

Teachers' Perceptions of Environmental Education in Early Childhood

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***Abstract:** What are teachers' perceptions of environmental education in early childhood education? Research conducted by Prince (1994) with pre-school children on their awareness of the natural environment led to an investigation of how teachers perceive the importance of environmental education both philosophically and as part of the early childhood curriculum. Six early childhood centres with different philosophies were chosen to take part in the study. Staff were interviewed for approximately one hour at their centre and the need for explicit teaching strategies based on existing practices was highlighted. Strategies were formulated from the interview answers and were later offered to centres to assist in planning environmental education learning experiences. The study uncovered the extent to which environmental education was considered an important part of each centre's philosophy of early childhood. The use of Te Whaariki within each centre's early childhood curriculum emerged as a common philosophical base for the potential implementation of environmental education. The holistic approach espoused by Te Whaariki along with the learning outcomes of knowledge skills and attitudes were perceived as a key to children's understanding and appreciation of the natural environment. The most significant finding was that when centre philosophies were examined for specific mention of environmental education, only one centre, the Rudolf Steiner Centre, met this criterion.*

Introduction

A need to care for the environment received world-wide attention at the United Nations Conference on Environment and Development held in Rio de Janeiro in 1992. At this world summit many nations of the world met to discuss the "environmental crisis" facing the world today. Education as a means of addressing concerns about the environment was highlighted in Belgrade in 1975. From the series of meetings on environmental education the Belgrade Charter was established. The Tbilisi conference followed in 1977. Recommendations from this conference formed the basis for an International Strategy for action in the field of Environment Education and Training for the 1990's. This strategy was developed at the UNESCO-UNEP Congress held in Moscow in 1987 (Gough, 1997).

Environmental education is "a multidisciplinary approach to learning that develops awareness, attitudes, values and skills that contribute towards

maintaining and improving the quality of the environment” (Ministry for the Environment, 1998, p.9). Multidisciplinary teaching and learning takes a holistic approach to meeting the aims of environmental education (Ministry of Education, 1999). This holistic approach fits well with early childhood education and is encapsulated in Te Whaariki (Ministry of Education, 1996), the National Early Childhood Curriculum. This curriculum was planned to cater for a variety of services and their philosophies. A socio-cultural approach linked to the theories of Vygotsky (1978) is an integral feature of the document. Fler (1998, p.4) suggests that “environmental education can be viewed as education ‘about’, ‘in’ or ‘for’ the environment”. Gough (1997) agrees that there is broad acceptance of these categories in the schooling system. However, in line with the holistic socio-cultural emphasis in early childhood education, different approaches are needed in the early childhood sector.

Dighe (1993 cited in Bower, 1998) outlines three approaches to environmental education programmes for young children. These approaches are (a) to love, (b) to know, and (c) to do. The “love” approach encompasses respect and appreciation for the natural environment. The “know” approach increases children’s environmental knowledge. Finally, the “do” approach promotes care of the environment. This hands-on approach fits well with early childhood educational philosophy which espouses exploration as a way to learn. Wilson (1993, 1994) asserts that the newly emerging field of early childhood environmental education is pivotal to the development of a sense of respect and care for the natural environment. Tilbury (1994, p.4) agrees and suggests that the early childhood years “prove to be critical for the environmental education of the child”.

New Zealand has a diversity of early childhood programmes with differing philosophies. Traditionally mainstream programmes, such as playcentre and kindergarten, philosophically place emphasis on the value of play and the holistic development of children (May, 1992). The importance of this play philosophy was embraced by childcare centres and was combined to form their own unique philosophy that emphasises education and care (Smith, 1992). Fler (1998) argues that the care aspect of children’s learning along with the length of time in childcare provides an opportunity for children to learn through everyday experiences and adult-child dialogue about these experiences. Pramling, Samuelsson and Mardsjo (1998) extend this concept and suggest that children should learn through an “experience orientated approach”. Pramling (1990, 1995, 1996) conducted research which showed that children developed both cognitively and metacognitively through this approach, more than children from more traditional programmes. These mainstream early childhood services all philosophically emphasise the socio-cultural approach as outlined in Te

Whaariki. Smith (1998) envisages this approach as learning through interactions with peers and adults and the embeddedness of learning in social and cultural contexts. A pro-active approach to environmental education is also advocated.

