AEDI
Project Report

Barren to Blossoming
Building a Community Garden

October 2010 - July 2011

Prepared by Steven Cameron

BARIAR A KIKER MEMORIAL KINDERGARTEN
Acknowledgements

We would like to thank parents Kate Denton, Mark Caruso, Tony Rodato and Sandy Golledge for their contributions to preparing, planning and building our community garden.

The following local businesses and groups also made significant contributions to the establishment of our garden through either the direct donation of goods, or discounted pricing on equipment and materials: Bunning’s Mile End, The Herb Society of South Australia, Jeffries Compost, Soil and Mulch, The City of Charles Sturt Horticultural Team, Coles Junior Landcare and Smiths’ Nursery.

And of course the Australian Early Development Index Project Team in DECS for approving and funding our project!

Background

Community involvement has been a core focus of our Site Learning Plan in 2010. As an early childhood service, our success in meeting our site goals is often reliant upon the level of parent input into the day to day running of the centre, and that a sense of community ownership is a critical part of forging successful community partnerships.

The improvement of our building and facilities was another core focus of our Site Learning Plan in 2010, and with that in mind it was decided that something had to be done about our back ‘garden’ area, which was little more than a dustbowl with weeds and hard rubbish. After support from Bunnings to build a small veggie patch at the start of the year, we had successfully grown a number of small vegetables, and had some established fruit trees that would not bear fruit for some years to come.

Despite the area working initially, there were many ongoing concerns around the long term sustainability of the garden; primarily, issues with maintaining it. In summer the ground would get so hot that the clay like soil would become dry and hard killing the majority of the plant life out there. The area was frequently a ‘dumping’ space, where refuse from the nearby reserve would often find its way into the garden, polluting our soil further. And then the only remaining plants we had in our back garden were stolen, and we were suddenly left with an area of our kindergarten that offered very few opportunities for learning. Something needed to change.

Action

Together with our Governing Council, staff looked at various grants that we could apply for that would allow us to transform our barren backyard into an effective learning space. A garden met our centres needs as a learning space as a number of our children are very sensory orientated and would enjoy the process of planting and
digging and seeing the rewards of their labour. Community ownership of our garden was also important, as we felt that if staff were the only people responsible for it, then we would not have a strong continuity of care for the garden. As a result, 2 separate grants were applied for, through Coles Junior Land Care, and the Department of Education and Children’s Services AEDI Building Better Communities grant, both of which the centre subsequently won, and together with funds from the centres budget, we began our work on a Community Garden; one that suited the needs of both the children attending our centre, and also as a resource for our local child care centres and schools.

**Funding**

Our Budget for our garden was a total of $4500. This was provided through:

- $1000 – Coles Junior Landcare Grant
- $2000 – AEDI Grant from DECS
- $1500 – Site Budget Funds

The main purpose of the garden was to create a sustainable garden that the children in our community could take an active role in the planning, creation and maintenance. Funding was therefore expected to be spent on the purchasing of:

- Gardening tools and equipment
- Irrigation system
- Importing new soil
- Fruit and vegetable plants
- Fruit trees

We did not apply preconceived ideas about what the money would be spent on, simply a few essentials. This garden needed to be shaped by the children as much as possible, to ensure that the original concept behind our garden remained intact.

**AEDI Data**

As a requirement of our funding from DECS, we focussed on the involvement of children from 4 suburbs where we receive the highest proportion of our enrolments from. These are Kidman Park, Seaton, Findon and Fulham Gardens.

During the preparation, setup and maintenance of our new garden, we chose 2 children from each suburb as focus children for this project. These children were selected through systematic sampling, after sorting all children into their home suburbs. These children were heavily involved in the initial stages of planning, and subsequently were also the most interested in ensuring that their ideas were brought to life.
Our focus group from Group A (children attending Monday and Wednesday) were Madasyn, Alek and Nathan. Our Group B (children attending Tuesday and Thursday) focus group included Noor, Holly, Connor and Sean.
Step 1 – Planning and Preparation

Week 1

The first part of our project was preparing the area for the garden – which was no small task. The area was had a number of old soil mounds and garbage and we needed to clear and flatten the area. The first week of term 4 was all about flattening this area, and transporting the soil away from the site. When children first began to dig into the soil, they found that the plastic shovels were not strong enough to dig into the soil, so during one of our morning group times, we developed the solution of the teacher’s breaking up the soil with a pitchfork so that it became loose enough for the children to dig into it. After our initial success with a couple of children, we were joined by large groups of children all helping to dig up the hard soil and using wheelbarrows to move it to the digging patch at the front of the kindergarten.

