Helping to Protect the Earth—the Kosciusko National Park Education Program

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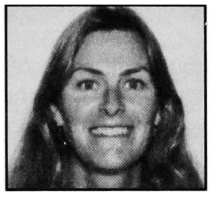

A B S T R A C T

An exciting and successful environmental education program has been implemented at Kosciusko National Park in south-eastern NSW. It is based on programs developed by the Institute of Earth Education, a non-profit volunteer organisation made up of an international network of individuals and member organisations. The major work of the Institute is to design and develop educational programs.

The two most popular programs offered at Kosciusko National Park are Earthkeepers™ and Earth Caretakers™ which are focused, sequential and cumulative nature education programs intended for upper primary children, that is, ten to twelve year olds. The aim of these programs is to help students enjoy, understand and live in harmony with the Earth. The activities integrate three components-understanding, feelings and processing—mirroring the interpretation philosophy of understanding, appreciation and protection. Evaluation has shown that the programs successfully enhance school curricula subjects and motivate students to change the way they and their families live.

The earth is such a beautiful place. If there are not more earthkeepers in the world we will not be able to enjoy the wonderful landscape. I learnt that we should care for the earth better than we have been. I learnt that we should get to know the earth and enjoy its wonders. I have been caring for the earth more since I've been to the Earthkeepers Training Centre.

—Stefan, year 5, 11 years old

Successful communication with the public is an integral part of the role of national park agencies. Communication can play a vital role in assisting these agencies to achieve management goals as well as developing the community's conservation philosophies. Communication can take different forms and provide a range of different messages including promotion, information, interpretation, environmental education and dialogue and liaison (Stephens & Prescott 1989).

National parks have been acknowledged as providing an important foundation for environmental education programs (Hall & McArthur 1993). In particular the potential for environmental education within Kosciusko National Park, a large alpine park in south eastern New South Wales, has been recognised by several authors (Good 1992).

The NSW National Parks and Wildlife Service (NPWS), which manages Kosciusko National Park regards community education programs as essential to the achievement of the aims and objectives of the Service. From a legislative perspective, the Director-General of the NPWS is charged under the National Parks and Wildlife Act 1974 with promoting educational activities in national parks, historic sites, nature reserves and at sites of Aboriginal significance. Specifically the Act states that educational activities should be undertaken "to awaken and maintain an appreciation of the value of animal and plant life" (NSW Government 1974).

Promotion of conservation is identified in the Service's current Corporate Plan as one of four key program areas. The Plan states that the Service is "to promote community awareness, understanding and appreciation of the conservation of nature and of our cultural heritage, by way of.... information and community education programs" (NSW National Parks and Wildlife Service 1994).

The Service uses education and interpretation as management tools to assist in protecting the state's natural and cultural heritage by employing a range of strategies to promote understanding of and support for conservation in the general community. Strategies employed include providing visitor facilities and services throughout the park system, disseminating information and running community education programs.

https://doi.org/10.1017/S0814062600004134 Published online by Cambridge University Press

The Kosciusko National Park Plan of Management identifies the importance of offering programs which assist visitor enjoyment and understanding of the Park; there is a high degree of commitment by staff to this aspect of public involvement. The Plan of Management states that one of the objectives of management is "to stimulate interest, greater understanding and appreciation of the natural phenomena, the cultural history and the complexity and diversity of Kosciusko National Park", and also emphasises the need "to maintain regular contact with local education authorities as a basis for studying the park, its natural environments and its management" (NSW National Parks and Wildlife Service 1988).

The Kosciusko Education Program and its Discovery Ranger Program are the two key personal contact interpretation and education programs operating in the Kosciusko National Park.

The Kosciusko Education Program

Beginnings

The education program began in response to frequent requests from local schools for Park staff to present educational activities. Some of the staff did not have the experience and special skills needed for making effective presentations to children so an experienced, qualified teacher was employed in 1989, on a part-time basis, to design and coordinate the education program which now operates from October to May each year. Other qualified staff are employed on a daily basis as the need arises. A fee of $5 per child is charged to help offset the program costs.

The program is based at Sawpit Creek, the headquarters of the Park, because of the availability of toilets, office facilities and storage space, and the montane forest's ability to withstand the effects expected from the level of use occurring in the program. When requested the programs are run in bush settings closer to participating schools.

An initial objective of the program was to provide an educational service for Park neighbours. With this in mind, local schools were initially invited to participate. Many of these were small rural primary schools with fewer than thirty students. Despite this, and the fact that the Park and mountains form a physical barrier between the schools to the south, west and north and Sawpit Creek, about 1300 children participated in the program in the first summer.

Infant and primary school students

After searching the literature for appropriate programs and activities, the Park purchased the copyright for two programs originating from the Institute for Earth Education. Details of the Institute's approaches are set out in the accompanying box. The two programs used are intended for 10 to 12 year olds; they were chosen because they are coherent programs rather than a series of disjointed supplementary activities.