The Te Kohanga Reo highlights the importance of the Maori language to the well-being of Maori children. Philosophically it aims to operate as a Whanau and incorporate Marae protocol into children's learning (Smith, 1992). The Awhina Whanau Education Service works collaboratively with Te Kohanga Reo and emphasises the importance of care and respect for the natural environment. This concept is seen as a culturally and spiritually significant part of the Kohanga programme (Potaka, 1991). The Rudolf Steiner philosophy as articulated by Bruce (1987) values the aesthetic beauty of the environment as well as its ability to provide for basic human needs in line with the balance of nature. In contrast to the philosophical underpinnings of the mainstream services outlined earlier, these two services seem to view environmental education as inherent to their centre's philosophy.

This study aimed to ascertain teachers' views about the place of environmental education in the early childhood curriculum. The teachers that took part came from a diversity of early childhood services with differing philosophical underpinnings.

Method

The main research question was "What are teachers' perceptions of environmental education in early childhood education?". Two sub-questions were: "Does Te Whaariki and the centre curriculum acknowledge environmental education?", and "Does centre philosophy make specific mention of environmental education?".

The Research Process

The research was undertaken in early childhood centres in both rural areas and provincial cities. A letter was sent out to centres outlining the research. Consent forms and discussion questions were included. The number of participants taking part are noted in parentheses: a playcentre (PC) (5), an all-day childcare centre (C) (9), a kohanga reo (KR) (5), a sessional childcare centre (SC) (6), a kindergarten (K) (3) and a Rudolf Steiner centre (RS) (1: one staff member was interviewed after consulting with other staff).

Qualitative research using an interview process was undertaken to gain teachers' perceptions of environmental education. A focus group approach was used. Morgan (1997) argues that this approach makes it easier to conduct less

structured interviews and is a useful data gathering qualitative research tool. Group interviews differ from one to one interviews as they allow for free discussion and the role of the interviewer is one of group moderator (Watts & Ebbutt, 1987).

When the centres were initially contacted by telephone to take part in the research, all expressed that they were “a team” and agreed to the use of group interviews. This focus group approach was an appropriate choice as it allowed for a collective communal view which as Watts and Ebbutt (1987, p.30) explains “represents them as artefacts of a shared encounter”. Their responses were therefore one of a single entity. The results gained from this process should not, as Watts and Ebbutt (1987) caution, be considered representative of the population at large. They do however highlight the advantages of focus groups. First, that discussion can develop and a range of responses can be gathered. And, second that this approach is particularly effective if the group has been working together as was the case in this research.

Interviews

The interview schedule consisted of six focus questions:

1. Can you briefly outline what environmental education means to you?
2. How do you see environmental education fitting into an early childhood curriculum?
3. Do you think Te Whaariki acknowledges environmental education? Please give examples.
4. Does your centre philosophy mention environmental education? If yes, please elaborate.
5. What natural environmental features does your centre have? Please list.
6. What learning experiences have you used recently that included a natural environment approach?

The first question elicited the teachers’ personal views and foundation knowledge of environmental education. The information gained from questions five and six evaluated the centres current approach to environmental education and aided in offering appropriate teaching strategies to assist in further implementation of the environmental education in their centres. The remaining questions, two, three and four will be addressed as the major focus of this paper.

Staff were interviewed for approximately one hour at their centres during November 1998. The time of the interview was negotiated and in some instances formed part of a staff meeting. Each participant had the opportunity to

speak one at a time, but in accordance with a focus group approach (Morgan, 1997; Watts & Ebbutt, 1987) interviewees were encouraged to elaborate and extend the debate. The resultant discussion allowed for a consensus to be reached.

Data Analysis

The interviews consisted of six focus questions and responses were recorded on cassette tape. This method is advocated by Watts and Ebbutt (1987) and is seen as less inhibiting when used in a group situation. Audio recordings of the interview questions were transcribed on the basis of emerging themes. Categories were used as a way to analyse the data. Categories based on common curriculum learning outcomes (from Te Whaariki) were used to analyse question two. These included; knowledge and understandings, skills and abilities and attitudes. Responses to question three were analysed for their links with Te Whaariki. Question four required a yes/ no response plus elaboration.

