion about the importance of companion crops for their garden activities.

- **Tu’iono, S. (aged, 52)**, district officer of the Tongatapu eastern villages said:
  
  *Companion plantings could take a certain amount of soil nutrients whilst maintaining soil fertility.*

- **Palavilala ’I. (aged, 28)**, a member of the young farmers said:
  
  *I need to know why two or three crops could grow together with facing the problem of soil deficiency.*

- **Kapona, I. (aged, 25)**, a member of the young farmers said:
  
  *Companion planting should be adopted by young farmers to improve the production of farming land.*
Figure 6.4: A typical companion garden developed by one member of the group of women after the training workshop

Figure 6.5: A young farmer practised companion planting, mixed cropping and moon planting practices in his gardens

Figure 6.6: Home vegetables produced through the seed saving program
6.5.5 *Demonstration vegetable garden*

The group of women asked about the type of agrochemicals used on the vegetable garden. The instructor said that there were no agrochemicals used on any gardens of the demonstration plot.

- **Hope J. (aged, 25),** a member of the group of women said:
  
  *I want to know what types of materials were used for the vegetable garden because the vegetable crops are healthy and even free of pest and diseases.*

- **Moala, ‘O. (aged, 40),** a chairwoman of the group of women said:
  
  *I need to learn how this vegetable garden is both growing well and free of pests and diseases.*

- **Finaulahi, P. (aged, 36),** a member of the group of women said:
  
  *I want to learn how to make the organic material applied to the vegetable garden. It is a good material for a home vegetable garden.*

The young farmers asked the following questions:

i. When did they plant the vegetable garden?

ii. Where do you get the seeds for the vegetable garden?

iii. How do you prepare the seedlings at the demonstration plot?

The instructor reported that the time for planting of vegetable gardens was based on the moon planting guide which uses different phases of the moon. The seedlings are developed from the vegetables growing in the demonstration plots (Figure 6.4). Seeds were saved from selected vegetables on the plots by using seed saving methods.

The group of women said that through demonstrations and practice with the instructor they had learnt more about companion planting and promoting ESAP in Tonga. The young farmers focused on what they had learnt from the demonstrations about how to use the moon planting guide.

- **Livai, T. (aged, 27),** a member of the young farmers said:
  
  *I need to learn how to plant root crops and vegetables according to different phases of the moon. Moon planting guides are essential for ESAP because it keeps farming activities closer to nature.*
• **Palavilala, ‘I, (aged 28),** a member of the young farmers said:

*I need to learn how moon planting guides could increase the vegetable farm production depending on cutting of planting materials, weeding, transplanting of seedlings and shootings to support plant growth.*

• **Tu’iono, S, (aged, 52),** a district officer of the Tongatapu eastern villages said:

*I need both government and non-government organizations to develop an education program which could improve traditional knowledge of local farmers and local communities about sustainable farming methods such as ESAP and SUOP.*

Figure 6.7: Demonstrations and practice of simple ways of compost making as learned by the participants

Figure 6.8: A group of women engaged in learning from a composting demonstration
6.5.6 Composting demonstrations
The groups visited composting activities. Compost was made from sawdust, leaves of bean legumes, banana leaves, *Mucuna pruriens* leaves and chicken manure in a box of three compartments.

The group of women asked about the types of materials used for composting and the instructor said that recyclable domestic wastes were excellent for composting that food scraps and peeling of root crops were used for composting, and that the more recyclable waste is collected for composting the better the compost that would be produced.

The young farmers asked about the right amount of compost to apply for each crop. The instructor said that there is no exact amount of compost to add for each crop but the more compost applied to vegetable gardens, the better the yields.

One young farmer asked how long vegetables can keep bearing fruits when fertilised with compost. The instructor said that the more compost added to the gardens the better, and that longer yields of vegetables could be obtained because compost enriched the soil by helping in maintaining moisture and providing useful micro-organisms.

One young farmer suggested that burning is the easiest and quickest method of land clearing for cultivation. The instructor said that burning is not allowed at the demonstration plot because it would destroy all soil micro-organisms. The beneficial insects on the farming land would also be affected. In addition, burning polluted the environment. One young farmer shared his first-hand experience of *Mucuna pruriens* as a soil rehabilitation mechanism (DSAP, 2006).
6.5.7 Liquid organic fertilizer demonstrations

The groups also learnt how to make organic liquid fertiliser from organic food scraps. The young farmers asked about the type of materials used for making liquid organic fertiliser. The instructor said that the leaves of banana, *Leucena leucocephala*, *Pisona grandis* and *Erythrina variegata*, etc., chicken manure, fish off cuts, sea urchins (*vana* and *tukumisi*) and food scraps were used for making liquid organic fertiliser. A clean empty 44 gallon drum was partially filled with clean water before banana leaves (*Musa* cultivars), leucaena leaves (*Leucaena leucocephala*), *Mucuna pruriens* (DSAP/Tonga 2006a), food scraps, etc., were added to it in this process. The young farmers asked about how many weeks were needed for making organic liquid fertiliser and the instructor said the time required for making of organic liquid fertiliser would be around three to four weeks.

- **Palavilala, I. (aged, 28)**, a member of the young farmers said:
  
  *I need to know the time taken by a liquid organic fertiliser to change into a soluble form before absorbing by the plants.*

- **Vailea, M. (aged, 42)**, a member of the young farmers said:
  
  *If I do not use all the organic liquid fertiliser for my gardens, do I have to keep it for later use or pour it out to the open field.*

One of the young farmers said that sea urchins could be mixed with water to make local insecticides and that local pesticides helped to chase pests and insects away from their garden. Sea urchins could be easily collected from coastal reefs.

6.5.8 Nursery visit

The group of women asked about getting seedlings to plant in their home gardens. The instructor said that free seedlings would be given to community home gardens from the nursery after garden sites had been prepared.

The women also asked about the method of distributing seedlings to local communities. The instructor said that when garden sites were prepared, the seedlings would be donated by a PASA nursery project after an inspection to make sure that preparation of the garden sites had been completed. The women also asked about using the shade of the tree as a nursery and for seedbeds. The instructor said that tree shade could be a
good nursery provided that seedlings are well protected from children and local chickens.

The young farmers asked about the materials used for making seedbeds at a nursery. The instructor said seed beds for germination are composed of compost, sawdust, chicken manure, rotten leaves and sand. Sand helps the seeds to develop their fresh roots easily by making the soil friable. The young farmers also asked how often per week should they water a nursery and the guide said that watering of a nursery at the development stage could be once a day.

- **Palavilala, I. (aged, 28)**, a member of the young farmers said:
  
  *I wanted to learn the proper way of watering a seed nursery because heavy rains and poor watering methods could damage the new seedlings.*

- **Kapona I. (aged, 25)**, a member of the young farmers said:
  
  *I wanted to make a watering container for a home nursery and my vegetable garden.*

- **Vailea, M. (aged, 45)**, a member of the group women said:
  
  *Rain water and used water from washing should be collected for watering of home vegetable gardens and tree crops.*

### 6.5.9 Seed saving demonstration

The young farmers asked where the seeds for a nursery came from. The instructor said that seeds were saved from local vegetables by using simple seed saving techniques. A second question from the young farmers was about why seeds were not purchased from the agricultural shop. The instructor said it was easy to save local seeds which were better adapted to the local environment than imported seeds that were not as resistant to local pests and diseases.

The young farmers also asked about how to select the vegetables for seed saving. The instructor said that they should, for example, identify the healthy tomato plants for seed saving. Some tomatoes should be saved for seed saving activities.
The group of women invited the tour guide to visit their gardens as well as helping them with seed saving techniques. The instructor said that when they had prepared their garden plots they should contact him for further assistance.

The participants learned how to select good healthy vegetables such as capsicum, tomatoes, lettuce tops for seed saving activities. For example, Moala ‘Oli (aged, 40), the chairwoman of the group of women, felt:

*Seed saving encourages saving seedlings from local vegetables such as capsicums which are better adapted to the local situation.*

- **Vea’ila N. (aged 38)**, a member of the group of women expressed a similar point of view:
  
  *Seed saving could help local families to maintain food safety, food security and even provide a better diet.*

- **Alafoki S. (aged 32)**, a member of the young farmers, supported all of these arguments when he said:
  
  *Seed saving is quite easy to perform and less expensive which is an appropriate farming technique for local farmers.*

The young farmers were shown where they could obtain all of the seeds used at the nursery site and the instructor explained that all seeds had been collected from the vegetables grown at the demonstration site.

### 6.5.10 Vote of thanks

The chairwoman of the group of women conveyed words of thanks and appreciation to the guide on the PASA project.

- **Moala, ‘O. (aged, 40)**, A chairperson of the group of women said:
  
  *I learned that ESAP activities are more comprehensive, inexpensive, generating income and environment friendly. These activities should be practised as farming activities to promote sustainable development in Tonga and eradicate poverty.*
6.5.11 Follow-up meeting

The group of women and the young farmers confirmed the exact dates for the training workshop during the follow-up meeting. They reviewed the agenda, including the venue, training supplies and services and the duration of the workshop. Once again, the research/facilitator showed that he valued their participation as shown by the following quotes.

