

# *Trends in Environmental Education Research in England.*

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## **Support for Research**

From the perspective of researchers in this field it is important to state at the beginning that research in this field has been significantly assisted by two particular developments which provide direct support to individual researchers. Firstly, the establishment of a highly influential research journal, called *Environmental Education Research*, which is now published four times a year. This has had the effect of stimulating researchers, not only in England but also throughout the world. The importance of this to British researchers is that it has enabled them to contribute to and draw from an international agenda of research. It has widened perspectives and encouraged personal contacts with researchers in other countries. This is particularly important in a sphere of research where the workers are often quite isolated.

A second significant factor facilitating environmental education research in England is the existence of the Council for Environmental Education (the CEE). This organisation is a fairly small NGO, based in the South of England with a permanent staff of 10 people. It is part funded by Central Government and partly by member organisations, project funding and the sale of services (mainly information). The Council has probably the largest collection of information relating to environmental education in the country. Much of it is also accessed through databases. The information is also updated regularly. Researchers are able to use the facilities of the CEE and this is a very valuable source of up to date information and of contacts working in the field.

## **The Nature of the Research**

I will begin by making a distinction between research and curriculum development. This paper is concerned with the former and not the latter. To explain further, research in this context is normally taken to mean an activity that conforms to a selection of criteria which include: providing an aim and rationale for the research, identification of a research question or questions, setting the research within a context of previous related research, subjecting the original aspects of the research to some

form of analysis and making some form of final evaluation. It need not conform to all of these criteria but it should conform to most of them. Also, from my point of view here, research that relates to education that is simply informing people about the environment or is purely descriptive is not included. Some part of the agenda for a piece of research in environmental education should be to encourage reflection on what has been achieved or it may include aspects of discussion of the implications of the research for personal values in relation to the environment.

Also, since there are very few major government sponsored research programs related to environmental education (although there are some exceptions such as one that relates to an international project funded by the European Community, which will be discussed later) most of the research is carried out by individuals or small groups of researchers, usually working in academic institutions, particularly universities. Consequently it is difficult to determine clear trends. In many cases it is more appropriate to identify particular lines or categories of research and to comment on some of the major findings. This could easily simply become a list which could be organised arbitrarily in many different ways; however some structure has to be imposed and for the purposes of this paper they have been organised as follows, in 7 categories:

1. Research that is derived from the practice of teaching. This may originate from the National Curriculum in the UK. This may include investigation of teachers' or students' understanding of particular issues, consideration of how young people learn, or aspects of methodology. Generally speaking it is observational and analytical.
2. Snapshot and position statements that describe the current situation with the purpose of informing future directions for development of the curriculum in schools. This category of research generally relates to policy and present practice.
3. Research that relates to current thinking about the nature and purpose of environmental education. This often has a strong philosophical dimension

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that considers such matters as the nature of knowledge, the influence of postmodern thinking, the purpose of education and our understanding of sustainability, for example. Such research usually takes the form of scholarship in which the aim is to stimulate debate.

4. Action research in which the purpose is often to initiate change by participating with practitioners and then encouraging a process of reflection that can support the change process.
5. Significant life experiences and their formative impact on the development of environmental educators and others with a strong appreciation and concern for the environment.
6. What people think about and hope for when considering the future for the environment. This is intended to overcome the natural tendency toward despondency and powerlessness among students. This is developed as an approach to creating a more optimistic attitude to the environment leading to empowerment.
7. Work undertaken in themes which provide valuable information for environmental educators. An example would be the work of the Biodiversity Forum, in which the CEE has a leading role. The purpose has been to identify good practice and to inform agencies about biodiversity in the UK but one outcome has been to provide valuable information for environmental educators.

This list is unlikely to be comprehensive but it should serve to highlight the main areas of current research and development in environmental education in the UK.

The next stage will be to provide some more detail and examples of each of these seven areas.

#### **1. Research that is derived from the practice of teaching.**

This particularly relates to recent empirical studies of learners and learning in schools. A recent review by Rickinson (2001) focuses on the nature and quality of the evidence generated in this area. This concern is motivated by the tendency for previous studies to focus on methodological trends (in other words curriculum development) more than the research findings. Also, a concern that environmental education theory and research have overlooked the students who constitute the purpose of the environmental education. Rickinson's study is based

on analysis of over 100 journal articles and reports.