Report to Centres

A summary of responses to questions one, five and six was offered to centres. Question one outlined their personal perceptions of environmental education, while question five outlined what they considered to be the environmental features of their centres. Extension activities and environmental education strategies based on questions five and six were developed for each centre based on their identified existing environmental educational practices. Suggestions were offered to all centres such as; the use of children's questions and experiences as a starting point for planning environmental education, learning through the senses, themes, excursions, recycling and composting. These were discussed with the centre staff during a further visit in February 1999. Some centres received books on environmental education themes to assist in planning for their centre programme.

Results

In response to question two, all six centres offered unique answers to the category of; knowledge and understanding. Some agreement was reached on the category of; skills and abilities. From this category three major themes emerged. These included; the adult role, interaction with the environment and learning through the senses. When considering the final category, attitudes, four centres highlighted caring attitudes towards the environment while the remainder emphasised a sense of purpose for living things (See Table 1).

TABLE 1: How Environmental Education Fitted In

Centre	Knowledge & Understanding	Skills & Abilities	Attitudes
PC	<i>Learning through play</i> Natural materials in collage. Play (e.g. seashells, sand). Fossil hunting. Natural music sounds. Books on the environment, health and safety. Sun protection.	<i>Garden as a medium for enhancing children's skills</i> Designing and planting of the garden. Natural things in the environment to enhance skills such as puddles, mud, dirt and bug hunts.	<i>Caring attitudes</i> Highlighted an "awareness" of the environment as an explanation for environmental education fitting into the curriculum.
RS	<i>Ecological consequences</i> User-friendly products, organic nutrition, bio-dynamic garden preparations.	<i>Adult role and learning through the senses</i> Staff professional development skills. Direct and indirect care of the environment.	<i>Caring attitudes</i> Quality and rhythm of the environment: "the sense impression, the colours, the materials, the touch, the smells, the taste...".
C	<i>Children's interests</i> Hands on approach. Investigations of the moons and stars, excursions to the beach, garden and farms.	<i>Interaction with the environment</i> Use of natural materials such as wool.	<i>Caring attitudes</i> Starting young to value the natural environment. Considered that the natural environment is "part of your whole life really".
TK	<i>Gardening</i> What is good for the garden. Seasonal cycles. The role of insects and plants	<i>Adult role</i> The need to research the topic by accessing libraries.	<i>Sense of purpose and place for living things</i> Deep spiritual respect for their awa (river) and moana (sea). Conservation. Celebration of seasonal plantings. Explanation of bees and honey to children.
SC	<i>The use of Te Whaariki</i> Concept of growth as an area of knowledge.	<i>Senses</i> Children's spontaneity and communication about nature. Meeting needs and offering choices.	<i>Sense of purpose and place for living things</i> "The environment is everything to me" (teacher's view).
K	<i>Child's role</i> The child's role "...amongst the environment exploring and communicating". Development of theories. Knowledge of living things. Cause and effect learning,	<i>Interaction with the environment</i> Indoor and outdoor areas inter- changeable. Programme allowed for creative expression.	<i>Caring attitudes</i> Appreciation of nature. Children's knowledge of their place in the natural environment.

In response to question three, all centres agreed that Te Whaariki acknowledged environmental education and all mentioned the strands. The analogy of the woven mat (Te Whaariki) was often alluded to when referring to environmental education. This holistic approach was reflected in the answers such as “it was right the way through” (PC) or that “it interweaves environmental issues all the way through” (RS). Teachers’ responses to this question often included direct quotes from the curriculum. Below is a summary of their responses.

Rudolf Steiner Centre

- Te Whaariki: “It interweaves environmental issues all the way through”.
- Wellbeing: “We look at health, emotional wellbeing, feeling safe. For me it intrinsically involves the environment” (goal 1).
- Belonging: Connecting and linking home with the centre (goal 1).

Playcentre

- Te Whaariki: “It was right the way through”. Potentially children can do anything, learn anything”.
- Wellbeing: “Confidence in moving in space ... running”.
- Exploration: “Children experience an environment where their play is valued” (goal 1).