- **Hope, J. (aged, 25).** A member of the group of women said:
  The training program of SUOP and ESAP is focused on the needs of the participants. This type of program could facilitate the learning activities for the participants.

- **Vailea, M. (aged, 45).** A member of the group of women said:
  The participants should learn more about the ESAP and SUOP because they identified the topics to learn during the training program.

- **Palavi, L. (aged, 40).** A member of the group of women said:
  I should learn more about SUOP and ESAP because the agenda of the training program is flexible enough to fulfil both family commitments and group participation.

- **Halauafu, K. (aged, 36).** A member of young farmers said:
  The participants should learn more because they identify the topic about ESAP and SUOP. The training materials could be comprehensive and easy to follow and put into practice.

In many of the quotes above the participants are showing that they have taken on ownership of the project.

6.5.12 First Press Release

The media interviewed the chairwoman of the group of women and the leader of the young farmers about their participation in the project. The facilitator/researcher was also interviewed on June 25th, 2004 by the media about the benefits of the project to Tonga (Figure 6.2: Taumu’a Lelei Newspaper Article No. 1, 2004).

- **Alafoki, S. (aged, 32).** A leader of the young farmers said:
We encouraged the young farmers to pay more attention during the training programs in order to learn more about SUOP and ESAP which are appropriate and environment friendly with the limited resources of Tonga. They could also be aware of the importance of environment, education, eco-tourism and maintaining the ecological conditions of their farming systems.

- Moala, ‘O. (aged, 40). A chairwoman of the group of women said:
  The participants (group of women) are happy to learn and practise ESAP activities in order to provide better diets as well maintaining a safer and healthier environment for their families. Recycling and compost making could provide organic materials for their vegetable gardens as well making their homes and villages clean and tidy.

6.5.13  Garden site identification and preparation

At meetings held in late June, 2004, the groups identified proposed sites for their gardens, indicating that they realised that a good site should have a large enough area for composting, good soil structure and be accessible to water and a good road. Home gardens could provide sufficient food such as tomatoes, lettuce, onions, pele (hibiscus manihot), talo leaves (alocasia macrorrhiza), beans, bananas and cabbages etc., for family consumption.

The young farmers prepared their gardens on their family bush allotments as they had more opportunities for farm development. They planted more crops to fulfil family needs and the surplus could be sold at the local market for additional family income. The group of women grew many vegetables in their gardens. Their gardens provided a variety of vegetables for their diets and their surplus could be also sold at the local market. As a result the participants were practising the skills they had learnt. They were using their new knowledge and skills to assist themselves and their community. It was inevitable that a certain amount of approximation would occur but as they refined their techniques and shared experiences they were able to make on-going improvements to their plots.
6.5.14 Compost making

At meetings held on June 5th and June 9th, 2004, the group of women and the young farmers learnt about making compost from domestic waste, that waste is simply a resource discarded by households and should not be dumped into the sea or swampy areas but could be composted either in wooden or corrugated iron boxes. The food scraps, such as, from cassava cleaning, could make good compost (Thaman, 1995; SPREP, 2001).

The young farmers learnt to sort out domestic waste, such as, potato peelings and food scraps, into recyclable and reusable categories before putting them into the composting box (Figure 6.7). The recyclable material was collected in the first box for four weeks before moving it into the second box. The first box was then filled up again. After rotating composting materials in the second box for three to four weeks, they were then moved to the third box for three to four weeks before the product was used for composting. The excess, not used on site, could be packed into a plastic bag and stored safely for later use.

During this exercise, the groups showed that they had learnt much about how to make home compost by sorting out domestic waste into reusable, recyclable and reduction categories. Participants were encouraged not to burn domestic waste any more, but to sort it out for reuse.

The group of women decided during their weekly group meeting not to burn rubbish but to compost it for indoor pot plants and that they would share their experiences with their neighbours and friends. The chairwoman of the group of women also reminded the other members that if any member did burn her domestic rubbish, she would have to provide refreshment during the next meeting.

The young farmers decided not to practise burning during farming land preparation. They shared their new knowledge of the importance of composting activities with their parents and their neighbours. They wanted to adopt composting, mulching and recycling to maintain better crops free of pesticides to promote good health and longer lives for their families.
• Livai, T. (aged, 27). A member of the young farmers said:

Composting, recycling and mulching of ESAP programs should be adopted by young farmers because domestic waste could be recycled to provide more plant materials to their gardens and maintaining a healthier environment.

• ‘Okilani, Jr. (aged, 25). A member of the young farmers said:

Local farmers should learn ESAP activities to maintain a safe and healthy environment to work and live. Compost making, recycling should be carried next year because those practices could possibly creating a sound mind in a sound body.

Summation

During phases one and two the following conditions of learning contributed to the engagement of participants: immersion; responsibility; expectation; use; approximation; and response (of researcher/facilitator). These conditions of learning raised the levels of participant engagement and laid a solid foundation for future success.

6.6 Overview of of steps taken by facilitator/researcher to encourage participant engagement during remaining Phases (three to six).

Table 6.4 display the events and data collected during Phases three to six. At various times these phases ran in parallel in order to take advantage of local events.

Table 6.4: Summary of the events and data collection in Phase three to six

<table>
<thead>
<tr>
<th>Phase</th>
<th>Events - the time frame allowed for each phase was 4 to 6 weeks Phases 3 to 6 – July 2004 to April 2005* * Final interviews completed in April.</th>
<th>Data collected</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>Home garden visits</td>
<td>Observations and key ideas recorded as field notes, photographs</td>
</tr>
<tr>
<td></td>
<td>Individual interviews about the structure of the remaining phases</td>
<td>Responses recorded as notes that were verified by subjects</td>
</tr>
<tr>
<td></td>
<td>Updating plans for future phases</td>
<td>Recorded as notes</td>
</tr>
<tr>
<td>4</td>
<td>Networking and collaboration with government and village and church</td>
<td>Observations and key ideas recorded as field notes, photographs for all events</td>
</tr>
</tbody>
</table>
| Phase | Events - the time frame allowed for each phase was 4 to 6 weeks  
Phases 3 to 6 – July 2004 to April 2005*  
* Final interviews completed in April. | Data collected |
|---|---|---|
| | committees to form of village planning committees  
Planning of village cleanup program and the involvement of local high schools (22) | |
| 5 | Development of training information for the whole community in local languages.  
Presentation of gardens to local community members and participants, including secondary school students  
Publicity via newspapers, radio and television. Drama presentation to school students and local community members to reinforce the key skills  
Ongoing follow-up up and inspections | Observations and key ideas recorded as field notes, photographs for all events |
| 6 | Exchanging and sharing of experience among the participants during discussion (*talanoa*), field trips, home visits and kava circle (*faikava*) ceremonies, group meetings  
Follow up radio talks and television interviews with two women of the group of women and two young farmers. Follow-up group meetings  
Follow-up garden visits and sharing and exchanging of information with interested citizens  
Public awareness program to promote tourism, (SUOP), (ESAP) in Tonga | Observations and key ideas recorded as field notes, photographs of events  
Recordings of interviews  
Observations and key ideas recorded as field notes, photographs of events  
As above |

The events of phase three to six were modified to suit the local context. As a result, the original sequence of events was altered at times to take advantage of planned local events and the schedules of the various stakeholders involved. The events that occurred are described as they occurred and the conditions of learning applied by the facilitator/researcher are mentioned.

Use was made of the artefacts collected by the researcher/facilitator during the community talks, group meetings, training workshops, and home gardening visits. These artifacts include field notes, photographs, newspaper articles, posters, booklets and semi-structured interviews transcripts. The mode of communication was the local language and subject responses were recorded in Tongan language, verified and then translated into English.


6.6.1 Posters/Handouts

In 2002, two posters about pesticide awareness and sustainable agriculture were prepared in the Tongan language while the facilitator/researcher worked at the Tonga Community Development Trust (TCDT) for the PASA project. Other posters about water pollution through the South Pacific Regional Environmental Program (SPREP) and persistent organic pollutants (POPs) through the Pacific Concern Resource Centre (PCRC) were displayed to promote public awareness of the participation of the young farmers and the group of women during the SUOP and ESAP training workshops.

Three booklets in the Tongan language, prepared by the facilitator/researcher in 2002, while he was a project officer for environmental projects of TCDT, Nuku'alofa, had been given to participants during the workshops. These were also made available to the general public during this phase.

i. “Ngaue fakapotopoto’aki ‘a e faito’o kona fakangoue” – the safe use of pesticides.


iii. “Fakatolonga tenga’i ‘akau fakalotofonua” – seed saving activities.

6.6.2 Drama performances

On July 2nd and 4th, 2004, a drama group presented a play about the health effects of pesticides in the environment during the women’s weekly meeting and the young farmers’ monthly meeting. The focus was upon acute poisoning (has immediate symptoms) or chronic poisoning (can be less obvious and take more time to become apparent) and alternatives for safe pesticide use. The performance also dramatised the alternatives of sustainable agricultural practices, such as home composting, companion plantings to reduce possible pesticide risk.