The Institute for Earth Education

An Earth Education Program has nine special characteristics. As Van Matre (1990) explained:

"The program:

- hooks and pulls the learners in with experiences that promise discovery, fun and adventure
- proceeds in an organised way to a definite outcome that the learner can identify beforehand, and rewards them when they reach it
- focuses on building good feelings for the earth and its life through lots of first hand contact
- gets the descriptions of natural processes and places into the concrete through tasks that are both 'hands on' and 'minds on'
- uses good learning techniques in building focused, sequential, cumulative experiences that start where the learners are mentally and end with lots of reinforcements for their new understandings
- avoids the labelling and quizzing approach in favour of the full participation that comes with more sharing and doing
- provides immediate applications of its messages in the natural world and later in the human community
- pays attention to the details in every aspect of the learning situation
- transfers the learning by completing the action back at school and home in specific lifestyle tasks designed for personal behavioural change".

Earth Education Programs have been carefully developed and extensively trialled in diverse settings throughout the world before being published. In many parts of Australia Earth Education programs are presented by schools, community groups and organisations such as the Girl Guide Association, government and private field study centres as well as national parks.

Institute for Earth Education programs provide a sequence of learning activities which integrate the following three components:

- increasing understandings of basic ecological concepts including energy flow, cycling, interrelationships and change
- development of positive feelings of enjoyment of and concern for the natural world
- processing these feelings and understandings into practical actions so that participants' everyday lifestyles have less impact on their environments

These components mirror the following statement often attributed to Tilden (1957), which has become a classic of interpretation literature

> *through interpretation, understanding; through understanding, appreciation; and through appreciation, protection.*

The concepts promoted through Institute of Earth Education programs are also similar to the NSW Department of School Education's Environmental

https://doi.org/10.1017/S0814062600004134 Published online by Cambridge University Press

Education Curriculum Statement (University of Sydney 1990). This document defines environmental education as

> *a process which develops awareness, knowledge and understanding of the environment, positive and balanced attitudes towards it and the skills which will enable students to participate in determining the quality of the environment.*

The most effective environmental education programs include activities designed to provide these three components. A sprinkling of unrelated activities which in themselves may be worthwhile will not achieve the three essential components of environmental education, that is, to help learners increase their ecological understandings, to assist them to develop a love for the Earth and its life and to encourage them to change their own lifestyles so that they might have less impact on the earth's natural systems.

The Park's most popular learning programs for primary school groups are Earth Caretakers™ and Earthkeepers™.

Earth Caretakers™ is a one-day outdoors program which focuses on energy flow. The program begins when a large parcel is delivered to the classroom about a week before the students visit the Park. Through considering a series of riddles and the contents of the parcel students are challenged to assess the impact they are having on the Earth's natural systems and are invited to visit the Park to participate in a learning adventure.

During their park visit students enter a giant leaf to learn about photosynthesis, attend a special restaurant to learn about food chains and take part in an unusual race to discover how energy is lost from a food chain. They also participate in sensory awareness activities which give them the opportunity to explore a natural area.

When they return to school, students complete another four activities which help them to use their new knowledge to assess the impact they are having on the natural world, and encourage them to change their lifestyles accordingly.

Earthkeepers™ is an exciting three-day learning experience that deals with energy flow, cycles, interrelationships and change over time. According to Van Matre and Johnson (1988) the aim of the program is to "turn out youngsters who possess some basic ecological understandings and good feelings about the earth and its life, and will undertake not only to live more lightly themselves, but to share their insights and behaviours with others."

To become Earthkeepers the students earn four keys representing **K**nowledge, **E**xperience, **Y**ourself and **S**haring. A mysterious figure, 'E. M.' serves as the motivator. These two aspects of the program—the secret meanings of E. M., and the K, E, Y and S keys, tie the program together. When students complete the two activities which earn them their K key they use this key to open a box and discover that E. M. stands for "Energy and Materials—because that's what connects all living things on earth". On completion of further activities students are presented with their E key which they use to open the E box and learn that E. M. also represents "My Experience—because that's how I can increase my contact with the earth". After returning home and spending a month working on tasks they have pledged to undertake in order to lessen their own impact on the Earth students receive a Y key allowing them to open a Y box at school and discover that E. M. also stands for "My Earth—because my actions here make a difference." To earn their S key the students share their knowledge and their experiences with someone else. When these four tasks are completed students use their S key to learn that E. M. points to "ME—because it's up to me to help others improve their relationship with the Earth".

The program is designed to be "a fairly intense, highly stimulating educational experience that must continue for some time back at school".