All Day Childcare

- Te Whaariki: Environmental education recognises biculturalism.
- Belonging: “Caring for the (centre) environment, cleaning, fixing and gardening”.
- Exploration: “Children experience an environment where they develop working theories for making sense of the natural, social, physical, and material worlds” (goal 4).

Sessional Childcare

- Te Whaariki: Environmental education is “right through the book”.
- Belonging: Children bring treasures from home to the centre
- Communication: “Communicating what they see and learn”

Kohanga Reo

- Te Whaariki: “The Whaariki, it is all there and I can relate to it as a Maori. It can relate to it, the Whaariki because it’s me, you know”.
- Wellbeing: “Its exercise too. Physical health, the jumping, the understanding”.
- Contribution: “You learn a lot of waiata (songs)”.

Kindergarten

- Te Whaariki: “A reflection of the way we do things”.

- Contribution: “Affirmed as individuals” (goal 2).
- Exploration: “(children) discover different ways to be creative and expressive” (goal 4).

In regards to responses to question four, of the six centres only the Rudolf Steiner centre specifically mentioned environmental education, while three others felt it was inferred (PC, KR, SC). Five of the six centres referred to a written statement of their centre’s philosophy. The remaining centre (KR) referred generally to the philosophy of the Kohanga Reo movement. Some aspects of each centre’s philosophy, based on interview responses, are summarized below.

Rudolf Steiner Centre

- Believed emphatically that there was specific mention
- Offered specific references from the philosophical statement eg. “at home experiences”, “warm nurturing atmospheres”, “rhythm”, “in breathing and out breathing”, “..we talk about the garden and the immediate environment will be cared for using organic methods and biodynamic preparations”

Playcentre

- Circle format of personal choices eg. attendance at meetings (parents)
- Negotiables eg. fundraising (parents)
- Non-negotiables eg. regular attendance (children)
- Made links with operations manual and welcoming talk
- Wording highlighted in these: ”respect for people, property and the environment”
- Believed mention was inferred

All Day Childcare

- Promotion of the overall development of children
- Responsiveness to the needs of families
- Acknowledgement that adults are also learners
- Believed this constituted “mention”
- Another disagreed “to me it doesn’t specifically mention environmental education”

Sessional Childcare

- The Environment section was highlighted
- Safe, clean, healthy environment
- Choice of responses and equipment offered
- Believed mention was inferred

Kohanga Reo

- Referred to generic Te Kohanga Reo philosophy

- Believed mention was inferred (This response in keeping with Maori oral tradition “It goes without saying”).

Kindergarten

- Alluded to “grow up as confident and competent learners”
- Agreed environmental education was not in the philosophy
- “Don’t apologise for it not being there”

On the basis of these responses it was concluded that only the Rudolf Steiner centre provided statements from their philosophy that were evidence of specific mention of environmental education. For the remaining centres the researcher noted no specific mention of environmental education in their philosophies.

Discussion

The results of the present study highlight variability in teachers’ perceptions of environmental education in early childhood. This was based on both their personal views and how they believed environmental education could be implemented in the early childhood curriculum. Centre responses to the interview questions and related discussion uncovered some consensus about environmental education and its relation to Te Whaariki. It also highlighted the centres’ unique views on environmental education that were linked to their particular philosophical approach to early childhood education.

Curriculum

When considering the integration of environmental education in early childhood curriculum, each centre’s individual responses reflected their unique philosophical underpinnings. The playcentre emphasised the importance of children learning through play. Environmental education in their view offered children the opportunity to utilise natural materials in collage play, enjoying sounds of nature, as well as gaining environmental knowledge from books. These points are supported by Wilson (1993). Protection from the sun also featured as a health and safety issue.

The Rudolf Steiner centre discussed the ecological consequences as knowledge they hoped their children would gain in their early years. This sentiment is shared by Paprotna (1998) who investigated preschool children's understanding of ecological concepts such as environmental protection, atmospheric pollution and waste.

The Childcare Centre concentrated on building on children's interests and their sense of investigation. Taking children on excursions and learning about the moon and stars were cited as examples. This hands-on approach to

environmental curriculum is endorsed by Bower (1998, p. 16) who asserts that “young children learn best in an environment which is interactive”. The sessional childcare centre emphasised the use of Te Whaariki as a way to promote environmental education in early childhood education. This response was a very generic view of environmental education and how this was to be achieved was not outlined.