In the discussion following the drama performance many of the issues highlighted earlier were again prominent. These included the importance of composting, recycling, reduced/zero pesticide use, health issues, ecological impacts, and the adoption of ESAP. Participants responded strongly, following the presentation and were intently and enthusiastically engaged in the follow-up discussion.
6.6.3 Youth floats

On July 4th, 2004, the parade of youth groups’ floats during the Heilala Week Festival in Tonga promoted the natural beauty of Tonga and “the best place they love to be” along Vuna Road at Nuku’alofa. Many of the messages delivered by the floats about ESAP reflected those delivered in earlier phases. This was evidence that the youth groups had become involved with the project through their schools and villages.

6.6.4 Second media press release

Once again the facilitator/researcher informed the press about the development and successes of the project and this resulted in a second press release designed to inform the general public about SUOP and ESAP in Tonga. It was also a celebration of the impact of the program.

It needs to be recognised that the media played a vital role in responding to and supporting the program by promoting public awareness.

6.7 Evidence of participant engagement in learning in the remaining Phases

The evidence of participant involvement is organised under the headings of each phase. After each major heading, the field notes are summarised and representative quotations are presented to illustrate and support the points made.

6.8 Participant engagement during Phase three

6.8.1 Immersion

The participants were interested to learn about the SUOP and ESAP during the home garden visits because the learning context occurred in their respective homes.

During meetings, the participants discussed what was to be mastered about SUOP, ESAP and about the planning and implementation of the remaining phases of the program. The participants identified important real-life experiences such as land preparation, collection of planting materials and sorting of domestic waste for recycling etc. They updated the planning, development and evaluation of SUOP and ESAP based
on their actual real-life experiences. The following statements indicate how the process of participatory planning, implementing and review was valued by participants.

- **Finaulahi, P. (aged, 36).** A member of the group of women said:

  *I need to support the SUOP and ESAP because it is important for the participants (young farmers) to participate in the planning, implementation and review of the programs.*

- **Vailea, M. (aged, 42).** A member of the young farmers said:

  *The SUOP and ESAP programs give an opportunity for the participants (young farmers) to attend the training workshop and site visitation of the PASA organic farming demonstration plots. I agree with this new approach to be adopted by young farmers in their farming activities.*

### 6.8.2 Practice and Use

The participants implemented what they had learned during the field visits and training workshop into the real world such as composting, companion planting, seed saving, insect repellents in their own gardens which helped them to extend knowledge of, and skills, in SUOP and ESAP in a meaningful way.

The participants shared their experiences in SUOP and ESAP during the individual interviews about the structure of the remaining phases. They reported learning companion planting, mixed cropping, composting, seed saving activities during the training program as well as organising home garden visits to follow up their progress. They also exchanged skills and knowledge learnt about the future phases of SUOP and ESAP.

- **‘Iloahelotu, P. (aged, 28).** A member of the group of women said:

  *ESAP program is a home based activity. I could do all compost making and companion planting at home.*

- **Palavi, L. (aged, 40).** A member of the group of women said:

  *I understand ESAP activities are all related. Composting, recycling and home gardening are aimed for sustainable community development.*

- **Moala, ‘O. (aged, 40).** The chairperson of the group of women said:
Field trip and home visits also helped the group of women to learn more about SUOP and ESAP before sharing their skills and experiences about compost making and how to save seeds from tomatoes and capsicum.

6.8.3 Responsibility

During the home garden visits, the participants were responsible both for their own gardens and in sharing the knowledge and skills they were learning and applying in the program. The participants identified the topics to be learnt during the training workshops as well as organising garden visits during the SUOP and ESAP. They decided for themselves what was important for their own learning. As a result, they built up their trust and confidence in the program. Home visits gave more opportunities to experience better nutrition, medicines, cultural and conservation values of SUOP and ESAP.

- Moala, O. (aged, 40). The chairperson of the group of women said:
  
  I am pleased to participate during the planning and implementation of the SUOP and ESAP such as identifying topics to be learnt during the training workshop. This approach gives an opportunity for me to learn more about what is important in the program.

- ‘Iloahelotu, P. (aged, 28). A member of the group of women group said:
  
  I learn what I wanted to learn during the SUOP and ESAP programs because the agenda of programs was identified by the participants.

- Halauafu, K. (aged, 36). A member of the young farmers said:
  
  I am sharing the knowledge and skills learned during the ESAP and SUOP with the other participants during group meetings and field visits.

During the group meetings and garden visits, the participants updated the progress they made in the program. Their input and feedback helped them to work cooperatively in the program. The press releases, television and radio interviews helped them to share with the public their knowledge, skills and their progress in the program.

- Tu’iono, S. (aged, 52). A district officer of the Tongatapu eastern villages said:
  
  I appreciate how participants updated the progress they have made during the SUOP and ESAP. The way they reported their progress during group meetings...
and garden visits could be a part of review and monitoring of the program for further improvement.

- **Palavilala, ‘I. (aged, 28).** A member of the young farmers said:
  
  Group meetings and garden visits could help for the success of the SUOP and ESAP because the participants (young farmers) shared the knowledge, skills and experiences learned during the program. First-hand experience about SUOP and ESAP is very important.

- **‘Otukolo, S. (aged, 59).** A member of the group of women said:
  
  Group meetings and garden visits helped me to participate in SUOP and ESAP programs and achieving their purposes.

### 6.8.4 Expectation

During the home garden visits, the participants found out that the learning activities were do-able and own-able. The participants updated the SUOP and ESAP program during the group meetings, interviews, press releases and individual interviews.

- **Vailea, M. (aged, 45).** A member of the group of women said:
  
  I am happy to see that I am capable of doing the activities of SUOP and ESAP during group discussion about the topics to learn during the training program.

- **Finaulahi, P. (aged, 36).** A member of the group of women said:
  
  The lessons learned about the SUOP and ESAP are that such activities can be done by us. This is also a key to our future success.

- **Hope, J. (aged, 25).** A member of the group of women said:
  
  I need to carry out the program myself because I can also practise the SUOP and ESAP programs.

- **Palavilala, ‘I. (aged, 28).** A member of the young farmers said:
  
  SUOP and ESAP should be encouraged because the benefits of the programs will come back to us (young farmers).

- **Vailea, M. (aged, 28).** A member of the young farmers said:
  
  I learned more about the programs because I could learn more while doing the SUOP and ESAP activities myself.

- **Kapona, ‘I. (aged, 25).** A member of the young farmers said:
The learning activities of the ESAP and SUOP are organised based on the capabilities of the individuals. The learners could learn and follow recycling, composting and gardening activities together and for themselves.

6.8.5 Drama performances

The responses from the group of women to the drama performances held on July 2th and July 4th, 2004, showed that they were particularly concerned about the detrimental impacts of pesticides on the water supplies, coastal areas, their health and pregnant mothers. They saw that pesticide control is important because they now realised that pesticide runoff will cause water pollution, loss of biodiversity and severe health problems. Their newly developed views paralleled the reports such as those by Velde et. al., (2006), Pelesikoti (2003), and Vea’ila (1999).

• Moala, ‘O. (aged, 40). The chairperson of the group of women said:
  
  *I need to learn more about SUOP and ESAP because the impacts of pesticides on the water supply systems and coastal areas and coral reefs are very detrimental. It means water is one our basic needs and coral reefs could provide fresh fish for home consumption.*

• ‘Otukolo, S. (aged, 56). A member of the group of women said:
  
  *I am more concerned about the SUOP and ESAP because pesticides could pollute our water supplies. Water resources must be clean and free of pesticides because of our health.*

The young farmers decided to use pesticides carefully as well as adopting ESAP in their farming activities. They learnt that domestic waste could be used as a renewable resource for composting of their gardens.

• Kapona, ‘I. (aged, 25). A member of the young farmers said:
  
  *Pesticides could not be used by local farmers anymore because although they destroy crop pests and disease, they may cause both acute and chronic health poisoning compared with ESAP, which maintains soil fertility, increased food production and sustainable development.*

• Tu’iono, S. (aged, 52). A district officer for the Tongatapu eastern villages said:
Pesticides are poisonous whereas ESAP is an appropriate farming approach which for Tonga. ESAP should be adopted by young farmers because they are the future of today.

6.8.6 Home and garden visits
On July 12th and July 16th, 2004, the group of women and the young farmers attended to their garden sites to start practising what they had learnt during the training workshop. The groups prepared their own companion gardens. The group of women were happy to work on their gardens with extra help from their husbands and families and this support helped to speed up the progress of their gardens. They organised their own weekly plan for visits to the home gardens as well as for sharing their experience and information on the success of their gardens.

- **Moala, ‘O. (aged, 40).** The chairperson of the group of women said:
  
  *I am practising what I learned about ESAP and SUOP during the training activities. A training program is a key to the success of home gardens activities.*

- **‘Iloahelotu, P. (aged, 28).** A member of the group of women said:
  
  *Education is important for the SUOP and ESAP because it brings more knowledge and skills for the participants in the programs.*

The young farmers planted yams, taro and bananas together with yam in companion gardens. The group of women planted different vegetables such as tomatoes, capsicum, cabbages, pele (*ibiscus manihot*), bananas (Musa clones), and roots crops such as taro Tonga (*Alocasia macrorrhiza*), tannia (*Abelmoschus manihot*) sweet potatoes (*Ipomea batatas*), cassava (*Esculernta manihot*) etc., on the same plot (Thaman, 1995; Pole, 2004). They shared their experience to help extend the project. The participants asked the PASA project guide more questions during garden visits which built up their trust and confidence in their own activities. They listened to each other and shared information about the development of their individual projects.

