

# The Role of Social Research in Effective Social Change Programs

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## Abstract

Social research is a critical foundation for programs that seek to engage communities in change and in the development of more sustainable societies. Without appropriate research, programs aimed at change are likely to be based on implicit or assumed problem identification and/or inferred community needs and wishes. If we are to achieve community participation in activities that lead to real change, research to find out about those communities is the first step. Over the past ten years the NSW Department of Environment and Conservation (DEC) has developed a considerable body of social research, conducted with both the general community and specific community segments, to underpin its environmental education programs. This paper includes a review of some models for integrating social research into education programs, and examines the extent to which social research has impacted on both the environmental education programs and the organisational culture of the DEC. From this are drawn learnings from the perspective of a major State environmental agency, about the integration of social research into any program or organisation seeking to achieve social change towards sustainability. As well as program specific benefits, the ultimate outcome of this process is to assist in producing an organisational culture which values evidence-based decision-making and develops policies and structures that incorporate a social research dimension into both programs and policy.

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## Introduction

### *Why is Social Research Important?*

Around the world, environmental educators are grappling with the issues and challenges of developing and implementing programs which meet the goals of fostering sustainable societies. In developing nations the challenges may centre on ensuring that the critical social and economic development agenda (Fien & Tilbury, 2002) also meets environmental protection goals. In developed nations, where environmental goals are often well prioritised, along with economic imperatives, the challenges are different but no less difficult to meet, confronting as they do the over-consumption ethic and issues of equity within nations, internationally and inter-generationally.

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Australia experienced improvement in a range of economic and social indicators in the 10 years to 2002, for example in health, education, employment rates, income, national wealth and productivity (Australian Bureau of Statistics, 2002). A close relationship, both positive, and negative, has been found between per capita GNP and environmental indicators (Janicke & Weidner, 1997). Thus Australia, in common with a range of other affluent nations, has also experienced progress in environmental protection legislation for air and water quality and in developing comprehensive natural reserve systems. For example in 2002 over 77 million hectares or just over 10% of Australia was in protected areas, and representation of the major bioregions in protected areas was increasing (ABS, 2002).

However, affluence also brings deterioration in other environmental indicators for which public financial resources or technological solutions are less able to provide solutions (Janicke & Weidner, 1997). In the same period of the 1990s, the environmental sustainability of lifestyles has been deteriorating as consumption has increased, encouraged by economic success. For example, the 2003 NSW State of the Environment Report found that the NSW community increased its total ecological footprint by 23% in the five years between 1993–94 and 1998–99, when population grew by only 7% (Department of Environment and Conservation (NSW), 2003). Across Australia biodiversity (as measured by the number of threatened species) is decreasing as a result of practices such as land clearing. Dry land salinity is increasing, quality of waterways is declining, and in 2000 about one quarter of the country's surface water was classed as highly used or overused (ABS, 2002).

Consumerism is driven by a complex range of factors, but transforming this culture and its perceived attractions is contingent on adoption of fundamentally different norms and values. Over the past 30 years many of those concerned about environmental problems sought to address those problems and achieve change through environmental education programs. However, it is clear from a wide range of studies and experience, that early linear models of environmental education which provide information about environmental issues and problems on the basis that people will change their attitudes and/or their behaviour relating to those problems are profoundly inadequate to drive the level of social change required to meet these challenges. Despite this, such linear models continue as the basis for many education programs (Kollmuss & Ageyman, 2002).

Kollmuss and Ageyman's (2002) review of the analytical frameworks, models and factors which have been used to explain what shapes pro-environmental behaviour demonstrates the complexity of the question, and the lack of simple solutions and formulae for developing pro-environmental behaviour and more sustainable societies. While some models have some validity in defined circumstances, the variety of issues, communities or audiences, and circumstances encompass numerous conflicting and competing factors that may shape daily decisions and actions in different ways. In addition, for any given issue, problem or behaviour, these factors change over time as community views and norms evolve, and physical resources, infrastructure and cost structures change.

This paper puts forward the view that research and evaluation are critical to understanding the community's interaction with environmental issues in order to design programs that engage precisely with their current views and needs. For example, to design a specific program for a specific problem, it may be important to know about individuals and communities:

- which part of the community is relevant to the problem;
- what people know or do not know, or what conceptions they hold about the problem and its relationship to, for example, to broader issues of sustainability;

- whether their views and practices have been changing in respect of the problem;
- what are their current practices (relevant to the problem);
- the reasons for current practices;
- what might motivate them to do things differently; and
- the most effective methods to engage this audience or community segment.

At another level, it may also be important to understand:

- what organisational, institutional and social structures impact on the problem;
- what social movements or social change directions can be harnessed to positively influence the problem;
- what values and interests are embedded in the language, culture, symbols and practices associated with the problem; and
- what critical socio-economic factors exist which may precipitate change.