The results of the research can be understood in terms of three main areas:

- i) students' environmental knowledge (for example their understanding, or misunderstanding, of the causes of climate change). Also the sources of this knowledge.
- ii) students' environmental attitudes and behaviours,
- iii) the environmental learning outcomes.

This review has shown that there is much less research evidence about the students' experiences and preferences or about the actual learning process. The case needs to be made for studies that focus on effective ways that students learn and the role that they play in this process.

The general thrust of this type of research is that insights into the nature and sources of students' knowledge is important because there is evidence that we have young citizens who are emotionally concerned about the environment but lack basic knowledge. Also, that informed decisions in the future will require our citizens to have fundamental knowledge of basic environmental concepts and processes. This may be so that they can take action for themselves or provide support for those who seek to change policy to protect the environment. So far the studies have shown that students' factual knowledge is generally low but it can vary considerably from one topic to another, for example their knowledge about threats to the biodiversity of exotic species in far off countries is often much higher than in relation to their own domestic fauna and flora (see Gayford, 2000).

However, it should not be assumed that young people are without prior concepts which may or may not contain misunderstandings of basic environmental issues. This may be through the media for example. Once formed these ideas may be difficult to change. An awareness of the nature of this knowledge, the underlying patterns and origins of these pre-existing ideas should be helpful in designing more effective teaching strategies (see for example the work of Boyes and Stanisstreet, 1997). This work has included studies on children's understanding of such topics as ozone depletion, the Greenhouse effect and the effect of motor vehicles on the atmosphere.

With regard to research about students' attitudes and behaviours the methodological approaches show a preference for fixed response questionnaires as opposed

to more open-ended interview approaches (see for example Morris & Shagan, 1996). This therefore relies on self-reporting which can have some obvious flaws. Dillon & Gayford (1997), in a study of over 140 undergraduates set out to use questionnaires based on well tried models of behaviour. This is a much less direct method and has been applied in many other contexts not related to the environment by researchers. These methods, focus on some of the important factors influencing human behaviour, such as our beliefs about the outcomes of our behaviour, the way that we are affected by social norms and the degree of control that we perceive that we have to exercise particular behaviours. These show interesting results and overcome some of the problems of self-reporting.

The studies that are concerned with learning outcomes all seem to investigate whether a particular approach to teaching can yield desired changes. Usually this relates to the students' knowledge or attitudes. Usually with some sort of pre- and post-test. The outcome criteria are usually clearly specified prior to the investigation (e.g. Mason & Santi, 1998). For example also, Gayford (1996) showed that with discussion-based methods that were interactive the learning outcomes and motivation of school students was considerably enhanced.

## **2. Snapshot and position statements that describe the current situation with the purpose of informing future directions for development in the curriculum in schools. Usually relating to policies and present practice.**

These studies (for example, Nixon *et al.* 1999) often report on the current situation, normally following on from a major change in policy. The case that I am using here as an example provides a good model for the general approach used. It involved a trawl for documentary evidence relating to policy and practice in relation to education for sustainability in Scottish schools. Although focused mainly on Scotland there was investigation of the situation in other parts of the UK. This particular study should be seen in the context of a revision of the National Curriculum and the specific inclusion of education for sustainability within the prescribed curriculum. There were interviews with key personnel in schools who were developing good practice and discussions with policy makers who had a national perspective as well as the teachers themselves.

The main problems that have been identified from studies of this kind are the cross-curricular nature of education for sustainability and the considerable resistance to change that exists among the majority of practitioners; particularly an unwillingness of most teachers to teach across the boundaries of their own discipline within a subject dominated framework.

Some of the interesting findings are that where good practice has been found this is usually associated with whole school changes and closer involvement with the local community and looking even further to the global community. Strong arguments for further community involvement are made. This research also argues for education for sustainability to be viewed as a central component of education and not simply something that is added later. It requires proper co-ordination by an experienced member of the teaching staff. Many earlier studies had shown small isolated examples of good practice but this was usually associated with one dedicated teacher and the other staff in the school were unaffected. Also, when that teacher left the school the quality of environmental education deteriorated or stopped completely.

## **3. Research that relates to current thinking about the nature and purpose of environmental education.**

This work also relates to a much broader dialogue on an international scale, particularly with Australian and Canadian writers. Perhaps it should be more properly described as academic study that identifies the 'state of the art' in the subject and develops some of the forward-looking ideas, rather than research as we might know it. However, it occupies much space in research journals and therefore deserves some mention here. Also it has been very influential in moving our thinking forward so that our thinking today about environmental education is really quite different from even a decade ago. This has affected practice. Much of this has followed on from the United Nations Rio Conference in 1992. The work of Plant (1995) and Tilbury (1995), both from the UK has made a valuable contribution to this debate.

