

Environmental Education in a Culturally Diverse School

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Abstract

School gardens provide a unique learning environment for English as Second Language (ESL) students; students are able to engage in experiential outdoor learning that will enhance in-class lessons. This study evaluated the effects of school gardening on ESL students' learning about good nutrition. Data collected indicated that there were positive gains in student learning and feelings of belonging to the school community. Indications from the study suggest that teacher attitudes play a big part in ESL student engagement in the learning process for environmental education. Garden-enhanced lessons about nutrition provided experiential learning for ESL students that effectively supported in-class learning.

Australia's school population has become more culturally and linguistically diverse than ever before. For example, according to Education Queensland (2006), 40% of Queenslanders are migrants or children of migrants, 10% of Queenslanders over 5 years old speak a language other than English at home and Queensland contains more than 200 nationalities. Teaching to diversity means being aware of and being sensitive to cultural and linguistic difference. Newly arrived children aged 5 to 12 are usually placed in a classroom at their local school rather than being placed in a special English-as-a-Second Language (ESL) class as a way to have students assimilate quickly into the established Queensland school culture (Osborne & Dawes, 1992). To assist with such assimilation, ESL teachers' expertise helps to shape learning for these students through curriculum development and classroom teaching.

School grounds are an ideal environment in which to engage the potential of ESL students providing them with opportunities that can lead to improved attitudes and behaviours towards the outdoor school environment and better overall feelings for the school within the community and themselves as members of the school community (Skamp & Bergmann, 2001). Outcomes for learning can be developed to address a range of learning skills and abilities. When lessons are aimed at the level of children's understanding there seems to be no reason why environmental studies should not be taught. For example, Davis (2005) described a sustainability program implemented for preschoolers. These young children were active participants in planting eco-friendly plants in their school grounds and monitoring water use. For such a program to be successful, Davis suggested that ideally such a program needs to be implemented as a whole-school approach. Such an approach ensures that all the children at the

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school have an opportunity to learn about their natural environment and that staff are working in coordination with each other across the grades.

However, when there is not a whole-school approach, individual teachers can do much to address the needs of their students. For example, an ESL teacher can support individual classroom teachers to assist in preparing students for environmental education. As specialists, ESL teachers deal with learning needs that go beyond the content level for it often happens that when children migrate to a new country with a new language to learn they lose their ability to communicate at the same level as their peers (Makin, 1992). Teachers can use an arsenal of strategies and techniques (Gibbons, 1991; Gersten & Baker, 2000) to assist children in their language development and to help them feel safe and secure about their learning. Learning activities in outdoor settings encourages ESL students to take control of their learning through shared participation with their peers, releasing them from the intensity of classroom seatwork where their lack of proficiency in the English language and learning is revealed.

One example where such learning can occur is through active involvement in a school garden. Children can become involved in the process of planting and harvesting food. Thematic studies involving the garden as an outdoor classroom can include language and literary development, mathematics and areas of social and environmental studies. Yet, Skamp and Bergman (2001) found that in spite of the perceived benefits, few schools use the outdoors as an environment for learning. Teachers tended not to engage environmental knowledge learnt in the classroom with environmental action outside outdoors. In a school garden, children can acquire environmental knowledge through hands-on experiential learning, interacting directly and indirectly with their environment (Malone & Trantor, 2003). Pranis (2003) described school gardens as living laboratories of hands-on experiential learning. One theme that can be used for such hands-on learning is garden-enhanced nutrition (Morris & Zindenber-Cherr, 2002). Planting and harvesting a school vegetable garden in combination with in-class lessons on nutrition can help to improve students' nutritional knowledge and also increase their consumption of nutritious foods to which they might not have been otherwise exposed (Reynolds et al., 2000). McAleese and Rankin (2007) found that garden-based activities run alongside nutritional education resulted in an increase in fruit and vegetable consumption for students. They noted, though, that prolonged change in dietary behaviour is an ongoing process rather than expecting change to occur with a one-off program.

The diversity of food now available in Australia reflects the diversity of students' home cultures. Campey (2002) suggested that for immigrant and refugee children to settle into their new environments it is essential that they see themselves reflected in the curriculum. Incorporating learning about foods from different cultures as part of the curriculum can provide children with a sense of belonging. Children new to Australia may be confronted with foods previously unknown to them (see Reynolds et al., 2000). Working in a school garden, ESL students learn not only about the cycle of plant life and how to support the environment in a more global sense but also learn about new foods and good nutrition.

The Gardening Project

The research reported on in this paper examined the utilisation of a school garden for ESL student learning in a small primary school, in south Brisbane, Australia to promote an awareness of good nutrition. The school consists of 153 students of which 67 are English-as-a-second language (ESL). Students' home cultures and languages include Chinese, Vietnamese, Korean, Finnish, Ukrainian, Polish and Indigenous Australian. These students had various levels of English language proficiency, which

for some depended upon whether they had older siblings in the school who were also learning English. Significantly, of the 67 ESL students, 33 were Sudanese refugees. These students arrived in Australia without any formal schooling, having lived in refugee camps before their arrival in Australia; they spoke no English and had no knowledge of Australia or Australian culture before their arrival. The large number of students from the Sudan at the school had an impact on shaping the environmental education in that their previous knowledge of foods and their particular learning needs were taken into account in curriculum development on good nutrition.