The kohanga emphasised gardening, the seasonal cycles and the role of insects and plants as essential knowledge for their children to possess. This approach to the natural environment is highlighted by Eastman and White (1998) who outlined similar environmental learning with Aboriginal and Torres Strait Islander children.

The kindergarten emphasised the child's role in exploring the natural environment as central to environmental education. This notion is emphasised in the revised DOP's (Ministry of Education, 1998) and Te Whaariki (Ministry of Education, 1996, p.90) “...children develop working theories for making sense of the natural, social, physical and material worlds”.

Three themes were recognised as significant by two each of the centres. These were interaction with the environment, learning through the senses and the adult role in promoting caring attitudes towards the environment. Two centres (C & K) highlighted the importance of interaction with the environment. Wilson (1994) argues that interaction with the natural environment is pivotal to children's understanding of the environment. Learning through the senses was considered the ideal way for preschool children to learn about nature. Holtz (1994) endorses this approach by emphasising the value of sensory experiences when learning about the natural environment. The adult role was also highlighted. Bower (1998) stresses this point and suggests that the adult role cannot be underestimated. She suggests that teacher role modelling can mirror enthusiasm and respect for nature and this in turn will enhance children's knowledge of the natural environment. This finding was also emphasised in research with kindergarten children conducted by Prince (1994).

Unique communal answers representative of focus group discussion (Watts & Ebbutt 1987, Morgan, 1997) revealed a variety of approaches to environmental education. These included meeting children's needs, offering choices, a sense of spontaneity and communication about nature (SC). The use of indoor and outdoor areas of the early childhood centre was encouraged as a means to enhance children's awareness of the natural environment (K). Holtz (1994) argues for a contribution of both the built environment and nature as a way to teach children about the protection of the natural environment. The garden as a medium for enhancing children's skills was offered by the playcentre. The

children at this centre designed and planted a garden to enhance the outdoor environment.

Caring attitudes towards the environment were outlined by four out of six centres. This consensus corresponds with research conducted in environmental education by Dighe (1993) and Wilson (1994). The early years are an important time for the development of attitudes and values. This is especially so when it comes to caring attitudes towards the natural environment. Having a sense of purpose and place epitomises these affective attitudes. Individual answers also reflected a diversity of understandings of these attitudes that children possess about the natural environment. These individual answers offered as part of focus group discussion and debate were transformed into the communal view of the group. This group response became, as Watts and Ebbutt (1987) argue “...artefacts of a shared encounter”. An example of this consensus approach was offered by the kohanga. They outlined their deep spiritual respect for their Awa (river) and Moana (sea). They also highlighted the significance of seasonal planting. Wilson (1994) endorses these points raised by the teachers. She believes that children need a sense of appreciation of nature. This should start at a young age and be seen as part of life.

Te Whaariki

Te Whaariki (Ministry of Education, 1996, p. 10) espouses as its purpose that the document “...is to provide a curriculum framework that will form the basis for consistent curriculum and programmes in chartered early childhood education services”. This statement was reflected in the answers given by all six early childhood centres when asked if Te Whaariki acknowledged environmental education. The holistic nature of the document was highlighted along with the socio-cultural approach to environmental education (Smith, 1998; Vygotsky, 1978). The consensus was total, regardless of what philosophical perspective the individual centre was coming from. One aspect of their responses that was disturbing was the verbatim quoting of sections of the document especially the goals associated with the strands. These “direct quote” explanations offered were in many cases not supported by actual examples of environmental education learning experiences. This suggests perhaps that the document was analysed for connections with environmental education rather than relating this into practical examples. One example was quoting “Children experience an environment where they develop working theories for making sense of the natural, social, physical and material worlds” (Ministry of Education, 1996, p.90). There are many practical ways this strand could be translated into environmental education experiences.