Earthkeepers™ and an earlier Earth Education program Sunship Earth™ are designed to be incorporated into classroom study units. They are not intended to be isolated learning experiences. Van Matre (1979) stated that "Sunship Earth should be an opening unit for the class instead of a culminating one. The teacher can follow up with the kids back at school, tying new information in with the concept folder prepared at the study station, reinforcing the concepts with additional activities, and expanding upon the implications of the concepts in their daily lives." In the case of Earthkeepers™ Van Matre and Johnson (1988) also stated that it "is not a culmination unit. It serves as a dynamic, 2½ day springboard for what can take place back at school. It is meant to be a panacea for what ails us in environmental education. Earthkeepers provides a framework on which the teacher must continue building."

The programs are most effective when the classroom teacher builds on this framework after returning to school. The language used and ecological concepts developed may need reinforcing and relating to students' environments; class time is also needed to allow students to complete their chosen tasks and therefore complete the program.

In her study of Sunship Earth™ in 1987 Beckmann (1991) supported this requirement. She found that

> *there was undoubtedly an overall increase in students' knowledge of the ecological principles underlying life on earth following the program. However, there was evidence that the learning had not reached the levels intended by the program developers, and significant post-visit support and restatement by the students' own teachers would probably have been necessary to ensure retention of the relevant facts and principles.*

The Institute for Earth Education has produced

supplementary materials which assist classroom teachers to provide follow-through activities for students when they return to school after participating in Earthkeepers™, Sunship Earth™ or Earth Caretakers™.

Kosciusko National Park also offers several other programs intended for infant and primary children. Some of these use Institute for Earth Education activities while others, such as the Aboriginal Dreamtime program, are curriculum extension activities.

Although most of the Institute for Earth Education activities are copyrighted and are most effective when incorporated into a complete program some activities are not covered by copyright. Examples are Micro-parks and Nightwatchers (Van Matre 1979). These and Earthwalks (Hoessle & Van Matre 1980), which are sensory awareness activities, have been incorporated into Kosciusko National Park's Discovery Ranger school holiday programs and have proved popular with family groups.

Secondary school programs

In February 1996 the Kosciusko Education Program began offering programs to support the NSW secondary school geography syllabus. Many school students now study the alpine area as a mountain landscape in junior secondary school, or as an example of a fragile environment in Year 11 or 12.

The Education Program employs trained staff who accompany school groups on walks or field studies and interpret the special features of the alpine environment ; these include, for example, glacial features, plant and animal communities, human use of the area and management strategies. These programs have already proved to be popular ones.

Benefits of the Education Program

Since 1989 more than 11,000 students from Sydney, Canberra, the NSW South Coast, the Blue Mountains and the local area have participated in programs run by the Park.

The Education Program:

- provides a focus for school excursions to the Park and is able to meet most of the requests for talks or guided walks
- has enabled a quality, professional educational service to be provided
- engages presenters experienced in working with children
- gives children who would not otherwise visit the Park the opportunity to do so
- gives children an opportunity to explore and increase their ecological understandings and so increase their appreciation of national parks
- gives Park neighbours the opportunity to meet and discuss Park issues informally with Park staff
- helps kids assess the impact that they are having on the Earth's natural systems and to make lifestyle changes

Evaluation

When Beckmann (1991) studied students from two schools who participated in the three Earth Caretakers™ activities at Birrigai Outdoor School in the Australian Capital Territory as part of a five day residential Earth Education program Sunship Earth™ she found that

> *there was clear evidence that students learnt many of the facts communicated during the program. For example, whereas [prior to their visit] no students had been able to draw a food chain with three links...most gave acceptable responses afterwards.*

Evaluation of the Kosciusko Education Program has been undertaken formally using questionnaires to teachers and informally through the collection of anecdotal evidence from the comments of students, teachers and parents, and from newspaper articles and students' personal letters to the mystical figure E. M. Although this approach to evaluation has been not been systematic or comprehensive, feedback has been highly positive. Many schools return annually and participate in more than one program. Questionnaires were distributed to all the sixteen schools which participated in the program between February and April 1996. Eleven surveys were returned. The majority of schools participating were primary schools. Nine responses indicated the program was "excellent" while two responded with "very good". Teachers comments reinforced this positive response with comments such as:

> *It is without doubt the best environmental education program I've ever been involved with.*

> *An excellent blend of active child-centred activities and teacher-centred ones.*

All the schools considered that the information presented was suitable for the educational level of the students, adding comments such as:

> *Well structured and presented. All students were able to understand easily.*

> *Activities were very stimulating for the student and impacted greatly on their understanding. It was a wonderful day.*

All respondents indicated that the leadership provided was excellent, adding for example:

> *All the leaders have done a great job. Students have responded positively to all tasks.*

The majority of the schools indicated that they had found

https://doi.org/10.1017/S0814062600004134 Published online by Cambridge University Press

out about the program through word of mouth, which reinforced the notion expressed above that both students and teachers had positive feelings towards the program.