Social research enables understanding of both the broader social context for sustainability issues, as well as a particular community or audience's role in and engagement with specific issues at specific times. Taken over time it can also track evolution in community views and norms. Without appropriate research, programs attempting to bring about change are likely to be developed simply on the basis of the dimensions of the issue or problem and/or inferred community needs and wishes. If we are to achieve community ownership and participation in activities that lead to real change, research to find out about those communities is the first step. Likewise evaluation of programs that feeds back into an ongoing design process or informs future programs is a key element in the process.

In the introduction to all four volumes of *Human Choice and Social Change*, a significant collection of work in the social sciences relating to global climate change, Rayner and Malone (1998), argue that responses to environmental problems involve choice: we can decide whether to respond and how to respond. They also point out that most problems are the result of the myriad choices of people and societies, both past and present. Social research and the social sciences allow us to interrogate and reflect on those choices, "to question assumptions and propositions that those who are already committed to a course of action may take for granted" (Rayner & Malone, 1998, p. 4).

The NSW Environment Protection Authority (EPA), now merged (in 2003) along with the National Parks and Wildlife Service, Resource NSW and the Royal Botanic Gardens into the Department of Environment and Conservation (DEC), has been developing social research as a basis for its education programs over the past ten years. From this, much has also been learnt about the value of social research for organisational and policy development as well as for program design. In addition to program specific benefits, the ultimate outcome of a process that integrates research at the organisational level is to assist in producing an organisational culture which values evidence-based decision-making and develops policies and structures that incorporate a social research dimension into both programs and policy. Based on Clements (2004), "evidence-based decision-making" is considered to consist of judgements informed by best available evidence, which may include research evidence, organisational evidence and political evidence.

## Social Research

### *Types of Research and Their Application*

There is a wide range of activities that can constitute "research" and the work of many people encompasses a research dimension through experience and learning in variety of contexts. However, this paper defines social research as rigorously obtained knowledge

about a defined population, systematically obtained by verifiable means and informed by different disciplines of the social sciences.

Using social research to underpin education programs may involve using the research of others and/or obtaining new knowledge. The different types of research and uses include:

- *Literature reviews*: Reviewing research of others is often the first step – assessing both developments in the field, and programs, approaches and initiatives used elsewhere. It can serve a range of uses from providing a theoretical framework or best practice models to gathering “what works” programs. For example, desk research undertaken on behalf of the UK Department of Environment Food and Rural Affairs (Darnton, 2004a, 2004b) reviews a broad spectrum of studies and programs relevant to conceptions of “sustainable development” among the general public in the UK, their involvement in sustainable development activities and sustainable behaviours, and the drivers for, and barriers to, adopting sustainable lifestyles.
- *Basic social science research*, which builds theories and models and provides examples and explanations of learning, social change and the development of environmental knowledge attitudes and behaviour, is generally found in published texts and a range of environmental education, education and social psychology journals.
- *Broad-based community surveys* provide a knowledge foundation for a wide range of stakeholders on key issues. These may be conducted at many levels. For example, the Australian Bureau of Statistics conducts regular surveys across Australia of people’s views and practices in respect of environmental issues (ABS, 1992-2003), providing a wealth of data on household sustainability practices and trends on a state by state basis. For state and local governments this provides valuable information on those dimensions on which the community is progressing and those aspects of sustainable lifestyles that are being adopted slowly and may thus need to be specifically targeted.
- *Program or issue based research* provides specific information to inform the design of campaigns or educational programs. It may include stakeholder analysis, research on specific issues and/or specific communities. For example, recent NSW DEC campaigns and education around stormwater, litter and sustainable living have incorporated pre-campaign qualitative research with the community about the issue, testing of communication materials, and assessing evolution of key aspects of the issue over time.
- *Evaluation* is social research designed with specific use in mind (Weiss, 1998). Assessing the appropriateness, effectiveness and efficiency of projects or programs against objectives and standards provides critical feedback for ongoing programs, provides information on which to base program and policy decisions, as well as key learnings for future programs.
- *Policy research* influences the direction of policies and programs by providing information that contributes to discussion and planning. For example an extensive survey of existing environmental education in NSW (EPA NSW, 2003a) preceded the NSW Council on Environmental Education’s three year environmental education plan (NSW CEE, 2002) and a 2000 review of early childhood environmental education in Australia has underpinned a range of recent initiatives in this area (EPA NSW, 2003b).
- *Practitioner research*, done by practitioners on their own practice most commonly using action research and evaluation tools where “participants systematically conduct inquiry about their work..., reflect on their findings, and make informed

decisions about implementing changes in their practice and improving their program" (Spacone, 2003, Introduction).