- **Moala, ‘O. (aged, 40).** The chairperson of the group of women said:
  
  *I am confident about what I learned during the training workshop and putting such knowledge and understanding into practice.*
Tu’iono, S. (aged, 52). A district officer for the Tongatapu eastern villages said:

*Field visits are important to ensure that knowledge, skills and attitudes learned during the workshop could be practised at the PASA demonstration site.*

They understood the status of their individual garden projects and what to do next. They were also aware of the possible desired results of the projects and the application to their gardens of what they had learnt and experienced during the training workshop and field visits.

During the garden visits, the secretaries of the group of women and the young farmers recorded the progress of the garden activities of each member before reporting to the rest of their groups at the next meetings. These reports provided information for the members to assess the current status of their individual garden projects. Examples of comments follow:

- **Moala, ‘O. (aged, 42).** The chairperson of the group of women said:  
  *Group meetings and reporting helped the participants to evaluate the progress of the programs.*

- **‘Iloahelotu, P. (aged, 28).** A member of the group of women said:  
  *Reporting of the activities during group meetings helped to work out the strengths and weaknesses of the SUOP and ESAP programs.*

- **Alafoki, S. (aged, 32).** A leader of the young farmers said:  
  *The progress of the SUOP and ESAP could be assessed by the feedback and inputs provided by the participants during group meetings.*

- **Palavi, ‘I. (aged, 28).** A member of the young farmers said:  
  *Information could be discussed by the participants during the group meetings. The participants could provide input and feedback in group reports during group discussion.*

As a follow-up, the groups organised their own regular meetings based on their availability. They had more time to discuss the progress of the project based on what they saw during garden visits. Their involvement and shared experience helped to create favourable working conditions for the project. As a result, it was found, everyone in each family wanted to participate and support the project. The participants also planned
an end-of-year function to celebrate their achievement and progress. The following quotes illustrate this:

Moala, ‘O. (aged, 40). The chairperson of the group of women said:

*It is important to celebrate the achievement of both SUOP and ESAP throughout the year. The success of the programs could not be achieved without everyone’s support and co-operation.*

- Finaulahi, P. (aged, 36). A member of the group of women said:

  *It will be a happy ending of the SUOP and ESAP this year. It is a good idea to celebrate at the end of the year with our friends and family members.*

- Tu’iono, S. (aged, 52). The district officer for the Tongatapu eastern villages said:

  *It is a good conclusion for the SUOP and ESAP to see our co-operation at the end of the year function. It is an indicator of our team-work during the program.*

- Palavilala, I. (aged, 28). A member of the young farmers said:

  *I agree with the end of the year function. It could celebrate our co-operation and collaboration, and what we learnt.*

6.8.7 Response to the Media Press Release

The group of women and the young farmers bought the newspapers from local stores to read articles about SUOP and ESAP and to share with their local communities.

- **Hope, J. (aged, 25).** A member of the group of women said:

  *Local communities should be informed about the SUOP and ESAP because their support and participation could depend on how well they understood the purpose of the programs.*

- **Halauafu, K. (aged, 36).** A member of the young farmers said:

  *Local people need to read the local newspaper about SUOP and ESAP activities. An article with pictures of ESAP activities could encourage them to think carefully about the programs and their environment. It could pass the information to outer islands and rural communities.*
6.9 Evidence of participant engagement during Phase four

6.9.1 Demonstration

The group of women and the young farmers developed networking and communication with government agencies, such as, the Ministry of Agriculture, Food and Forestry (MAFF), the Department of Environment and the Central Planning Department, and non-government organizations, such as, the Tonga Community Development Trust (TCDT), Langafonua ‘a Fefine Tonga Women’s Association, etc. They shared their developing knowledge and skills in SUOP and ESAP. Some of the participants were invited to attend the training activities for SUOP and ESAP of MAFF, TCDT and the Langafonua Women’s Association.

- Moala, ‘O. (aged, 40), a chairwoman of the group of women reported:
  The Fe’ofa’aki women’s group has developed better linkages with the government and non-government organizations to share their experiences about ESAP and community development. These opportunities for us to participate in their training activities is a bonus.

- Hope J. (aged, 25), a member of the group of women said that:
  We realised that networking is important for community development. It helps the group of women to share their knowledge and experience about SUOP and ESAP with local community.

- ‘Okilani, Jr. (aged, 25), A member of the young farmers said:
  SUOP and ESAP education programs give an opportunity for me to learn more about the activities. I did not have that opportunity to learn SUOP and ESAP at secondary school.

The participants worked with local communities to plan their village clean-up programs and to practise composting, recycling and home garden activities.

- Moala, ‘O. (aged, 40). The chairperson of the group of women said:
  The group of women is working with the communities to promote composting, recycling and village home vegetable gardens. These activities could maintain a safe environment for local families.

- Tu’iono, S. (aged, 52), The district officer of the Tongatapu eastern villages said:
We are living and working together. The SUOP and ESAP programs teach us many lessons such as recycling, composting and home gardening to practice at local communities. Our community would be friendly and healthy if we work together to manage our environment.

6.9.2 Use/practice

The participants also networked with government agencies and village and church committees to form village planning committees during the SUOP and ESAP program. They organised a village clean-up program to sort out domestic waste for recycling, composting and vegetable gardens.

- **Finaulahi, P. (aged, 36).** A member of the group of women said:
  
  I am happy to see that the local communities and churches are participating in ESAP and SUOP activities such as recycling, composting and home gardening. We need to do these activities as they are important to manage our environment and for the health of our communities.

- **Livai, T. (aged, 27).** A member of the young farmers said:
  
  SUOP and ESAP should be everyone’s business. We are helping our community by recycling, composting and home gardening.

The involvement of the 22 local high schools during the SUOP and ESAP program helped the participants share with them what they had learnt during the program.

- **Hope J. (aged, 25).** A member of the group of women said:
  
  SUOP and ESAP are the basics for the environment and sustainable development. Environments are wisely managed when recycling, composting and home gardening are practised at school environments. Recycling of rubbish will solve littering in local communities.

- **‘Okilani, Jr. (aged, 25).** A member of the young farmers said:
  
  I did not understand the importance of SUOP and ESAP while I was as student at the secondary school. I learned how recycling, composting and home gardening could maintain the environment for our local communities.

- **Katoahelotu, L. (aged, 38).** A principal of one secondary school said:
These SUOP and ESAP programs should be encouraged at local schools because they are related to all subject areas such as economics, sciences, nutrition, health, etc. Some of the activities such recycling, composting and home gardening are important for our environment science and health studies. It is important for us to work together for SUOP and ESAP.

6.9.3 Response
The facilitator/researcher and the group chairpersons continued to express their confidence in, and encouragement of, the positive aspects of the program. The networking and collaboration established with government agencies, local communities and local churches also reinforced participants’ engagement in the SUOP and ESAP program.

- **Moala, O. (aged, 42)**. A chairperson of the group of women said:
  
  *I am confident that the group of women participated strongly in SUOP and ESAP. They practised what they learnt such recycling, composting and home gardening at their respective homes. They also shared their knowledge and experiences about SUOP and ESAP with their friends and neighbours.*

- **Vailea, M. (aged, 42)**. A member of the group of young farmers said:
  
  *I have learned about the impact of pesticides on the environment of Tonga during the SUOP and ESAP program. I have decided to practise ESAP into my farming lands because of my health and the limited resources and fragile environment of Tonga.*

6.9.4 Expectation
The participants learnt from their own SUOP and ASAP activities, that such activities, especially with government and community support, could be successful and that ‘failure’ could be overcome and learnt from. The following translation from a participant’s response illustrates this point:

*When I started to make the first compost heap, I was not very successful but I was visited by the facilitator/researcher who showed me how to arrange and mix the wastes.*
The other women came over to my garden to give me advice. This helped me to plant a better mixture of crops. I am happy that they gave me such good advice.

The participants accepted and demonstrated that the village clean-up program was doable and would further enrich their lives, that collective recycling of biodegradable waste for composting would also mean a reduction of the volume of waste to be disposed at the rubbish dump.

- **Moala, ‘O. (aged, 42).** The chairperson of the group of women said:
  
  The village clean up will provide a safe and healthy environment for our local communities. Domestic waste could be classified into recycling and reuse. This led to a reduction in the volume of waste disposed of at the rubbish dump. These resources could be owned and re-used by local families for recycling, composting and home gardening.

- **Livai T. (aged, 27).** A member of the young farmers said:
  
  The village clean-up is a matter of keeping a safer and healthier environment. SUOP and ESAP programs give more opportunities for our local communities through recycling, composting and environmental management.

6.9.5 **Responsibility**

The participants continued to be responsible for their own gardens as well as networking and collaborating with government, village planning committees and church committees, to share their knowledge and skills in SUOP and ESAP.