Teachers have indicated (S. Perry pers. comm.) that the programs have been particularly valuable because they were all encompassing. The program has assisted students in many facets of their school curricula. For example, their writing skills improved with extended vocabulary, their knowledge and understanding of basic scientific concepts was enhanced and their oral language skills improved. They were also much more aware of and active in environmental issues in their daily lives. For example, at Jindabyne Primary School (S. Perry pers. comm.), as a direct result of their experience in the program students have initiated and maintain a school recycling and composting system, as well as a worm farm. The program covers a range of school grade levels and teachers have noted (S. Perry pers. comm.) that there is a layering and building up of knowledge from kindergarten to primary levels. Some children are known to have taken memories of their experiences from primary through to high school. There is also evidence that students share their experiences of the program, for example during peer tutoring.

The program also appears to have a significant impact on the daily lives of students and their families. Of the program Jonathan in year 5 said:

> *Since the Earthkeepers program I have become more earthly about the Earth. I have been taking all the waste that I can down to the recycling bins at the shops. I have been turning the lights and TV off when nobody is using them. It has changed my family's life completely.*

Bevan, another student, expressed similar sentiments:

> *When I started the Earthkeepers program I started to think about the Earth so I thought I would do something about it. I started taking shorter showers and I also turn off lights. When it is my turn to wash up I collect all of the dirty things in one bundle so I save water. I ride to school every morning to save fuel and I recycle cans and bottles and that has changed our lifestyle.*

Beckmann (1991) indicated there was sufficient evidence to suggest that structured Earth Education programs such as Earthkeepers™ were effective in providing primary school children with "experiential and enjoyable introductions to environmental knowledge, concepts and issues".

These results confirm those of Dresner and Gill (1994) who suggested that active participation in environmental education activities can contribute to changing participants' attitudes and behaviour. They suggested that programs which integrate awareness about the natural environment, knowledge of environmental concepts and issues, and action on environmental problems were highly successful, particularly in raising participants' self esteem, which they considered to be a driving force in motivating action. They also suggested that undertaking activities in wilderness and natural areas like those found in the Park can deepen participants' personal relationships with nature, help to develop a sense of caring about the earth, and increase their awareness of beauty in the natural world.

The future of the Kosciusko Education Program

To evaluate the effectiveness of the program in more detail further evaluation could be undertaken using pre-tests, and post-experience questionnaires mailed to students and parents. This method was implemented by Beckmann (1991) in evaluating Sunship Earth™. In her study students completed both pre- and post-visit questionnaires which mainly consisted of open-ended questions which required knowledge-based answers. It would be beneficial to undertake a similar study on Earthkeepers™ in a national park setting with children from rural rather than urban backgrounds. Further study could also include long term monitoring of participants' attitudes and behaviour changes, as well as identifying the variables and components of the program which contribute to these changes and the effects of parents, peers and teachers in the change process.

Because there is a growing trend for government services to become cost effective and to adopt user-pays principles the program is now working towards self-sufficiency. To assist in achieving this aim business and marketing plans are currently being developed. The future may see changes to the levels of fees charged, as well as to the kind of programs and services being offered. Beckmann (1991) cautioned against the introduction of user-pays for interpretation programs, suggesting that the success of programs comes then to depend on users' ability to pay.

An exciting opportunity to establish an Alpine Education Centre housing displays intended for school students is currently being considered by Park management. This facility would be particularly popular with schools visiting in summer for study purposes and with groups visiting in winter for recreational activities such as skiing. It would have the potential to generate revenue from admission fees which would assist the program attain self-sufficiency as well as increase students' knowledge and appreciation of natural and cultural features of the Park.

Conclusion

National park agencies have an important role to play in initiating and undertaking environmental education and interpretation programs both within and outside the park and reserve systems. Such programs are one of the ways through which a greater awareness and understanding of the earth can be developed within the community and particularly amongst schoolchildren. This increased

understanding, appreciation and protection of the earth will hopefully continue to be translated into people's daily lives so that we impact less on the Earth and its environments.

The Kosciusko Education Program, based on the philosophy of Earth Education as developed by Van Matre, is proving to be a highly successful vehicle for developing this awareness and understanding amongst primary school children, resulting in positive changes in the attitudes and behaviour of the participants. Beckmann (1991) suggested that these kinds of programs could offer natural resources agencies a very useful "ready-made process" to target specific audiences.

Financial resources are and probably will remain limited within the NPWS and other conservation agencies. Nevertheless, given the legislative and corporate mandate to implement education programs, as well as the importance of these programs for achieving long-term conservation goals, it is vital that funding for these programs be maintained and enhanced.

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https://doi.org/10.1017/S0814062600004134 Published online by Cambridge University Press