### *Integrating Social Research and Evaluation – Some Models*

Central to the effective harnessing and use of research is the value placed on knowledge: the role of knowledge in educational programs, and knowledge management by generating organisations. This means actively investing in knowledge, and harvesting and sharing collective knowledge to improve practices and programs. Measuring, managing and improving knowledge or "intellectual capital" has become a corporate top priority, at least in the United States (Patton, 2001). If educational programs are also to evolve and build on prior experience, knowledge has to be actively sought, used in program development and captured in a way that makes it available for future use. The key to these processes is being a pro-active knowledge-based organisation (Dunphy & Griffiths, 1998) which values evidence-based decision-making, and has an evaluative culture (Ferguson, 2003) which results in "high quality" lessons learned (Patton, 2001). Such an organisation ensures that social research is incorporated into program and policy development, and actively uses effective knowledge collection and management strategies appropriate to organisational goals (Hansen, Nohria & Tierney, 1999).

At the individual program level, the need for a systematic process of development is not confined to environmental education. The complexity and dynamic nature of human social systems, values and behaviours and the struggle to manage impacts on the environment by shaping sustainable behaviour, organisational and social structures, has parallels in the complexity and unpredictability of complex ecosystems and their responses to management prescriptions in the context of human demands and impacts, past and present.

One approach which attempts to deal with uncertainty in the natural system and variability in the social system is Adaptive Environmental Assessment and Management (AEAM), first proposed as a natural resource management technique in the 1970s (Holling, 1978). AEAM is essentially learning by experimenting (Lee, 1999) and its aim is the continual improvement of management policies and practices by learning from the outcomes. Its implementation has suffered from the need to confront highly problematic issues and deal with social conflicts that arise from competing demands on natural systems, and lack of flexibility in institutions and management structures (Gilmour, Walkerden & Scandol, 1999). However, it provides an important rationale for social research as it acknowledges that decisions about resource management are dominantly made in the socio-political domain (Shindler & Cheek, 1999). Its change management model also provides a *modus operandi* for the inclusion of social research in environmental education.

Adaptive management involves cycles of assessing problems, identifying options, choosing and implementing solutions, measuring and reviewing outcomes, then reassessing the problem (Figure 1). In this model, as applied to environmental education, social research is an integral part of "planning" and evaluation is the "measuring". Research and evaluation by the NSW EPA/DEC to support its education programs through ongoing capturing and application of learnings has evolved over time. While not rigorously applied in its early years, the value of the adaptive management model in education and social change has become increasingly apparent in the past five years as large programs spread over several phases have enabled an evolutionary approach rather than "one-off" design.

This improvement loop can also be seen in action research which is characterised by cycles of reflecting on current actions, developing questions, planning to seek answers,

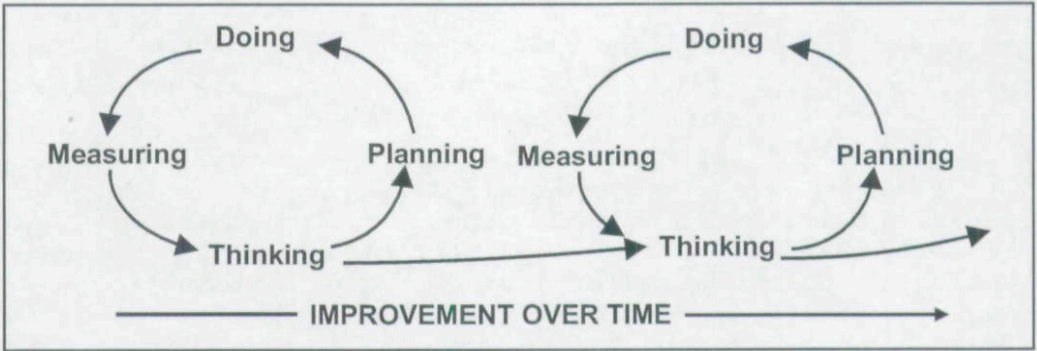


FIGURE 1: Adaptive Management Model of Continuous Improvement through Experimentation, based on ISO 1400

conducting “fieldwork”, analysing experiences resulting in conclusions then planning of new and transformed actions (Wadsworth, 1998), illustrated in Figure 2. While it may be argued this characterises all applied research, action research claims to apply a much greater degree of reflection, theorising and critical thinking to its activities, in part due to critical reflection on the actual processes of thinking, planning and doing, as well as on the substantive issues. The cycles (rather than a linear hypothesis-fieldwork-analysis-conclusion science model) of reflective activity followed by action, evaluation and further reflection then spawn new and improved practice (Masters, 1995; Wadsworth, 1998). Further, the very goals of action research include social change associated with empowerment, participation (in participatory action research) and acquisition of knowledge.