All of the children from Group A helped demolish the large mounds of dirt in the garden, and flatten the area.

This process took the entire week. The group overall was very engaged during this process, and were amazed at what was underneath the largest mound we broke up, finding a network of tunnels where a colony of ants had set up. We were very careful to move the soil without squashing any of the ants!
Explicit Teaching

After the children had lunch each day, we talked about what children wanted from a garden. We encouraged them to draw their ideas on paper, thinking about their own gardens, what varieties of plants they had, or have seen before (see appendices). The main consensus from the group overall was that they wanted plants that were aesthetically pleasing, but also plants that could produce food, particularly vegetables and fruit trees. Children began to draw ‘plans’ for the garden, including how many plants they wanted and the types of fruit they wanted to grow.

Week 2

After flattening the mound and transporting the soil away, we needed to look at what else had to be moved and prepared before we could start the building of the garden. The old garden bed that had been used for most of the year was still set up, with the large sleepers and stumps set into the ground. Before going out into the garden, we had a group discussion on what we needed to think about before dismantling the old garden bed. The two main points that were raised were:

- The weight of the sleepers and stumps
- Spiders and Insects living under them

The group agreed that teacher’s should be responsible for moving everything, and that the children would supervise to make sure that we didn’t get bitten!

Alek pulling out all of the weeds from the old garden bed before digging up the remaining soil.
Moving everything from the old garden bed took just under a day to complete. We kept all of the old stumps and sleepers because we thought that we could reuse them at a later date. During the process of weeding, many children made discoveries that a number of plants were still alive and growing, and had been covered by dirt. We carefully dug those established plants up and potted them ready for transplant in the future garden. One plant that was barely alive was a strawberry plant that Holly decided to begin to care for, and took responsibility for watering each day.

The final part of the preparation was the compacting of the soil to make it flat enough to install our garden beds. A parent came in with his soil compacting equipment to complete the job, and also broke up some concrete slabs we found under the surface.

Our garden area at the end of the second week of our project.

Explicit Teaching

Towards the end of the second week of our project, we began to discuss the main elements that plants required to grow strong. Our group times focused on books which illustrated the conditions that plants needed to grow, such as ‘The Tiny Seed’ by Eric Carle. After our discussions and literacy experience, children recorded their comprehension of the topic through drawing what plants needed to grow (see appendices). This proved to be an important part of the next step in our planning, which was seeing if our garden area was conducive to growing strong healthy plants.
Step 2 – Testing and Experimenting

Week 3

Dale, Madasyn, Alek and Nathan started our testing on Monday of week 3 through seeing if we had all of the elements necessary to grow healthy plants. In our small group experiences, we went to test if our garden space had sunlight, water and good soil. Nathan said that there was a lot of sunlight outside, as it ‘wasn’t shady out here’, and Madasyn located the tap, and said we could get all our water from there; Dale adding that the rain from the clouds would also give our plants a drink. The question of the soil was one that wasn’t easily answered, as we had no means of determining what ‘good’ soil was. After a quick look at a gardening website, we began talking about the concept of acidic and alkaline soil, and that some plants liked different soil conditions to grow. A quick trip up to the hardware store, and we had bought ourselves a reusable soil PH testing probe, and the group spent time testing the various patches of soil in our garden area, a PH of between 6 and 7 suitable for the fruit trees that we wanted to plant in our garden.

Holly, Connor, Noor and Sean wanted to test the soil through planting seeds that were donated by our local Coles store at Findon through the Junior Landcare Grant in pots using the soil we had dug up from the mound. We planted Strawberry, Nasturtium and Snow Pea seeds, and the each day the group was at kindy they watered them and checked for sprouts. By the end of week 3 we had a few Nasturtiums beginning to sprout, which the children took as a sign that our soil at kindy was ‘good’ soil, and that we could grow trees and plants in it.