- **‘Otukolo, S. (aged, 59).** A member of the group of women said:
  
  I am confident to manage my own gardens because the SUOP and ESAP training programs teach me about safe use of pesticides and the alternatives for sustainable agriculture. The knowledge and skills I have acquired during the training programs are important for planning, development and management of recycling, composting and home gardening.

- **Vaileoa, M. (aged, 42).** A member of the young farmers said:
  
  The training programs of SUOP and ESAP help local community and high schools to learn and practice ESAP and SUOP programs. When the students
go back homes they could help their parents to practise recycling, composting
and home gardening etc.

6.10 Further evidence of participant engagement from Phase four

The participants planned their own village clean-up programs and the extension of
SUOP and ESAP. The participants networked with 22 local high schools in Tonga and
arranged times for school visits and presentations to match with the school program,
and over the period from July 15th to December 31st 2004, the group of women not only
cleaned up their home areas regularly, they organised and participated in village
cleanups. The chairwoman and the secretary of the group of woman visited the homes
of each member to make sure that these clean-ups occurred. The secretary also recorded
their observations and reported during the next meeting. The young farmers worked
together with the village working committee to visit every home garden to ensure
composting was already practised. The young farmers decided themselves that littering
should be eliminated within local communities and that they needed to set up a model
for other communities.

• Vailea, M. (aged, 45). A member of the group of women said:
  Upon the completion of the SUOP and ESAP training programs, I am
  confident that I can plan and develop recycling, composting and home
  gardening. I could share the knowledge and skills learnt during the programs
  with other members of my communities.

• Palavilala, ‘I. (aged, 28). A member of the young farmers said:
  I learned more to stop littering by using recycling, composting and home
  gardening. Domestic waste is not a problem now because it is recycled for
  composting and home gardening.

• ‘Iiaiasi K. (aged, 25). A member of the young farmers said:
  Our local community could become a model for other communities to learn
  about environmental management and conservation. SUOP and ESAP
  programs should be adopted at local communities to keep our environment
  clean and healthy.
6.10.1 Replanting

From July 15th to December 31st, 2004 the women and young farmers were encouraged and began to plant multi-purpose trees in their gardens. Local trees were planted for protection, conservation and nutrition. Fruit trees such as tava (*Pomotea pinnata*), molikai (*Citrus sinesis*), kuava (*Psidium guajava*), etc. could provide fresh fruits for their families and medicinal plants such as nonu (*Morinda citrifolia*), tamatama (*Achyranthes aspera*), kava (*Macropiper piperatum*), manonu (*Tremna sambucina*), uhi (*Euodia hortensis*), etc., could be used for traditional medicines (Thaman, 1995; Hoponoa, 2004; Taufa, 2004; Fakatene, 2004). Timber trees such as pines (*Pinus caribaea*), kauri (*Agathis robusta*), tavahi (*Rhus taitensis*) (TREE/TCDT, 1999; Vea’ila, 2002; Hoponoa, 2004; Pole, 2004) could be used for building purposes in the near future. Cultural trees such as kava (*Piper methysticum*) have become an integral part of Pacific Island religious, economic, political and social life (SPC, 2001). Paper mulberry (*hiapo*) could be used for making tapa cloths and pandanus for weaving.

• **Moala, ‘O. (aged, 42).** The chairperson of the group of women said:

>The group of women are learning more about the importance of planting multi-purpose trees in their home gardens for nutrition, traditional medicine, conservation and construction. Fruit trees can provide fresh fruits, firewoods, shading and wind protection.

• **Hope, J. (aged, 25).** A member of the group of women said:

>Tree planting could help local communities to plant cultural trees such as pandanus and paper mulberry for making better handicrafts for tourists.

The young farmers carried out replanting in their gardens. Boundary replanting was recommended due to limitations on farming land. Boundary replanting is simply the planting of multi-purpose trees such red cedar, *Pinus caribaea*, etc., in rows to mark the boundaries of a bush tax allotment and these trees could be harvested after about fifteen years for construction, economic and cultural purposes (Hoponoa, 2004).

Thus, the young farmers integrated agro-forestry into their farming systems growing trees and local crops together. Root crops could provide short-term food. Local and introduced timber trees such as pines (*Pinus caribaea*), kauri (*Agathis robusta*) (TREE/TCDT, 1999), mo’ota (*Dysoxylum forsteri*), fekika vao (*Syzygium*
clusiaefolium), toi (Alphitonia ziziphoides), etc. (Vea’ila, 2002), could bring long-term benefits.

- **Tu’iono S. (aged, 52)**. The district officer of the eastern district said:
  
  *Young farmers learned how boundary replanting integrated into the farming system could provide local timber such as red cedar for construction and income generation.*

- **Halauafu, K. (aged, 36)**. A member of the young farmers said:
  
  *SUOP and ESAP programs are important for young farmers because I learned about the role trees play in the environment and how different ecosystems rely on each other for survival.*

### 6.10.2 Second seed saving activities

This activity was requested by participants to reinforced and extend upon the first seed saving activity and on July 15th, 2004, the participants learned how seed saving helped, especially the less advantaged families, to save seed stocks from existing vegetables for their gardens.

The young farmers were confident in preparing seeds for their gardens. Vegetable seeds were stored in clean coffee bottles with dry wood ash or dry charcoal in the container to absorb moisture and maintain good quality seeds. The women commented positively on the manual and the following comment is indicative of their responses:

- **Tu’iono, S. (aged, 52)**. A district officer of the Tongatapu eastern villages said:
  
  *I learned more how to save seeds from local fruits and vegetables which is easy enough to practise and quite appropriate for the local situation.*

- **Palavilala, ‘I. (aged, 28)**. A member of the young farmers said:
  
  *I learned more about saving vegetable seeds from local produce. Seed saving techniques could help me to grow vegetables throughout the year rather than buying seeds from the shop.*

### 6.10.3 Meetings with NGOs and Government Agencies

Between July 19th and December 31st, 2004 the group of women developed better working relationships with the government and non-government agencies (NGOs). The
members of the group of women were invited to attend both government and donor agency training workshops. The donor agencies also provided assistance towards their kitchen and cement tank projects.

- **Moala, ‘O. (aged, 42).** The chairperson of the group of women said:
  
  *I am happy to learn that government agencies could invite a member of the Fe‘ofa‘aki ‘a Kakau group of women to participate during their community development training programs. It is an indication that local communities and government organisations are co-operating to maintain the environment and resources of Tonga.*

- **Finaulahi, P. (aged, 36).** A member of the group of women said:
  
  *The SUOP and ESAP training programs helped to teach women how to participate in upcoming activities of the government agencies and NGOs for promoting community awareness and environmental education.*

The young farmers discussed with government and non-government organizations ways of working collaboratively to promote safe pesticide use in Tonga. They developed networks with local communities and local families to ensure the success of the project.

- **Tu‘iono, S. (aged, 52).** A district officer of the Tongatapu eastern villages said:
  
  *The young farmers learned more about networking with government and local communities to share the knowledge learnt about SUOP and ESAP with other local communities.*

- **Vailea, M. (aged, 42).** A member of the young farmers said:
  
  *Networking with government agencies such as MAFF, Department of Environment and non-government organizations could help to share the success of SUOP and ESAP programs with local communities and other young farmers.*
6.11 Evidence of participant engagement during Phase five

6.11.1 Responsibility
With increasing engagement in both their own SUOP and ESAP and the widening recognition and involvement of others, participants increasingly made their own decisions and planned their own activities and presentations to others. They organised options such as home garden visits and marketing of crops, etc., and participants decided who and what to talk about in newspapers, radio and television interviews and what was important for local communities to learn. In short, participants became more independent and took responsibility for their own SUOP and ESAP as well as engaging others in the project.

• Moala, O. (aged, 42). The chairperson of the group of women said:
  The group of women are responsible to plan an on-going SUOP and ESAP programs. They could organise home gardens visits, press releases, radio programs and television interviews.

• ‘Otukolo, S. (aged, 59). A member of the group of women said:
  I am confident to participate in the planning and development of SUOP and ESAP in the local community. The group of women have a high calibre of leadership to raise community awareness and organise adult education about SUOP and ESAP.

• Palavilala, ‘I. (aged, 28). A member of the young farmers said:
  I learned more about SUOP and ESAP programs therefore I could work to develop recycling, composting and home gardening. I could also share the knowledge and skills learnt about SUOP and ESAP with other local communities in order to maintain a safer and healthier environment.

• Livai, T. (aged, 27). A member of the young farmers said:
  I am confident to carry out SUOP and ESAP programs in my farming as well as sharing the knowledge and skills learned during the training programs. I now follow the basic information about SUOP and practise what I learned about SUOP.
6.11.2 Demonstration

The participants increasingly became demonstrators to others in presenting their own activities. They presented SUOP and ESAP activities practised in their gardens to their local communities and secondary school students and teachers. They also informed the general public that SUOP and ESAP could be learned and implemented to encourage others to also engage them in the programs.

- ‘Otukolo, S. (aged, 52). A member of the group of women said:
  
  I am confident that we learned and practised SUOP and ESAP. We could decide what to do in SUOP and ESAP activities for the good health of our families. We are confident that we can share (demonstrate) the knowledge and experiences we learnt from the programs with the rest of the community.