A second model relevant to the integration of research and evaluation in educational programs is program logic and the outcomes hierarchy (Owen, 1993), alternatively called an objectives hierarchy (Owen & Rogers, 1999). Program logic describes the way a program or project works by developing a logical chain of cause and effect linking

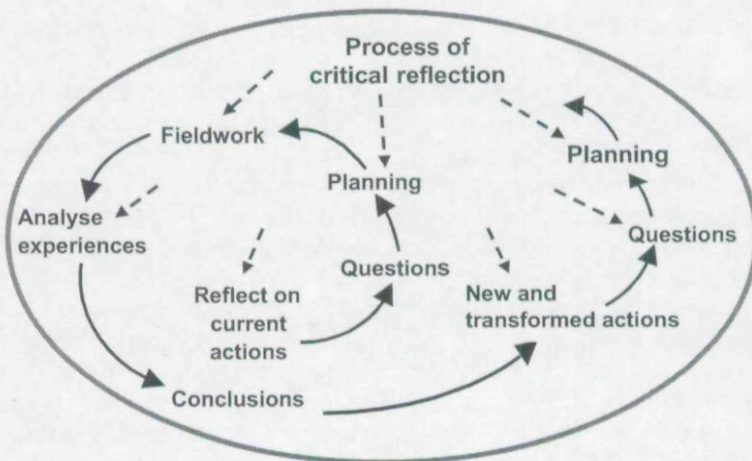


FIGURE 2: Processes of Action Research (based on Wadsworth (1998))

Outcomes & definitions	Monitoring and evaluation tools	Program evaluation
<b>Ultimate outcomes</b> The ultimate program goal and overall impact of the program on the biophysical, social economic or organisational environment	<ul style="list-style-type: none"> <li>Pre and post testing of environmental indicators</li> </ul>	
<b>Intermediate outcomes</b> Changes in individual &/or group values, knowledge, attitudes, intentions, skills, behaviours and practices required to achieve the ultimate goal	<ul style="list-style-type: none"> <li>Monitoring: pre and post surveys, observations</li> </ul>	
<b>Immediate outcomes</b> Participation in, and reactions to, the program	<ul style="list-style-type: none"> <li>Exit evaluations</li> </ul>	
<b>Activities</b> Program activities, (products, outputs and/or services) created to engage audience(s)	<ul style="list-style-type: none"> <li>Monitoring participation and dissemination levels</li> <li>Process review</li> </ul>	
<b>Needs/ problem</b> The problem or issue which the program is to address	<ul style="list-style-type: none"> <li>Needs analysis</li> <li>Stakeholder research</li> <li>Literature review</li> </ul>	

FIGURE 3: The Outcomes Hierarchy (adapted from DEC 2004)

the need or issues with the program activities and the expected outcomes (DEC, 2004b). The value of this model is its focus on sequential monitoring and research and its assumption of causality. It includes identification of needs, derived directly from the nature of the issue or from stakeholder analysis, and a clear sequence built into the design of programs from the problem to the ultimate outcome(s) on which to base evaluation (Figure 3). It also clearly distinguishes between outputs and outcomes and allows for evaluation of a range of immediate and intermediate outcomes when the ultimate outcome may not be assessable within the time-frame of the funded program.

The following section details the development of social research and evaluation based on these models as an essential tool for environmental education by the NSW Environment Protection Authority.

## The Experience of the NSW EPA

### *Legislative Foundations*

The EPA was formed from a precursor body, the State Pollution Control Commission (SPCC), which had a predominantly regulatory and scientific culture derived (as indicated by its name) from a focus on “end of pipe” symptoms of environmental problems (pollution) and reliance on post hoc punitive sanctions to control these. In contrast, the EPA’s enabling legislation, the *Protection of the Environment (Administration) Act (1991)*, was explicitly formulated with contemporary notions of sustainability in mind. These endorsed addressing the social and economic causes of environmental problems in order to protect the long-term viability of natural systems that sustained the welfare of current and future generations. Such a mandate was, in principle, amenable to a social research, knowledge and evidence-based approach to managing EPA core business.

The statutory foundations for the evolution of a vigorous social research culture in the EPA were laid down in its enabling legislation following representations from NSW environmental educators. These provisions set a wide range of far-reaching

education and community involvement functions which had potential to establish the social dimension of environment protection at the core of the agency's responsibilities (see Table 1).

The Authority's legislation positioned it as the lead agency for environment protection in NSW, giving it power to "...direct any public authority to do anything within the powers of the public authority which will, in the opinion of the Authority, contribute to environment protection" (Protection of the Environment Administration Act 1991 Section 12 (1)). While these powers primarily relate to its regulatory role, they created a leadership role that extended to all areas under the EPA's jurisdiction, including education. With the emphasis on community involvement in environmental protection, the role of education, and the carrying out of research related to environmental protection, the legislation also provided a mandate for social research as a part of its programs.