Philosophy

The most significant finding of this research project was that out of the six centres interviewed only one centre, the Rudolf Steiner centre considered environmental education important enough to warrant specific mention of it in their centre philosophy. All of the centres scrutinised their philosophies and endeavoured to find some link with environmental education as part of their centre philosophy. Links were placed along a continuum from “no mention” by the kindergarten to specific “mention” by the Rudolf Steiner centre. The playcentre felt the need to explain their philosophy and referred to other playcentre documentation that they considered alluded to environmental education. The childcare centre linked environmental education with the overall development of children while the sessional childcare centre highlighted the section in their philosophy under Environment. The latter could be problematic as the environment in this instance refers to a person’s surroundings. This has a much broader meaning than the natural environment. Although the kohanga only referred generally to the movement’s philosophy, they saw environmental education as intrinsic to their philosophy and that it “goes without saying”. This response is consistent with the oral tradition of Maori.

Despite the diversity of philosophies outlined, all these early childhood centres shared a common philosophy through their use of Te Whaariki. They all acknowledged the essential learning and development areas and reflected in their practice the importance of curriculum strands and goals. Each strand and the accompanying goals ensures that...”the whaariki becomes an integral foundation for every child’s development” (Ministry of Education, 1996, p.15). A centre’s philosophy should reflect the vision each early childhood service has for its early childhood curriculum. These important aspects are epitomised in the principles of Te Whaariki. One of these principles; holistic development, was highlighted in this study. All centres considered this principle to be an important way environmental education could be integrated into the curriculum and centre programme. This finding highlights an issue for environmental education in early childhood in the New Zealand context. If this integral approach to environmental education is seen as important, then it is logical to expect that this emphasis would be reflected in the centre’s philosophy. This was not the case. It could be argued therefore, that although the centres saw the potential of Te Whaariki to integrate environmental education, this was not supported by a philosophical statement in five out of the six centres.

Implications for Teachers

The researcher would recommend the value of offering centres specific curriculum strategies and suggestions for the implementation of environmental

education. The benefits of matching each centre's current environmental education curriculum with appropriate strategies to build on existing practices was highlighted. This process gives teachers a starting point. An "experience orientated approach" as espoused by Pramling, Samuelsson and Mardsjo (1998) is another way teachers can introduce environmental education into the curriculum. Their environmental "theme" approach is particularly suitable. The kindergarten involved in this research implemented a recycling programme in their centre and involved the children in conservation activities. This example of environmental education was a direct result of the researcher discussing curriculum strategies with the staff as part of this research.

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Environmental Experiences for Early Childhood. "What a perfect way to engage our young learners" through song, dance, exploration, and play! Project Learning Tree's Environmental Experiences for Early Childhood is a valuable resource for every early childhood environment." Michele Bitters, Preschool Coordinator Loudoun County, Parks, Recreation, and Community Services.

"This guide is a perfect way to infuse the early childhood curriculum with environmental educational learning opportunities! It helps the youngest of learners interact with nature and the world around them through approaches " environmental education in preschool institutions; " environmental education at school (in academic and extracurricular activities); " environmental education in day care centers; " environmental education in summer camps; " environmental self-education [2]. The school is the main link in the education system, where people with creative thinking and universal morality should be brought up. Hence the need arises to find ways and solutions to the problems posed by time. According to Federal State Educational Standards, in the system of work of the class teacher, the following Universal Educational Actions can be distinguished and developed: Personal " connect learning with personal goals and motives of the student. These include Moreover, educational environment of the establishments should provide continuity between the stages of education, in particular during the transfer from pre-school to junior school. In this case pedagogical functions of adults (teachers and parents) are very important. Materials. Educational environment of kindergartens and schools analysis, the teachers' opinions about the problems and achievements of modern childhood study. Research methods: scientific-methodical and methodical literature analysis, interview with the teachers of kindergartens and elementary schools, the results of the inter The rationale for environmental education during the early childhood years is based on two major premises. The first premise is that children must develop a sense of respect and caring for the natural environment during their first few years of life or be at risk for never developing such attitudes (Stapp, 1978; Tilbury, 1994; Wilson, 1994). The newly-emerging field of early childhood environmental education reflects an increasing awareness that "environmental experience in the critical phase of the early learning years can determine subsequent development in environmental education" Early childhood education (ECE; also nursery education) is a branch of education theory that relates to the teaching of children (formally and informally) from birth up to the age of eight. Traditionally, this is up to the equivalent of third grade. ECE emerged as a field of study during the Enlightenment, particularly in European countries with high literacy rates. It continued to grow through the nineteenth century as universal primary education became a norm in the Western world. In recent years