- Tu’iono, T. (aged, 52). The district officer for the Tongatapu eastern villages said:
  
  I am happy to see that the young farmers are learning more about SUOP and ESAP. There is a good future for the young farmers in relation to SUOP and ESAP. They could use their gardens to demonstrate what they have learnt with the students at the high schools.

- ‘Ilaiasi, K. (aged, 25). A member of the young farmers said:
  
  I am confident to practise ESAP activities such as recycling, composting and home gardening in my farming activities. The general public should be informed that our environment is polluted by pesticides.

During a drama presentation to high school students and local communities, the participants demonstrated the key skills of composting, companion crops and seed saving activities, outlining their relevance and importance in their daily lives. The follow-up garden inspections were also important here.

- Vailea M. (aged, 45). A member of the group of women said:
  
  The group of women are committed to demonstrating their skills in ESAP to high school students and local communities and how SUOP and ESAP programs are important for their lives.

- Halauaful. K. (aged, 36). A member of the young farmers said:
I am now more confident to share the knowledge and skills about ESAP such as composting, companion crops and seed saving activities with the high school students because they are the future farmers for Tonga.

6.12 Further evidence of participant engagement from Phase five

6.12.1 Garden development

From July 26th to December 31st, 2004 the participants worked on their gardens whenever possible. They provided their own planting material, such as, cassava cuttings, yams, *taro futuna*, *pele*, bananas, etc., for their gardens. Additional vegetable seedlings were provided by the facilitator/researcher upon request from the PASA demonstration plot.

- ‘Otukolo, S. (aged, 59), A member of the group of women said:
  *The SUOP and ESAP programs could provide planting materials to allow participants to maintain the programs and learning about the role that ESAP plays in the environment.*

- Tu’iono, S. (aged, 52), A district officer for the Tongatapu eastern villages said:
  *The SUOP and ESAP programs could teach the young farmers to plan and manage their gardens and to identify appropriate varieties of crops to grow in their gardens.*

6.12.2 Impact of posters/handouts

The group of women took the posters home and displayed them at community halls because as one said ‘one picture is worth a thousand words’. Also they thought that the posters would be easy to read and would attract the attention of people.

- Finaulahi, P. (aged, 36), A member of the group of women said:
  *The posters about SUOP and ESAP are more able to be understood by local people. These posters are accessible for local communities to read and follow. Also they attract the attention of people.*

- Halauafu, K. (aged, 36), A member of the young farmers said:
Young farmers do not have to read carefully detailed information. They prefer to learn from a good picture with so many lessons to be learnt.

6.12.3 Impact of photographs

From June 25th to December 20th, 2004, photographs were taken during field trips, home gardening, workshops and compost making. The participants said that the photographs became artefacts that reinforced the importance of their participation in ecologically sustainable agriculture in Tonga.

- Moala, ‘O. (aged, 42). The chairperson of the group of women said:
  Photographs are a good way to describe how participants were immersed in the SUOP and ESAP. Participants asked the researcher/facilitators to take photographs of them at PASA demonstration plots. They then shared these photographs with their families and friends.

- Palavilala, I. (aged, 28). A member of young farmers said:
  The photos taken during the field visits always remind me of the importance of managing land resources wisely and the children could also learn from them to continue doing the right things. My family thought that the photos could be used to teach others.

- ‘Ilaiasi K. (aged, 25). A member of the young farmers said:
  I like to see how to do the right things. These photos that I have are the pictures of what I learned and practised during the SUOP and ESAP programs. I have shown them to my friends and family who could see what I had learnt.

6.12.4 Increase in confidence of the young farmers

The young farmers became more confident in participating as the project unfolded. They more readily participated in discussions and learnt from each other during SUOP and ESAP activities and field visits.

- Alafoki, S. (aged, 32). A leader of the young farmers said:
I want to share the lessons learned during the SUOP and ESAP programs with other members of the community because SUOP and ESAP could be achieved through co-operative efforts to sustain and manage our environment.

- **Tu’iono, S. (aged, 52).** A district officer for the Tongatapu eastern villages said: The young farmers are helping to pass on the information learned during the SUOP and ESAP programs with other members of the community. There is a good future for them and the rest of the community.

6.12.5 Impact of School visits

Between June 20th and December 10th, 2004 the facilitator/researcher and four participants visited twenty-two secondary schools and made presentations about sustainable agricultural practices for inclusion in the school programs. The school presentations included topics such as toxicity, signs and symptoms and prevention of pesticide poisoning, and applications in home gardens of companion planting, composting, seed saving and replanting.

Figure 6.10: Students and participants learn and work together for a clean and healthy environment through school presentations

- **Moala, ‘O. (aged, 42).** A chairperson of the group of women said:

  *I now realise how important school presentations about SUOP and ESAP programs are. They are an important avenue for community awareness and adult education. High school students will discuss with teachers and their parents about the significance of SUOP and ESAP for our local communities.*

- **Hope, J. (aged, 25).** A member of the group of women said:
High school students should be well informed about the signs and symptoms of human poisoning and even how agrichemicals enter our bodies. School presentations on preventative awareness activities about SUOP and ESAP are it good to be involved in.

- ‘Alafoki, S. (aged, 32). A leader of the young farmers said:
  Local students should learn more about SUOP and ESAP because they are reading more books about science, health, technology and economics. Future farmers should be well prepared to understand SUOP and ESAP.

- Vailea, M. (aged, 42). A member of the young farmers said:
  Learning is occurring both in the classroom and the community. I gained limited understanding of pesticides and sustainable agriculture at school but after attending SUOP and ESAP training programs, and sharing my understanding with my friends, I learned how to better plan and develop a home vegetable garden by using companion planting, composting and recycling of domestic waste. Also I could share this learning with school children.

6.13 Evidence of participant engagement from Phase six: Evaluation and response

Two members of the group of women and two members of the young farmers were interviewed during follow-up radio talks and a television program on SUOP and ESAP. Participants were happy to share and exchange information with interested citizens and with local communities during the public awareness program to promote tourism, SUOP and ESAP in Tonga.

- Moala, O. (aged, 42). A chairperson of the group of women said:
  The group of women are sharing what they learned during the SUOP and ESAP programs such as companion planting, composting and recycling of domestic waste. These practices are affordable and appropriate with the fragile environment and limited resources of Tonga.

- ‘Otukolo, S. (aged, 52). A member of the group of women said:
  SUOP and ESAP programs are appropriate for the local environment of Tonga. Home gardens could provide fresh produce such as pele, taro leaves and vegetables for local families. Seed saving activities could provide more
vegetables for vegetable gardens. Local families at local communities should contact the Fe’ofa’aki ‘a Kakau group of women if they are interested to learn more about SUOP and ESAP programs.

• Tu’iono, S. (aged, 52). A district officer of the Tongatapiu eastern villages said: I am proud of the lessons learnt during the SUOP and ESAP programs. The training programs set up a strong foundation for the participants to learn about SUOP and ESAP. The topics such as pesticides use, impacts of pesticides, alternatives for sustainable agricultures such as companion planting, composting and recycling of domestic waste learned during the training workshops gave more knowledge and understanding about the SUOP and ESAP. These experiences motivated the participants to learn and practice SUOP and ESAP.

• Alafoki, S. (aged, 32). A leader of the young farmers said: I am happy to learn more about SUOP and ESAP. The knowledge and skills learned about SUOP and ESAP could help me to be a good farmer in the future. Farming environments and the good health of the farmers, their families and the consumers must be taken into account during planning, implementation and farm management. We have enjoyed learning from each other as well as the input from experts such as the field officers.

6.13.1 Final Interviews

Five members each of both the young farmers and the group of women volunteered to be interviewed at the end of the project and a set of the final interview protocols (See Appendix Four) was prepared to guide the interview. The coding categories of participant responses are shown in Table 6.5 (next page).
Table 6.5: Coding of young farmers’ final interviews April 14, 2005