Holly planting the Snow Peas and Nasturtiums in pots filled with soil from our back garden to test its quality.
Explicit Teaching

This phase was very different in practice as the two separate groups of children developed their own way of testing the health of the soil. Numeracy was very important during this phase of planning, especially for Group A, who needed to accurately read the PH level on the meter each time they checked it, whilst keeping in mind the preferred PH level of the trees we wanted to plant. This led to a group time experiment where we mixed acidic and alkaline compounds in with soil samples to get a more extreme reaction from the PH probe, and gave all children the opportunity to test the different soil samples. The concept of which numbers have greater value was explored as a group, where the children sorted the soil samples according to their PH.

Group B were much more interested in the observable results. Whilst they did use the PH probe to test the soil within individual pots, the children were fascinated by the depth that seeds needed to be planted at after looking at the diagrams on the back of the seed packaging. Noor used a small hand rake to make holes the same depth as the diagram indicated, before burying the seed with dirt. When I asked the group why seeds couldn’t just be planted on the top, Noor’s response was “Because the birds will eat them, like the book about the tiny seed”. This was a great piece of evidence linking the literacy experiences from the previous week into real world learning experiences.

Noor was very conscious of planting the seeds at exactly the right depth to ensure the seeds would be safe from birds, and would be able to grow.
Step 3 – Building the Garden

Week 4

We began week 4 with a flat and dusty piece of land, and by the end of the week we would be left with a beautiful garden and learning area. We had ordered 5 raised corrugated iron garden beds to start the garden off with because they would be at working height for 4 year old children, which we felt was an important part of maintaining children’s involvement, as well as protecting the plants growing within. It was at this point that we began to talk about sustainable principles such as water conservation, because much of the planning for the garden had been based on ensuring that we were conserving as much water in the soil as possible, as the area traditionally became very hot in the Summer months. The garden beds arrived, and we needed to wait a few more days for the arrival of some quality soil, which we explained to children, was necessary after an experiment on the seeds planted by Group B had shown that water would pool on top of the soil rather than soak in. We also purchased mulch which we explained to the children would be used to maintain moisture levels within the soil by slowing the process of evaporation.

The garden was designed to have 2 parts: A sensory garden full of herbs, colour and textures, as well as a production garden, with fruits and vegetables which would grow short and long term. The children quite liked the idea of being able to come back to kindergarten in 5 years time after going to school to eat fruit from the trees that they planted!

Whilst some plants were purchased through Bunnings, there were a number of plants and trees that were donated by local families and businesses, including some Petunia’s for the border of our sensory garden from the Fulham Gardens Nursery, herbs for the sensory garden from the Herb Society of South Australia, and some citrus trees provided by Riverland fruit growers Robert and Phil Braunack, which were varieties that grow best in South Australia.

We began by positioning our plants and trees around the garden to ensure that there was enough space between each to grow, with children pacing out 4 big steps between each. We then planted all the trees, and some of the plants, before children in group A, together with a few parents, helped to transport all of the soil into the garden beds, and spread the mulch over the entire back garden area. The mulch provided so much cover, so to make a path through the garden we reused the stumps from our original garden bed to make stepping stones through the garden.

The children helped to put pea straw and water wells around each of the trees to help conserve water, and were amazed as the water wells filled up, and they were able to see an observable difference in the water retained on the surface with these water conservation measures in place. This helped to provide a more visual explanation of what happens to water when it disappears beneath the surface of the soil.
The moving of the soil and mulch took an entire day to complete, but the children were more focussed on the immediate planting. We planted carrots, strawberries, tomatoes, lettuce and transplanted some of the snow peas that we had planted as part of our soil testing the week before in our garden beds, and the children put mulch over the top and started to water them. The rest of the manual labour fell to the adults!

Explicit Teaching

The concept of water retention in the soil was somewhat difficult to convey to children, so direct observation seemed to be the best way to illustrate it. Adjacent to the garden space was an area containing a couple of bushes and 2 Melaleuca trees which had a heavy amount of leaf litter and ground cover. This area was marked for flattening to make room for a new shed, so we began digging in that space over a couple of mornings, and posed a few questions to children as we dug.