These researchers are concerned to broaden the discussion in two particular ways. Firstly, to ensure that economic and ethical perspectives are included as well as the scientific and technological; and secondly, to emphasise the controversial nature of the subject. By this it is meant that many of the issues related to a topic are

ones about which experts do not agree and therefore it would be dishonest to pretend that there were straightforward answers. The implication is that in many cases we do not even understand fully what future 'progress' might be and therefore rather than simply using education as a process for inculcating behavioural change in students it should be a process for exploration of personal values. Tilbury, for example is concerned with how education for sustainability of the 1990s and beyond should be different from the environmental education of the 1980s. Tilbury argues for increased relevance to the curriculum, the adoption of an issues-based approach, emphasis on participation and action with the strong inclusion of a values dimension. Also, the strong political implications cannot be overlooked and the links with development issues.

Littleddyke (1996) explores the impact of post-modern thought on our attitudes to the solution of environmental problems. This particularly focuses on and challenges our attitudes to scientific knowledge and the modernist idea that knowledge proceeds in a linear progression, further and further towards the truth. The idea that every problem must have a rational solution has been extensively challenged by post-modern philosophers and also the idea is put forward that problems can have many different solutions depending on culture and context. He acknowledges the importance of scientific knowledge. The challenge he sees is to use the development of scientific literacy to support environmental understanding. To use this to develop critical awareness of what is needed for environmental sustainability. The understanding of the implications of personal and political choices in relation to consumption is seen as a prerequisite for appropriate action on the part of individuals.

#### 4. Action research

It is important to make a distinction here between curriculum development and action research. In curriculum development the purpose is to change the curriculum in ways thought appropriate by the developers. The final expected outcomes are identified in advance by the developers. In action research the purpose is to initiate a change, to involve the participants in the process, to monitor and report on the change and finally to carry out an evaluation of the outcomes. The reporting of action research is not simply descriptive. However, definitions

of what constitutes action research, and where we draw the boundaries can be problematic and not always helpful.

The main research that is discussed here is based on an international project funded by the European Community which involved a number of schools in the UK and in other parts of Europe. Elliott (1994 and 1995) provides the main discussion of this approach to environmental education research. The main guiding principles of the research were that changes were made in the way that participating schools worked and that:

- i) students should experience the environment as something that was real, identifying problems and issues within their own local environment,
- ii) students should examine the environment as a subject for inter-disciplinary learning and research. It may be a controversial idea, but there exists within the supporters of action research in the UK the idea that even quite young students are able to carry out research at their own level,
- iii) students should have the opportunity to shape and change their environment in a socially important way,
- iv) students should view the environment as a challenge to initiative and responsible action.

This was seen to have important implications for the local community. Emphasis was also on discovery as an approach to learning. The teachers participated in identifying and clarifying the problems. They were also encouraged to share their experiences with each other. The outcome of this process was to engender positive attitudes towards other teachers, to be mutually supportive and develop a process of reflection.

Critics of this approach (see Menter, 1996) argue that more longitudinal impact studies should be carried out to find out whether the effects are sufficiently lasting. Also, there is a need for the approaches suggested here to have a much firmer basis in current educational policy and realistic opportunities within a tightly prescribed curriculum. The role of the democratic teacher within the context of this type of learning also requires further consideration.

Some similar work of this kind has been undertaken by Gayford (1996) which involved students in schools identifying ways in which they can reduce environmental impact by the way that their school is managed. They particularly focused on energy, water, materials and waste management. They set out strategies

for change and monitored the effects. What was interesting here is that students became committed to making behavioural changes and were interested in both the local impact and the wider global implications. What could not be checked is whether this behaviour was also used to affect their lifestyles at home.

### **5. Significant life experiences and their formative impact on the development of environmental educators**

Much of this work has been undertaken by Palmer *et al.* (1996, 1998 & 1999) together with various teams of other international researchers. This work was in fact funded by one of the UK major research funding councils. Part of the purpose was to identify differences between people in the different participating countries. This research involved autobiographical statements from people with proven environmental commitment, describing the formative influences upon them and their significant life experiences. Also, it looks at what is described as 'emergent environmentalism'. In other words those factors that affect young people and raise their awareness to the environment. The research also reports on how these influences may change with time or be affected by the person's age. An early part of this study involved very young children, between 4 and 6 years old. Although in the early part of this study there was emphasis on children's understanding of environmental issues there was an important element that focused on their concern for the environment which was found to be significant.