Early in the life of the new agency, staff mapped out a strategy for building on the EPA's legislative powers by establishing a strong education dimension in the organisation's corporate plan and building the case for a strong community involvement approach. This strategy was essentially one of capacity building for environmental education in NSW, based on four elements: utilising social research, developing policy, resourcing stakeholders and evaluating strategic programs. The elements of this approach were interdependent and tactically combined within the education capacity building strategy.

### *The Role of Research*

Janicke (1997, p. 1) defines capacity building (for sustainable development) as "improving the conditions of environmental action" but notes that a country's capacity

TABLE 1: Objectives of the NSW Environment Protection Authority relevant to community education activities (from the NSW Protection of the Environment (Administration) Act, 1991)

- 
- promoting community involvement in decisions about environmental matters;
  - conducting public education and awareness programs about environmental matters;
  - advising persons engaged in industry and commerce and other members of the community on environment protection;
  - ensuring that the best practicable measures are taken for environment protection in accordance with the environment protection legislation and other legislation, and; co-ordinating the activities of all public authorities in respect of those measures;
  - carrying out or commissioning research into environment protection;
  - co-ordinating the collection of information on environment protection which is published or supplied by public or other authorities; and
  - making grants to industry, commerce, public authorities, educational institutions and such other persons who the Authority considers are acting in the public interest for the purpose of funding projects which assist or advance environment protection.
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for environmental protection cannot depend only on government policy and action but is increasingly dependent on societal forces of all kinds. Derived from international comparative studies, Janicke's (1997, 2002) influential factors in capacity for environmental policy and management include cognitive-informational conditions under which environmental knowledge is produced, disseminated, interpreted and applied in developing public awareness. It follows that research to develop knowledge, and its subsequent distribution, is a key plank in capacity building for environmental policy and environmental outcomes.

In the EPA's capacity building approach, several roles were identified for research:

- *Knowledge building* – a series of major, broad based community surveys, literature reviews and evaluation studies of major change programs, were widely disseminated and used in seminar programs, conference papers and professional debates to help build and promote discussion about the appropriate knowledge base for environmental education (and subsequently, education for sustainability).

The first of these, in 1994, was a benchmark study of the environmental knowledge, attitudes and behaviours of the people of NSW, *Who Cares about the Environment?* (EPA NSW, 1994) Conducted triennially since 1994, there are now four surveys over almost ten years which track changes and trends reflecting both people's direct experience with environmental issues and the impacts of a range of policies and programs. These surveys thus provide key information for a wide range of agencies and educators in NSW.

- *Evidence-base for program design* – the practice of undertaking a formal research phase and ongoing evaluation as a basis for design and adaptive management of programs became the norm for major EPA projects by the late 1990s. The systematic use of research played a key part in developing EPA's programs on stormwater (*The Drain is Just for Rain*), litter prevention (*Litter, It's in Your Hands/Don't be a Tosser*) and sustainability education (*Our Environment – It's A Living Thing*).
- *Informing strategic policy development* - Several large research projects were central to the strategy, building research partnerships with key sectors and generating a focus on agreed policy issues. Research projects such as *Who Cares About the Environment?* (EPA 1994, 1997a, 2000; DEC, 2004a), *The Environment and Ethnic Communities* (1997b, 2005) and *Industry and the Environment* (1997c) were instrumental in gaining attention to community and sectoral needs for education, communication and training. The *Who Cares?* series in particular, had a powerful influence on the EPA's Executive by establishing the concept that changes in human knowledge, attitudes, skills and behaviour are causally related, and prior to, environmental outcomes.

Specific pieces of research were part of the policy development strategy, including surveys of professional needs, inventories analysis of education provision (NSW Government, 1996, NSW EPA, 2003a), documentation and content analysis of the outcomes of consultation processes, such as responses to the NSW Government Green Paper (1996) and the draft Environmental Education Plan and stakeholder analysis.

The central item of policy development was the process leading to a NSW Government Environmental Education Policy. This involved developing a green paper (NSW Government, 1996), legislation (Protection of the Environment Administration Amendment (Environmental Education) Act, 1999) and the subsequent

establishment of the NSW Council on Environmental Education, and the NSW Government's three-year environmental education plan, 1992-2005, *Learning for Sustainability* (NSW Council on Environmental Education, 2002). Each phase in the development process was underpinned by research and consultation that explored various dimensions of the policy problem and established the level and legitimacy of stakeholder support.

- *Building effectiveness* - Evaluation research was prioritised as a method for promoting debate about the program management issues of appropriateness, effectiveness, efficiency and process. Demonstrating the role of education in the strategic mix of pollution prevention tools through evaluated strategic programs was a central plank in the strategy for building the case for a strong community involvement approach.