Nathan was very interested in the difference in the soil in this area, from the main garden area. He described the soil by the bushes as ‘a bit orange and a bit wet’, and in comparison the soil in the garden area as ‘really brown and feels yuck’. As a group, we looked at the leaf litter and ground cover around the area with the bushes, and found that after digging down, we found that layer to be quite thick. We discussed that this stopped the ground from getting too hot, and because it wasn’t as hot, there was more water in the soil. Nathan then likened this to the sandpit and
said that ‘dry sand doesn’t stick together, but if you put water with it you can make sandcastles’. This comparison was the basis for a bit of experimentation, where the group wanted to see what happened to the different types of dirt when mixed with water.

Connor, Noor, Holly and Sean from Group B focussed more on the watering of the new plants on returning to kindergarten as they were not involved with the setting up of the garden on Wednesday. After our experiments on Tuesday with water drainage, the group was amazed at how quickly the water would disappear from the surface of the garden beds after watering. Digging down a couple of centimetres was enough to show that the water they had put on the garden beds was not enough to permeate deep enough into the soil, so through that the children started to develop more of a concept on how much water was required to get through the mulch and deep into the soil.
Step 4 – Planting

The space in the garden had been designed for a dual purpose, to have a ‘production’ space where all the plants would provide something edible along the way, such as fruit and vegetables, but we also wanted to give children the opportunity to experience plants in a sensory capacity, particularly plants that you could eat, smell, hear, touch or were aesthetically pleasing. A triangular patch which was separated from the main garden became the ideal place for the building of our sensory garden, which the children were to take a leading role in shaping.

We used the internet to find the names and pictures of plants that fit into sensory categories, Auditory (Hearing), Tactile (Touch), Visual (Sight), Gustatory (Taste), Olfactory (Smell), and made a list of plants that we would like to have in our garden. We were able to get a few of these plants donated through local businesses and organisations such as Smith’s and the Herb Society of South Australia, and purchased the remainder.

The most important part of this process was ensuring that children were thinking about the long term growth of the plants. We looked at the labels accompanying each plant to see what the growth was and worked out the ‘growth radius’ or area.
that the plants would occupy when mature. Each group of children then picked out a few of the plants to put in ground, removing them from the pots and filling the holes with new soil. This was particularly interesting, as Connor noted the difference in the soil, and noted that the ‘ground soil was very brown and squishy’, but the new soil be had imported was ‘black, and a bit like sand and bark’. We had a conversation about the texture of the soil, and I spoke to Connor about the fact that the soil we were planting in hadn’t had anything growing in it for a while and not much water, so we needed to continue to add new matter to the soil, such as our imported soil and mulch to improve the quality so all of our new plants would grow. Connor asked if he could do the watering each day he came to kindy to ‘help the soil become new again’.

Explicit Teaching

The small group times prior to planting utilised the internet to find out more about plants, including how to care for different types of plants, including the spatial and nutritional requirements for each plant. In Group A, Dale, Madasyn, Nathan and Alek were interested in plants that ‘looked nice’, so we Googled for plants that look nice! We were inundated with so many pictures of different types of plants, so we narrowed the field, Dale suggesting that we choose a different flower for each colour in the rainbow. So we searched separately for red, orange, yellow, green, blue and purple plants, and found a few varieties that grew well in Australia that would be a good match for our garden.

Connor undertook a lot of the watering duties in the garden after noticing the difference between the old and new soil.
In Group B, Noor, Holly, Sean and Connor thought differently about the plants they wanted in the sensory garden, and were interested in plants that smelled nice, and also tasted nice. We had already had a few donations of plants from the Herb Society of South Australia at this time, one of which was an Eau du cologne mint plant. This was a very meaningful experience for the children as they could both smell and taste this plant, and highlighted just what plants could offer. We looked up more plants that were both edible, and had a noticeable aroma, and found plants such as Jerusalem Sage, Australian Mint, Rosemary and Oregano, which the children agreed would be great for our garden.

**Data Collection**

We collected data in 2 different ways to explore the impact of our community garden project, through using the involvement domain from the Respect, Reflect, Relate document (Department of Education and Children’s Services, 2009) in order to gauge how sustained the focus children’s involvement was in the garden at various stages.