<table>
<thead>
<tr>
<th>Changes</th>
<th>Respondent 1</th>
<th>Respondent 2</th>
<th>Respondent 3</th>
<th>Respondent 4</th>
<th>Respondent 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. What was learnt from the program?</td>
<td>Composting</td>
<td>Composting from household waste</td>
<td>Companion planting</td>
<td>Companion planting</td>
<td>Composting</td>
</tr>
<tr>
<td></td>
<td>Companion planting</td>
<td>Seed saving</td>
<td>Composting</td>
<td>Composting</td>
<td>Recycling of waste</td>
</tr>
<tr>
<td></td>
<td>Tree Planting</td>
<td>Companion planting</td>
<td>Recycling</td>
<td>Recycling of rubbish</td>
<td>Companion planting</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Seed saving</td>
<td>Tree planting</td>
<td></td>
</tr>
<tr>
<td>2. What parts of program taught you most?</td>
<td>Composting</td>
<td>Field visits</td>
<td>Exchanging of information</td>
<td>Pesticides Awareness</td>
<td>Tree planting</td>
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<td></td>
<td>Seed saving</td>
<td>Group discussion</td>
<td>Practical exercises</td>
<td>Traditional practices</td>
<td>Home garden</td>
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<td></td>
<td>Companion planting</td>
<td>Field trips</td>
<td>Composting</td>
<td>Natural pest controls</td>
<td>Group discussion</td>
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<td></td>
<td>Group discussion</td>
<td>Practical exercise</td>
<td>Field trip (observation and discussion)</td>
<td></td>
<td>Traditional farming practices</td>
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<td>Practical exercises</td>
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<tr>
<td>3. Have you learnt from other participants?</td>
<td>Group discussion and presentation</td>
<td>Group discussion and presentation</td>
<td>Sharing of information during group work and</td>
<td>Sharing of information during discussion</td>
<td>Sharing of information</td>
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<td></td>
<td>Home visits</td>
<td>Field visits</td>
<td>different backgrounds</td>
<td>Working with youth for community development</td>
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<td></td>
<td>Exchanging of information</td>
<td>Exchanging of information</td>
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<tr>
<td>4. Were you enthusiastic and interested in</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
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<tr>
<td>the program for most of the time? Why?</td>
<td>Use of local language</td>
<td>Use of local language</td>
<td>Use of local language</td>
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<td>Demonstrations of what to do</td>
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<td>Help from others in the group</td>
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<td></td>
<td>Field trips</td>
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<td>Changes</td>
<td>Respondent 1</td>
<td>Respondent 2</td>
<td>Respondent 3</td>
<td>Respondent 4</td>
<td>Respondent 5</td>
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<tr>
<td><strong>5. Are you prepared to help other people?</strong></td>
<td>Youth development Helping other groups Radio talks Garden visits</td>
<td>Work with youth groups Talking and learning from others Making gardens for other families</td>
<td>Development of drama youth group Field visits Home gardening</td>
<td>Helped and talked with people, encouraged them not to use pesticides</td>
<td>Sharing of information with others</td>
</tr>
<tr>
<td><strong>6. How did the program change the way that you used pesticides?</strong></td>
<td>Use of traditional farming practices</td>
<td>Pesticides safely Read the instruction Adoption of traditional farming</td>
<td>Decided not to use pesticides anymore</td>
<td>Decided not to use pesticides</td>
<td>Decided not to use pesticides</td>
</tr>
<tr>
<td><strong>7. Other comments</strong></td>
<td>Follow-up program needed</td>
<td>Follow-up needed</td>
<td>Not using pesticides now</td>
<td>Follow-up project needed</td>
<td>Follow-up activity needed</td>
</tr>
</tbody>
</table>
As indicated in the table, the young farmers reported that:

- The program helped them to learn about composting, companion planting, tree planting, seed saving activities, recycling, pest control, and to organise to exchange information with others during group discussions, practice and field trips.
- They were also prepared to help others during garden visits, radio talks and youth development projects. The program changed the way they used pesticides, and they became more confident in adopting alternatives for sustainable agriculture.
- However, they expressed a need for a follow-up to the program to sustain the improvements that they have made.
- They all responded in very similar ways to question four and identified the use of Tongan language, an encouraging facilitator, effective demonstrations that they could easily understand, the help of others in the group, farm visits and field trips as key factors in engaging them and maintaining their enthusiasm.

Examples of young farmer responses include the following:

- Livai, T. (aged, 27) felt that he learnt more about SUOP and ESAP when he stated that:

  *I like safe use of pesticides and ecologically sustainable agricultural practices because land is our heritage and passed on through our children. What I have learnt will benefit all of my family.*

- Others, such as ‘Okilani, Jr. (aged, 25) expressed a similar point of view and said:

  *Safe use of pesticides and ecological sustainable agricultural practices, such as mixed cropping and planting of crops according to different phases of the moon are essential in keeping Tonga’s environment free of pesticides and this will help to make a Tonga a beautiful place to live.*

- Vailea, M. (aged, 42) supported these arguments when he said:

  *Human activities on the land must be managed to maintain biodiversity and our cultural heritage. Our land resources and farming practices must be compatible.*
The following examples are responses to question 4 from the same young farmers mentioned:

- **Livai, T.** (aged, 27) felt that he kept interested and enthusiastic about the program when he stated that:
  
  *I liked the use of our language and a local facilitator. My friends were doing the same project so we could talk to each other and look at how we were going. The researcher/facilitator was always respectful and encouraged me and I felt that he would help me if I had any problems.*

- **Others,** such as ‘Okilani Jr (aged, 25) expressed a similar point of view and said:
  
  *The researcher/facilitator used Tongan language for all parts of the program and organised very good demonstrations and field trips. He showed me how I could improve my farming and make a difference to the life of our village...I feel very proud of my achievement and feel that this has increased my status in the community.*

- **Vailea, M.** (aged, 42) also supported these arguments when he said:
  
  *I have seen other programs in the past and often the people give up. This one has been different because the people enjoy what they do. They can see that it will benefit all of the people and they can easily learn what they have to do. The whole community has been involved and they appreciate the respectful way that the researcher/facilitator has worked with us to encourage our achievement.*

Table 6.6 summarises the responses of representatives from the group of women.
Table 6.6: Summary of final interviews – the group of women: April 14, 2005

<table>
<thead>
<tr>
<th>Character</th>
<th>Respondent 1</th>
<th>Respondent 2</th>
<th>Respondent 3</th>
<th>Respondent 4</th>
<th>Respondent 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. What was learnt from the program?</td>
<td>Home gardening</td>
<td>Home gardening</td>
<td>Composting</td>
<td>Composting</td>
<td>Seed saving</td>
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<td></td>
<td>Composting</td>
<td>Recycling of rubbish</td>
<td>Seed saving</td>
<td>Seed saving</td>
<td>Home gardening</td>
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<tr>
<td></td>
<td>Seed saving</td>
<td>Composting</td>
<td>Home gardening</td>
<td>Home gardening</td>
<td>Tree planting</td>
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<td></td>
<td>Home gardening</td>
<td>Sees saving</td>
<td>Tree planting</td>
<td>Tree planting</td>
<td>Tree planting</td>
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<tr>
<td>2. Parts of program taught you the most?</td>
<td>Field trip</td>
<td>Group discussion</td>
<td>Field trips</td>
<td>Field visits</td>
<td>Field visits</td>
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<td></td>
<td>Composting</td>
<td>Field trip</td>
<td>Practical exercise</td>
<td>Group discussion</td>
<td>Group discussion</td>
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<td></td>
<td>Seed saving</td>
<td>Drama</td>
<td>Sharing of information</td>
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<td>Training booklets</td>
<td>Group presentation</td>
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<td>3. Have you learnt from other participants?</td>
<td>Group discussion</td>
<td>Group discussion</td>
<td>Group meeting</td>
<td>Exchanging of information</td>
<td>Exchanging and sharing of information</td>
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<td></td>
<td>Sharing of information</td>
<td>Field trip</td>
<td>Sharing of information</td>
<td>Group discussions</td>
<td>Group discussion</td>
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<td></td>
<td>Field trip</td>
<td>Group meeting</td>
<td>Women’s function day</td>
<td>Field visits</td>
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<tr>
<td>4. Were you enthusiastic and interested in the program for most of the time? Why?</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
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<td></td>
<td>Use of local language</td>
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<td></td>
<td>Encouragement &amp; respect of facilitator</td>
<td>Encouragement &amp; respect of facilitator</td>
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<td>Home garden visits</td>
<td>Home garden visits</td>
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<td>Field trips</td>
<td>Field trips</td>
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<td>Field trips</td>
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<td>5. Are you prepared to help other people?</td>
<td>Arranging home visits</td>
<td>Sharing of information</td>
<td>Sharing of information</td>
<td>Discuss with church and village women group and neighbours</td>
<td>Discuss with church youth groups</td>
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<td></td>
<td>Making newspaper article</td>
<td>Home visits</td>
<td>Radio program</td>
<td></td>
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<tr>
<td>Character</td>
<td>Respondent 1</td>
<td>Respondent 2</td>
<td>Respondent 3</td>
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<tr>
<td>6. How did the program change the way that you used pesticides?</td>
<td>Learned not to use pesticides anymore</td>
<td>Not to use anymore</td>
<td>Not using pesticides at all</td>
<td>Not using pesticides at all</td>
<td>Not using pesticides at all</td>
</tr>
<tr>
<td>7. Other comments</td>
<td>Follow up in 2005 needed</td>
<td>Nil</td>
<td>Funding to run an Annual Women’s Day needed</td>
<td>Follow up with government assistance needed</td>
<td>Follow up project needed</td>
</tr>
</tbody>
</table>
The group of women reported, as shown in Table 6.6 that:

- They learnt more about home gardening, composting and seed saving, recycling of rubbish and tree planting.
- The parts of the program which taught them the most were the field trips, group discussions and sharing of information with other participants.
- They learnt from other participants during group discussions, sharing and exchanging of information and field trips.
- They helped each other by arranging home visits, preparing newspaper articles for others to read, radio program, discussing with other women’s groups both at church and in communities.
- They did not want any members of their families to use pesticides.
- They responded in similar ways to question four and identified the use of Tongan language, an encouraging and respectful facilitator, effective demonstrations that they could easily understand, the help of others in the group, home garden visits and field trips as key factors in engaging them and maintaining their enthusiasm.