The DEC's approach to building effectiveness was underpinned by the development of an evaluation resource (DEC, 2004b) refined through a series of training and professional development workshops held around the state over a decade. The program logic evaluation model used (Weiss, 1972; Patton, 1996; Funnell, 1997) and discussed earlier, posits the relationship between demonstrated needs, outputs and outcomes as the core issue for evaluation. The promotion and use of this model played a central role, for example, in bringing about an evolving sophistication and efficacy in the mix of tools used to target stormwater pollution through various phases of a major NSW urban stormwater education program over five years 1988-2003 (DEC, 2004c; Young and Salier, 2004).

- *Internal capacity-building* Another element of the research strategy was the promotion of social research across the EPA as an essential element in program management. Development of a substantial quantum of research products and expertise created momentum and profile for social research that influenced other branches. Internal cross-branch partnerships were integral to a number of research projects and enabled skills transfer within the organisation.

To maximise the knowledge and policy outcomes, all major projects were conducted as partnerships between the EPA and key stakeholder groups. Research steering committees and preliminary stakeholder consultation assisted in determining the scope and focus of research questions and, importantly, helped to identify those who needed to be considered in the research process and in subsequent use of the research. In this way, social research activities attempted to meet the needs of stakeholder groups with the aim of maximising acceptance and uptake of findings. This process also led to wider understanding of, and support for, the adaptive management model and the integral role of research in program design and policy development.

Once the value of research and education had been demonstrated, education was featured in EPA strategic plans and resources were increasingly made available for social research projects. These resources funded partnerships between the EPA and university centres of research excellence and enabled employment of social research consultancies.

## Discussion and Conclusions

Sustainability involves social, economic and environmental dimensions and the progressive broadening of environmental education towards education for sustainability acknowledges the fundamental interrelationships between these spheres. The NSW 2002-2005 Environmental Education Plan recognises this evolution as education

programs move “from the reactive approach of the past to a more proactive, holistic and systemic perspective on environmental issues” (NSW Council on Environmental Education 2002, p. 15), while the draft 2006-2009 plan states more firmly that “education is a vital tool for sustainability because it helps people to understand the nature and complexity of environmental challenges and builds their capacity to take action” (NSW Council on Environmental Education, 2005, p. 1).

Capacity building at all levels and in many domains is a key factor in social change and in achieving positive environmental policy, protection and management. This paper agrees with the view that an important aspect of capacity building is social learning and argues that social research is a key foundation for education programs which strive to develop that learning. Social research provides a lens for focusing on the human causes of environmental problems. As human behaviour is complex, to understand and solve environmental problems we need to understand their social dimensions through research and evaluation in order to effectively work with communities in building their capacity to develop solutions to those problems.

Such a view is also put by Janicke as he both notes that “without a doubt, environmental knowledge and public awareness are important factors influencing environmental policy and management” (Janicke, 2002, p. 9), and acknowledges that the way societies interpret the environmental situation is also a key factor in the dynamics of the complex interactions that contribute to policy and environmental outcomes. Understanding the ways the community is reacting to and interpreting environmental issues is the role of social research, and these reactions can change very rapidly, as has been evident in the Sydney metropolitan area in response to the major decline in supplies in the city’s water storages through late 2004-5.

In developing to these needs, the DEC’s education capacity-building strategy and use of research and evaluation have evolved over time. While dissemination of its research is sometimes hampered or delayed by time and resource constraints, the organisation has learnt over its last fifteen years of program and policy development that:

1. Each environmental problem, each community and each place is different and their nature evolves over time. Thus a different mix of tools and strategies is required for the most effective strategies to address environmental problems, including the design of social change programs.
2. Social research undertaken by disciplined and accepted research methods is foundational to sustainability work in providing the knowledge required to design appropriate and targeted programs and initiatives. However, it is important to understand that this research supports decision-making, rather than providing solutions to problems or determining program design.
3. Effective social change programs are multidisciplinary and involve collaborative problem solving by teams working with participants in an adaptive management or action research cycle where problems, programs and strategies are researched, designed, tried, tested, critically reviewed and redesigned.
4. There is a critical interdependence between research, policy, resourcing and program evaluation. Research supports programs and policy, and policy provides strategic direction to programs. Evaluation ensures accountability in linking needs and outcomes and funding and outcomes, and provides the critical feedback loop to ongoing design of better programs.

Environmental and sustainability educators need to obtain the skills and competencies for social research and apply these in their sustainability work. This means formally planning for professional development and skills acquisition in the

areas of social research and evaluation to ensure they are able to rigorously obtain and use knowledge. At the same time, educators need to advocate for the development of organisational values, systems and strategies that encourage and promote the use of research and evaluation by incorporating these foundational elements into policy and thus linking the combined efforts of individuals and teams in the organisation towards a culture of learning and valuing of knowledge management and use.

Note: An earlier version of this paper was first delivered at the Australian Association for Environmental Education biennial conference in Adelaide, September 2004.