We then also looked at the AEDI domains evident in each video, and recorded when a child was engaged in an activity that fell under one or more of the AEDI domains, using the indicators of ‘children performing well’. Across all 6 children there was a total of 36 videos that we used to compile data in this way.

**AEDI Domains**

It was evident across viewing the involvement data that the social, language and communication domains were the most prevalent. In all instances (see table 1), children were talking to each other, sharing their general knowledge about gardening and talking about what they were going to plant at our garden at kindergarten, but also, all of the gardening that they did with their parents and extended families. The whole process of gardening became a very social experience.

The physical domain also featured frequently across the videos. As gardening involves a high degree of physical activity this was no surprise, however as the results demonstrated, children did not necessarily need to be physically active to be involved, at some times simply opting to observe and engage in discussions with other children.

Emotional behaviour was significantly lower in incidences of behaviour under the ‘children performing well’ category. In most videos there were incidences of children arguing, snatching and not reacting positively to other children. These were quite low level behaviours, and did not overpower the whole tone of the experiences as children still interacted quite socially with each other. There was also at times the capacity to be inattentive to the task at hand.
Table 1 – Incidences of AEDI domains in Involvement Scale videos.

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<th>Child</th>
<th>Physical</th>
<th>Social</th>
<th>Emotional</th>
<th>Language</th>
<th>Communication</th>
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<td>5</td>
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Involvement Scale

The involvement scale reflected high levels of involvement across all children observed. When scores were lower, it was almost always due to children’s attention level waning, although children always came back to the task at hand. The average for each child (see table 2), as well as the site overall is above the lowest acceptable score for an environment conducive to high levels of involvement.

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<td>Individual Mean Score</td>
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<tr>
<td>Total of Individual Mean Scores</td>
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<td>Mean Score for Setting</td>
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**INVOLVEMENT OBSERVATION SCORE**: A mean score of 3.5 is considered to be the lowest acceptable score indicative of a supportive environment.

Table 2 – Involvement Scale Video ratings
Summary

Our gardening project over the past term has led to children showing high levels of involvement, as well as many of the positive factors in the AEDI domains. The project can be deemed as extremely successful due to the high frequency of 4 out of the 5 AEDI domains, and has given us a strong focus for 2011 in terms of looking at emotional maturity and managing conflict.

The most significant part of this project has been the sense of community and ownership that has developed over the course of the term in regards to the garden. Children are continuing to take an active role in the management of the garden, despite a reduction in the frequency of intentional teaching around the garden management, and children are continuing to mentor each other in the care of the garden.

Holiday Care

The school holidays started only 5 short weeks after we first established our garden, and as the irrigation had not gone in yet we needed some help during summer to help care for our garden. A number of families as well as members of the community put their hands up to water the garden for a week and to continue the work we had started.

The next step

Building our community garden has been a huge success, and has incorporated a lot of involvement from our parent group, the children, local businesses and centre staff in order to complete it. What we have just finished now becomes a new beginning.

The opportunities that exist in our new learning space for both the children attending our centre and the local community are many, however we are hoping to use the garden as part of a long term project where the parent community takes ownership of the garden, and the children benefit directly from not only the learning opportunities that exist within the garden, but also through the consumption of the fruit and vegetables grown in it for snacks. The impact of children having access to fresh fruit and vegetables on a daily basis at the exclusion of the heavily processed and packaged foods that are often supplied by parents as snacks is an outcome that has many positives, including reducing the cost of food for parents, increasing the fruit and vegetable consumption of children, as well as reducing the waste that our kindergarten generates.

Our next step is ensuring the sustainability of the garden as a community resource, and making additions to become more environmentally viable. This will include the installation of one or more rainwater tanks, and a pump which is powered by solar panelling. These inclusions will ensure that our irrigation will be thorough, without putting further strain on our local water and energy resources. We are hoping to create more community partnerships in working towards these goals that extend the scope of the garden, through working with NRM education and KESAB.
Our Term 1 curriculum focus is already heavily based on the continuation of the garden, through adding an arts focus where the children will create art pieces for the garden to continue to enhance the aesthetics for the children of 2011 and beyond.