The secretary of the group of women reported during the last meeting that non-participants in the training workshop asked for opportunities to participate in the garden project and that the program enabled each participant to make a more ecologically sound and productive garden. The program had taught them not to use pesticides anymore, rather to adopt traditional farming practices that provided a more ecologically sound and productive approach. The women also believed that this program could be improved and could be run again in the following year.

Examples of the women’s responses include the following:

- **Hope J’s (aged, 25)** comment supported the program when she said:

  *Plentiful food maintains peace and unity of the Polynesian families as well as avoidance of any social conflicts.*

- **‘Iloahelotu P. (aged, 28)** took a similar point of view and said:
I am proud to live and work in a friendly and healthy environment like what I learned from ESAP rather than a polluted world.

The following examples are sections of responses to question 4 from the same women:

• **Hope, J (aged, 25)** commented that she kept interested and enthusiastic about the program when she stated that:
  
  *Because we’re doing the same project and we lived nearby we could talk to each other and look at how we were going. The researcher/facilitator was always respectful, used Tongan language and encouraged us. I was confident that he would help us if there were any problems.*

• **‘Iloahelotu, P. (aged, 28)** expressed a similar point of view and said:
  
  *I really enjoyed the group meetings and the demonstrations and field trips and appreciated the respect that the researcher/facilitator showed toward us. This made me feel that I was capable of doing the project and I would succeed.*

6.13.2 End of year function and prize giving ceremony

On December 4th, 2004, the group of women put up a shelter at the community sports ground. They hired a brass band to play music for entertainment and to mark the end-of-year function. They also prepared cooked food for lunch.

The end-of-year function started with a hymn and a prayer by a church bishop. The chairwoman of the group of women praised all members for their cooperation throughout the year. After her opening remarks, the lunch program was started with the announcement of awards plus local gifts of handicrafts such as tapas and mats.

The chairpersons had previously visited all the home gardens and other activities to share their experiences and promote future cooperation. They presented awards at this function to participants who had made the most progress. The chairperson of the group of women presented awards to each member to encourage them to work harder during the coming year.
Moala ‘O. (aged, 42) the chairperson of the woman’s group acknowledged the support and participation of the members when she said:

*All of your efforts have contributed to the success of the safe use of pesticides and ecologically sustainable agricultural practices. It is good to celebrate our success.*

The other participants also supported the achievement of SUOP and ESAP. For example, Tu’iono S. (aged, 52) the district officer of a Tongatapu eastern village, had a similar viewpoint when he said:

*The stepping stones for our achievement today are united, we stand forever and divided we fall. Everyone at our village helped and I am very pleased with the commitment of the people of the village.*

Others, such as, Ilaiasi K. (aged 25), of the young farmers, supported all of these arguments when he said:

*I want to make sure that pesticide is safely used and the adoption of ecological sustainable agricultural practices in our small crowded island is managed in a sustainable way for now and the future. It was good to see that many people appreciated what I did.*

The group of women acknowledged everyone’s effort. The young farmers were happy to meet their relatives and friends during the final activities. They shared their experiences with other members of the group. They organised a kava circle ceremony while the barbeques were set up and played guitars and sang local traditional songs and danced to mark the end of a successful year.

6.13.3 On-going communication

Participants developed better communication and networking with both government and non-government organizations towards ecologically sustainable farming practices in Tonga. A member of the young farmers carried out a fifteen minutes presentation on the importance of SUOP and ESAP for sustainable development in Tonga during the 2004 Tonga Farmers Association Conference. Also, the secretary of the group of women was
invited to do a presentation during the monthly meeting of the Tonga Womens’ Association about the importance of home garden for Tongan families.

6.13.4 Project continuity and maintenance
The group of women continued their home gardening, village clean-up, replanting, and recycling activities and held regular inspection visits to make sure that the project continued.

The young farmers formed a working committee to ensure the continuity of their sustainable farming practices. They conducted a monthly village meeting to reinforce participation in the project. The facilitator/researcher visited the project sites regularly and cooperated with participants to facilitate the continuity of the project.

6.14 Summary of steps taken by facilitator/researcher to encourage participant engagement in learning in all phases
It was apparent from the field notes from the various phases that responses from the participants and their community that there was a growing interest and enthusiasm in the program, the application of the conditions of learning as advocated by Cambourne (1988) also helped to facilitate learning engagement.

This summary focuses on the measures taken by the facilitator/researcher to apply the conditions of learning within a PRA framework. The purpose is to identify and describe the key steps taken by the facilitator/researcher to encourage participant engagement in learning.

**Immersion**
Immersion was seen to be the fundamentally important condition for successful learning in this project. For this reason, particular steps were taken from the beginning to ensure that this condition was met throughout. These steps taken by the researcher/facilitator included consultation with community leaders prior to commencement of the project, use of local language during the workshop, during discussions and in the printed material presented, and during activities such as gardening and composting.
Discussions about the project began in participants’ own language. Initially this was led by the facilitator/researcher and community leaders. Subsequent participation in community talks and follow-up meetings and interviews allowed participants to be more actively involved in discussion and this further immersed participants in the language of the project, helping them to clarify the outcomes. Also, this helped the participants to see the potential benefits of the project and to see themselves as capable of doing the project.

When the facilitator/researcher later met the young farmers in their fields they were more confident than when they were in group meetings and they were able to ask many questions. It was found that they made use of the language that the presenter had used at the initial meetings so they had processed the information presented at the meeting. Also, the facilitator/researcher met the members of the group of women at their homes and they were also able to ask more questions. Again it was found that they made use of language that the presenter had used at the initial meetings, an indicator that they too had processed the information presented at the meeting.

The interviews that followed the larger meetings allowed the participants to ask questions and make suggestions to the facilitator/researcher who took care to include their input into planning. This showed that he valued their participation.

It was also noted that during community talks and group meetings, the participants were listening intently to explanations and during discussions. They said that they wanted to learn more about SUOP and ESAP.

The preparatory meeting of the group of women held on June 07, 2004, started with a short prayer and remarks led by the chairwoman, once again paying respect to the local culture. The roll-check was taken by the secretary before the facilitator/researcher talked about sustainable agricultural practices. He welcomed all the participants before discussing the project and how to develop composting, companion planting, tree planting, seed saving and recycling to enhance ESAP for their families. Again this was raising the expectations of the local women and increasing the likelihood of engagement.
The initial meeting of the young farmers was held on June 12, 2004 and it was held separately because they lived away from the village of the group of women. The town officer started the meeting with a short prayer followed by some welcoming remarks. The facilitator/researcher spoke about the project at this meeting and once again raised participant expectations, thereby increasing the likelihood of engagement.

In both meetings the process of talking about the setting up of a home garden and composting immersed the learners in the language associated with sustainable agricultural practices as well as descriptions of the activities of the project.

**Demonstration**

During the training workshops and the field visits organised by the facilitator/researcher, a field officer at the organic farming demonstration plot showed the participants how to carry out composting, mulching, companion planting, seed saving, etc. Once again these demonstrations had the potential promote learner engagement and the participants said that they were more committed than before to participate in the SUOP and ESAP programs as the demonstrations made them realise that they were capable of carrying out the activities in their own gardens.

**Individual community talks**

During community talks, which lasted one week, the facilitator/researcher talked with members of the participant groups individually about the project. The group of women and the young farmers showed that they were now keen to learn about and practice composting, seed saving, and mixed cropping. Further they were keen to take ownership of the projects and the fact that they wanted to make wooden boxes and divide them into three sections for collecting of waste, rotating and watering of the compost materials, and the storage of composting materials ready for future application to their gardens is evidence of this.

The initial interviews, conducted with five members of each group of (Appendix Three) consisted of two parts. Part one gathered information about family status, sources of income, occupation, age, number of people in the extended/nuclear family, language spoken and willingness to participate in community training. Part two focussed on farming activities such as crops grown in his/her gardens, use of pesticides
for farming, reasons for using or not using pesticides, and suggestions about appropriate training methods, topics to learn, and appropriate time for training. These data were used to modify the program so that local needs could be met, once again increasing the likelihood of learner engagement.

During all of the events the researcher/facilitator took steps to pay respect to the local culture, to draw upon local expertise and to employ strategies that involved the participants in the planning, organization and evaluation of the project. Thus, the researcher/facilitator also took steps to fulfil the requirements of participatory action research: shared ownership of research projects; community based analysis of social problems; and an orientation toward community action.

6.15 Summary of participant engagement

In general the responses of the participants to the planned activities designed to apply Cambourne’s conditions of learning were positive and there was evidence of active engagement, shared planning and community action. However, there were differences in how the two groups (the women, the young farmers) followed up on or participated in the activities. Often this appeared to be related to the differences in the status of the groups within Tongan society. For example the group of women had a higher status and could assume a stronger leadership role in events, whereas the young farmers were often active participants and showed strong support of planned activities.

Again it appears that the application of the conditions of learning as advocated by Cambourne (1988) contributed to the engagement of participants. Chapter 7 reflects on the phases of this project from a broad participatory action research perspective.