*Keywords:* social research; program evaluation; sustainability; education; capacity building.

### Endnotes

1. This is a summary publication, printed and on-line. More detailed evaluation reports are at: <http://www.environment.nsw.gov.au/stormwater/usp/evaluation.htm>

### References

- Australian Bureau of Statistics (ABS) (1992-2003). *Environmental issues: People's views and practices*, ABS cat. no. 4602.0. Canberra: Australian Bureau of Statistics.
- Australian Bureau of Statistics (2002). *Measuring Australia's progress*, ABS cat. no. 1370.0. Canberra: Australian Bureau of Statistics.
- Clements, D. (2004). What counts? Interpreting evidence-based decision-making for management and policy. Report of the 6<sup>th</sup> CHSRF Annual Invitational Workshop, Vancouver British Columbia, March. Retrieved from [http://www.chsrf.ca/knowledge\\_transfer/pdf/2004\\_workshop\\_report\\_e.pdf](http://www.chsrf.ca/knowledge_transfer/pdf/2004_workshop_report_e.pdf).
- Darnton, A. (2004a). *The impact of sustainable development on public behaviour*. Report 1 of Desk Research commissioned on behalf of UK Department of Environment Food and Rural Affairs. Retrieved from <http://www.sustainable-development.gov.uk/documents/publications/desk-research1.pdf>
- Darnton, A. (2004b). *Driving public behaviours for sustainable lifestyles*. Report 2 of Desk Research commissioned on behalf of UK Department of Environment Food and Rural Affairs. Retrieved from <http://www.sustainable-development.gov.uk/documents/publications/desk-research2.pdf>
- Department of Environment and Conservation (NSW) (DEC) (2003). *New South Wales State of the Environment 2003*. EPA 2003/89. Sydney: Department of Environment and Conservation (NSW).
- Department of Environment and Conservation (NSW) (DEC) (2004a). *Who cares about the environment in 2003?* DEC social research series, DEC2004/10. Sydney: Department of Environment and Conservation (NSW). Also at <http://www.environment.nsw.gov.au/whocares>.
- Department of Environment and Conservation (NSW) (2004b). *Does your project make a difference?: A guide to evaluating environmental education projects and programs*. DEC 2004/110. Sydney: Department of Environment and Conservation (NSW). Also at <http://www.environment.nsw.gov.au/community/projecteval.htm>
- Department of Environment and Conservation (NSW) (DEC) (2004c). *The drain is just for rain did it work? Summary report on the evaluation of the NSW urban stormwater education program*. DEC2004/111. Sydney: Department of Environment

- and Conservation (NSW). Also at <http://www.environment.nsw.gov.au/resources/drain04111.pdf>.
- Department of Environment and Conservation (NSW) (DEC) (2005). *The environment and ethnic communities in 2004*. DEC 2005/213. Sydney: Department of Environment and Conservation (NSW). Also at <http://www.environment.nsw.gov.au/whocares/ethniccom.htm>
- Dunphy, D., & Griffiths, A. (1998). *The sustainable corporation: Organisational renewal in Australia*. St Leonards: Allen and Unwin.
- Environment Protection Authority NSW (EPA) (1994). *Who cares about the environment? A benchmark survey of the environmental knowledge, skills, attitudes and behaviour of the people of New South Wales*. Sydney: Environment Protection Authority NSW.
- Environment Protection Authority NSW (EPA) (1997a). *Who cares about the environment in 1997?* EPA social research series EPA 97/108. Sydney: Environment Protection Authority NSW.
- Environment Protection Authority NSW (EPA) (1997b). *The environment and ethnic Communities*. EPA social research series EPA 97/73. Sydney: Environment Protection Authority NSW. Also at <http://www.environment.nsw.gov.au/whocares/ethnic+communities.htm>
- Environment Protection Authority NSW (EPA) (1997c). *Industry and the environment*. EPA social research series EPA 97/78. Sydney: Environment Protection Authority NSW.
- Environment Protection Authority NSW (EPA) (2000). *Who cares about the environment? 2000*. EPA social research series EPA 2001/31. Sydney: Environment Protection Authority NSW. Also at <http://www.environment.nsw.gov.au/whocares>.
- Environment Protection Authority NSW (EPA) (2003a). *Inventory of NSW environmental education programs. A survey of NSW environmental education*. Conducted by the NSW EPA on behalf of the NSW Council on Environmental Education in November 2000. EPA 2003/32. Sydney: Environment Protection Authority NSW. Also at <http://www.epa.nsw.gov.au/cee/documents.htm>.
- Environment Protection Authority NSW (EPA) (2003b). *Patches of green: Early childhood education in Australia – scope status and direction*. EPA social research series. EPA 2003/35. Sydney: Environment Protection Authority NSW. Also at <http://www.environment.nsw.gov.au/publications/administrative.htm>
- Fien, J., & Tilbury, D. (2002). The global challenge of sustainability. In D. Tilbury, R. Stevenson, J. Fien & D. Schreuder (Eds.), *Education and sustainability: Responding to the global challenge*. Gland, Switzerland: Commission on Education and Communication, IUCN.
- Ferguson, L. (2003, September). *Developing an evaluative culture. Evaluation who benefits?* Australian Evaluation Society International Conference, Auckland New Zealand.
- Funnell, S. (1997). Program logic: An adaptable tool for designing and evaluating program. *Evaluation News and Comment*, 6(1), 5–17.
- Gilmour, A., Walkerden, G., & Scandol, J. (1999). Adaptive management of the water cycle on the urban fringe: Three Australian case studies. *Conservation Ecology*, 3(1), 11 (online) at: <http://www.consecol.org/vol3/iss1/art11>.
- Hansen, M.T., Nohria, N., & Tierney, T. (1999). What's your strategy for managing knowledge? *Harvard Business Review*, March–April 1999.
- Holling, C. S. (Ed.) (1978). *Adaptive environmental assessment and management*. New York: John Wiley.