Within the overall study there are some important findings. For example education in school was shown to be an important factor: however, this factor is shown to be far less important than childhood experiences of nature that are combined with other pleasurable experiences. Frequently in conjunction with interested adults, often but not by any means always, these being family members. They may in fact be teachers. The effects of the media were found to be greatest in the youngest of the adult samples considered who were being looked at from the point of view of emergent environmentalism. This group being those under 30 years of age.

The data obtained from this research has important implications for environmental educators. The importance of providing young people with positive experiences of the environment is clear. It also suggests that teaching should explicitly address issues such as pollution or

environmental degradation. Perhaps most important of all was the influence of the attitudes of those who introduce children to this area of knowledge, especially their enthusiasm.

### **6. What people think and hope for about the future for the environment.**

This work has largely been undertaken by Hicks (see Hicks, 1996, 1998 and Hicks & Holden 1995). The basis for this work is that although there is considerable current interest in issues related to the environment there should be a recognition that teaching about global problems can often be counterproductive and lead to feelings of despair and powerlessness among the young. The other aspect that is of concern is how young people conceptualise the future. From initial studies in this area it was shown that most students expect life in their local community to be the same or worse in the future. They think also a lot about the global future, but they do not talk to their friends much about it. This type of research is intended to identify and develop ways in which young people can be encouraged to think about and talk about their ideas for the future. Much of what young people think about the future of the environment is related to what they see on television. This focuses on pollution, wars and starvation and poverty. There is also evidence that there is a gender difference here with girls thinking more about the future than boys.

In the schools surveyed in this research it was clear that few did much about helping their students to think about the future. The research also shows that students generally lack the mental skills to create a mental picture of the future. Hicks postulates that we are living in deconstructive post-modern times which leaves most people without a basis on which to view the future and progress. He considers that 'hope' has an essential role to play and this can only be achieved if students are encouraged and enabled to create these mental pictures and use this to create their vision of recovery and renewal. He draws on the writing of the Brazilian Paulo Freire, particularly *The Pedagogy of Hope*, to support his ideas.

## 7. Work undertaken in wider themes that provide valuable information for environmental educators.

Some important aspects of this type of work is carried out by NGOs. By no means the only player in this context, but certainly one of the most important is the Council for Environmental Education. This is an NGO that was mentioned at the beginning of my talk. An important aspect of the work of the Council is that it works closely in collaboration with many other major environmental NGOs. The particular example that I wish to briefly mention to illustrate the category of research that I mean here is the support and leadership of the Council for Environmental Education in relation to the Biodiversity Education Working Group in the UK. This work stems directly from one of the primary objectives set at Rio in 1992, and also relates to work undertaken particularly in Europe.

The research that I wish to talk about briefly resulted in a widely disseminated document called *Educating for Life: Guidelines for Biodiversity Education*, and it is based on research into nearly 200 different centres and organisations. The work provides valuable information for environmental educators and it has been funded by central government and the purpose was to identify and describe biodiversity education provided in the UK outside of formal education. These places included nature reserves, national and country parks, wildfowl and rare breed collections, zoos, museums, aquaria, field and urban study centres, botanic gardens and even community-based programs. The aim was to identify good practice, leading to guidance for those providing the education. Some of the strengths of this project have been to set out the aims of biodiversity education and to suggest the qualities and criteria for good practice. Part of this also includes ways of helping these providers to evaluate the outcomes of their work. Suggested examples are following up opinions of visitors after visiting sites, both immediately after and several days following the visit when the initial enthusiasm may have declined. Also, the use of focus groups and the need for longer term tracking of opinion of those who have visited the place.

### In Summary

While it can be seen that there is a growing amount of research and academic study that contributes to research

related to education and the environment in the UK; but there is still much to do. I have no doubt left out some important areas. We should do more to investigate effective co-ordination of environmental education within the school curriculum and how this can be managed effectively and in a coherent way. The effects of globalisation are hardly talked about much less researched for an environmental education perspective. These are just a few of the topics.

What should be appreciated here is that little of the work that I have discussed is funded properly, most is done by academics, usually on their own. There is a growing interest in the international scene and a clear recognition that we can learn well from each other, despite the fact that our contexts and often our languages are very different.

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