Gardens at the school were built as a short course on school gardening by a local Technical and Further Education (TAFE) institution. Arrangements were made for a group of TAFE students to come to the school during the final term, two days a week for a period of ten weeks to establish a series of no-dig gardens, a worm farm and the beautification of areas such as preparing a quiet place in the school grounds for students and teachers. TAFE students were actively recruited from the school community (parents and former students of the primary school) and from the wider community. Classes of students were welcomed to visit the gardens at any time during their construction. Two teachers in particular, the Grade 2 teacher and the ESL teacher, utilised the outdoor learning area and are the subject of the current report.

Teachers' Utilisation of the Garden

The Grade 2 Teacher: Half the students in the Grade 2 class were ESL. For the most part, these students remained intact as part of the class; however, three of the students originally from the Sudan had additional ESL lessons apart from the class two mornings each week. The Grade 2 class spent time in the garden planting and harvesting herbs and vegetables but they were less than enthusiastic about weeding. To motivate the children in weeding the garden, composting methods for water conservation were introduced. The children added the weeds to the compost bin, the contents of which would then eventually be returned to the gardens to promote healthy growing plants and, thus, promote good nutrition.

The Grade 2 students grew plants familiar to Australian diets such as tomatoes and lettuce but also grew plants that the students from the Sudan were accustomed to eating such as okra and rosellas. When the plants produced fruits and vegetables, the students learned how to harvest them and began including them in their lunches, learning about both the cycle of plant life and what foods to eat for healthy nutrition.

Additionally, learning gained by working in the school garden was connected to learning about worm farming. The Grade 2 children could describe how they kept the worms alive by providing them with nutritious foods and how, in return, the worms provided fertiliser for the garden:

Teacher: And what have we been doing at lunch time with C [adult helper]?

Student 1: Collecting scraps to feed the worms, like apple cores and banana peel.

Student 2: They like apples.

Student 3: They're pet.

Student 4: They like the dark.

Student 3: They eat manure ... it's poo ...

Student 2: And they can eat compost.

Student 1: They eat some bugs in there too. Some cockroach and some ants, some flies.

Student 2: Worms don't have eyes or noses. They only have mouths and bums

Researcher: How do they breathe?

Student 2: They just use their mouth.

Researcher: How many worms are in there [the worm farm]?

Student 1: About twenty thousand.

Making sure that the worms ate healthily meant that the children needed to eat healthily. Their classroom displayed clear evidence of a strong connection between the learning environment outside and curriculum activities in the classroom with numerous posters and charts on the walls depicting the various stages of student learning. For example, there was a chart on the wall of foods for the worm farm. The chart was divided into “Yum Foods” and “Yuck Foods”. Students learned to cut their apple cores and other scrap food into bite-size bits for the worms and learnt that the worms would become sick and die if they were fed “Yuk” food. One student in particular changed his lunch time eating habits from processed foods, chocolate biscuits and chips, to healthy foods that he could share with the worms. The children learned that worms cannot stay healthy eating “yuk” foods so students needed to eat healthy foods in order to provide “yum” food for the worms.

The ESL Teacher: The ESL teacher worked both with the classroom teachers and in isolation, withdrawing ESL students to a separate unit for part of the day. The ESL teacher described that many of the children did not have gardens at home and became quite excited about many aspects of gardening such as watching seeds sprout. Interactive learning within the context of the garden played an important part in English language development for these students. It has long been recognised that experiential learning enhances students’ language development (see Dare & Polias, 2001) and remarks from the ESL teacher appeared to bear this out. She described how the freedom of learning outside the confines of a regular classroom allowed the



FIGURE 1: Grade 2 Poster of “Yum and Yuk Food” for worms

ESL students to explore concepts in an environment where they felt safe to express themselves.

In a conversation with the researchers, the teacher asked a group of students from the Sudan to describe their seed sprouting activity. Classroom seed planting was developed to reinforce learning that occurred in the garden and to allow the students to learn at their own pace in a place where they could make mistakes without penalty:

Teacher: Can you tell us what you did [re planting the seeds]? How did you get them to shoot?

Student: You get cotton wool and then you put it cotton square and put lima beans on and put lot of beans on cotton square and then you put some water and then you put it on the sun.

Teacher: And just leave it?

Student: Yes and then watch and then it crack a bit and stuff come out ... and more water.

When the seeds were established, the students would plant them in the school garden for harvesting along with other food plants they had been tending. Additionally, the ESL students kept a gardening diary in which they recorded what they planted, how they went about planting things and how they monitored the growth of their plants. Their diaries were used to assist in English language development but also to reinforce learning that occurred in the school garden and related classroom activities. The students confidently showed the researchers their drawings and descriptions of gardening activities in their diaries and then pointed out their plants growing in the garden, making the connections between outdoor and indoor learning.