- Janicke, M. (1997). The political system's capacity for environmental policy. In M. Janicke & H. Weidner (Eds.), *National environmental policies: A comparative study of capacity-building* (pp. 1–23). Berlin: Springer.
- Janicke, M. (2002). The political system's capacity for environmental policy: The framework for comparison. In M. Janicke & H. Weidner (Eds.), *Capacity building in national environmental policy: A comparative study of 17 countries* (pp. 1–43). Berlin: Springer.
- Janicke, M., & Weidner, H. (Eds.) (1997). *National environmental policies: A comparative study of capacity-building*. Berlin: Springer.
- Kollmuss, A., & Ageyman, J. (2002). Mind the gap: Why do people act environmentally and what are the barriers to environmental behaviour? *Environmental Education Research*, 8(3), 239–260.
- Lee, K. N. (1999). Appraising adaptive management. *Conservation Ecology*, 3(1), 3 (online) at: <http://www.consecol.org/vol3/iss2/art3>.
- Masters, J. (1995). The history of action research. In I. Hughes (Ed.), *Action research electronic reader*. The University of Sydney, on-line <http://www.behs.cchs.usyd.edu.au/arow/Reader/rmasters.htm>.
- NSW Council on Environmental Education (CEE) (2002). *Learning for sustainability NSW environmental education action plan 2002-05*. Sydney: NSW Council on Environmental Education.
- NSW Council on Environmental Education (2005). *Learning for sustainability NSW environmental education plan 2006-09: Consultation draft*. Sydney: NSW Council on Environmental Education. At: <http://www.environment.nsw.gov.au/cee/lfs.htm>
- NSW Government (1996). *A new approach to environmental education in NSW*. A NSW government green paper. Chatswood: Environment Protection Authority.
- Owen, J. M. (1993). *Program evaluation: Forms and Approaches*. St Leonards, N.S.W.: Allen & Unwin.
- Owen, J. M., & Rogers, P. (1999). *Program evaluation: Forms and approaches* (2nd ed.). St Leonards: Allen and Unwin.
- Patton, M. Q. (1996). *Utilization-focused evaluation: The new century text* (3<sup>rd</sup> edn). Thousand Oaks, Calif.: Sage Publications.
- Patton, M. Q. (2001). Evaluation, knowledge management, best practices and high quality lessons learned. *American Journal of Evaluation*, 22(3), 320–336.
- Raynor, S., & Malone, E. L. (Eds.) (1998). *Human choice and social change*. 4 vols. Columbus, Ohio: Batelle Press.
- Shindler, B., & Cheek, K. A. (1999). Integrating citizens in adaptive management: A propositional analysis. *Conservation Ecology*, 3(1), 9 (online) URL: <http://www.consecol.org/vol3/iss1/art9>.
- Spacone, R. (2003). *Practitioner research as staff development: A facilitator's guide*. Virginia Adult Learning Resource Centre, Virginia Commonwealth University, Richmond, VA. At: <http://www.aelweb.vcu.edu/publications/research/>.
- Wadsworth, Y. (1998). What is participatory action research? Action Research International (online) at: <http://www.scu.edu.au/schools/gcm/ar/ari/p-ywadsworth98.html>
- Weiss, C. H. (1972) *Evaluation research: Methods for assessing program effectiveness*. Englewood Cliffs, N.J.: Prentice-Hall.
- Weiss, C. H. (1998). *Evaluation: Methods for studying programs and policies* (Second edition). Upper Saddle River, NJ: Prentice Hall.
- Young, G., & Salier, P. (2004). The NSW urban stormwater education program 1998-2003. *Water*, March, 94–96.

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