FIGURE 2: Sorting through Seeds

Clair (1995) suggested that many teachers do not understand the complexity of learning that students who are ESL must undertake. Not only must these students learn the same content as the native English language learners in the class but they must process that learning through two languages, in effect learning through learning English (Cummins, 1991). Teachers who do not know how to teach students who are ESL may keep students engaged at busy work (non-academic or lower academic work than what the rest of the class are doing) so that it appears as if these students are on task (Gersten, 1996). Busy work, however, requires constant vigilance on the part of the teacher to ensure that students keep busy. Students, for their part, express embarrassment that they have to do what they perceive to be “baby” work, so it is not surprising that students become bored and distracted being in the same class as their English proficient peers. Students expect to work at the same age and grade level as their peers, not be stigmatised at working below that level. In the case of the students from the Sudan, the ESL teacher acknowledged their capabilities as learners and provided an environment wherein they could learn at age and grade level but in a safe environment.

In the garden the ESL students were learning the same lessons as their peers but with a curriculum that was adapted to meet their particular learning capabilities. Being able to go out to the garden to learn was an important element, helping the ESL students develop a sense of belonging to the school community. The ESL teacher’s perception was that the children felt safe and happy working in the garden so that when they joined their peers in the regular classroom (such as the Grade 2 class) they were better equipped with the knowledge they had gained from working in the garden with the ESL teacher.

The Effects of the Garden on Learning

There were benefits for the ESL students whose learning was connected to the school garden. English language development, both oral and written, for these students was enhanced through their experiential participation in growing and harvesting food. In the garden setting the ESL students worked well alongside non-ESL classroom peers. The researchers observed that the ESL students contributed as fully in the garden activities as their classmates and were just as eager to describe what they were doing as were their classmates. The ESL teacher explained that it had taken the students a full year to feel comfortable enough to participate at such a level. These students, many from war-torn Sudan, found a safe haven in the school garden. According to both the ESL teacher and the Grade 2 teacher, the students felt a sense of purpose to ensure the plants did not die and in doing so created a bond with fellow students and teachers who shared in maintaining the garden.

In maintaining the worm farm, the ESL students learnt about the cycle of life first hand. They could track how their human waste of food scraps was utilised by the worms to be transformed into a powerful medium for renewal and growth. The children’s eating habits changed through their awareness of appropriate foods to feed the worms; in order to share healthy food with the worms, the children had to bring healthy food to school for themselves. The scraps from their lunch boxes were no longer discarded in the bin as had happened with “Yuk Food” previously brought to school.

The children learnt which foods grow in drought conditions - some of the introduced garden plants were ones similar to those grown in the marginal regions of the Sudan. Students discussed how much water “European” plants need to grow in comparison to how much water “indigenous” plants that can tolerate drier conditions need. Students incorporated concepts of water conservation such as composting and being water wise into their learning and were careful with their watering cans not to waste this precious

resource in the garden. Introducing plants indigenous to the Sudan sent a strong message to the ESL children that they were valued members of the school community and that their customs and culture were very much of interest to their fellow school members. The ESL teacher drew upon the Sudanese children's culture through the support of a Sudanese community member that the children called "Auntie". Auntie helped in the classroom and in the gardens in identifying plants and describing Sudanese culture. There is much in the literature that suggests that the socialising and academic focus of parents and families can have a profound effect on a child's preparation for school (Igoa, 1995; Li, 2002). ESL students, particularly from the south-east Asian countries, described that many of the foods grown in the school garden were grown at home in their own gardens, making the connection between home and school gardening in relation to growing and eating nutritious food.

Learning was successful for these students because the teachers made it relevant to their lives. According to the Grade 2 teacher, through their awareness of appropriate foods to feed the worms the children brought healthy food to school for themselves. The Grade 2 teacher was himself a father of young children who was teaching his own children about environmental issues and so maintained a high level of enthusiasm for the project through his home-school interests. Weston (2005) suggested that in order to ensure that environmental education does not remain a one-off academic unit of study, not only must environmental issues be relevant to students' lives they must also be relevant to teachers' lives. One staff member described the Grade 2 teacher's enthusiasm:

He's really loving it. He comes out with the kids every day and they watch the worms and water the little seedlings and he's just dying to get them into the garden bed and he's doing, you know, stuff almost his whole day.

While the literature suggests that it is preferable that environmental education programs are part of a whole-school approach (see Davis, 2005), results in the Grade 2 class indicates that individual teachers can make a big difference in raising the awareness of environmental issues with particular groups of students.

Conclusion

The current study examined ESL students' nutritional learning within the context of a school garden and found that the students gained in environmental knowledge related to growing and eating nutritious foods. Other areas of learning occurred in English language development and a sense of belonging to the school community. An important factor in the students' learning was the teachers' commitment to the gardening program. Other teachers at the school did use the garden on occasion but none to the extent of the Grade 2 and ESL teachers. For the potential of school gardens to be fully realised in raising the level of good nutrition, all students at the school should have the opportunity to utilise the space. School gardens offer students a positive environment for learning about the natural world. Properly structured programming assists students in making connections between classroom lessons and the world outside the classroom.

Keywords: ESL; school garden; nutrition; experiential learning.

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