

## **MAKING SENSE OF GLOBAL WARMING IN THE PRE-SCHOOL AND PRIMARY SCHOOL**

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**Abstract.** This paper describes the development of a teacher training course which was based on the results derived from an international research project called “Emergent Environmentalism”, led by Durham University and which currently involves 12 countries.

**Keywords:** emergent environmentalism, global warming, teacher training, drama in education.

### **INTRODUCTION**

The first part of this paper describes one aspect of the work conducted within the “Emergent Environmentalism” research project<sup>1-3</sup> led by Durham University, UK, which currently involves 12 countries. In its entirety, the Emergent Environmentalism Project aims to investigate the nature and origins of young children early ideas about the environment, the development of children understanding as they progress through school, and the significant life experiences which have influenced the development of adults environmental awareness and understanding. Here, however, we concentrate solely on data relating to polar lands and global warming. The second part of the paper briefly describes a teacher training course developed from relevant data and designed to be appropriate for pre-school and primary teachers, who may wish to introduce the phenomenon of global warming into their teaching.

### **THE RESEARCH**

The research described below is concerned with young children development and understanding of a distant environment, the polar lands, and the associated issue of global warming. Data collected through interviews with four and six year old children aims to explain: (i) the knowledge (accurate, partial and inaccurate) of that distant environment which young children have when they enter school; (ii) the way in which such knowledge and awareness of that distant environment may develop and change as children mature during their first two years in school; and (iii) young children developing understanding of both short and long term impacts of major environmental changes.

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Each child in the study was interviewed individually by a researcher who used a series of three photographs (a general view of snow covered mountains, glacier and sea, polar bears and penguins) accompanied by key questions to stimulate discussion relating to the research agenda. With the general picture the questions were:

*What can you see here?*

*What would it feel like in this place? (hot or cold)*

*Where might this be?*

*Do you think anyone lives here? (animals, birds, people)*

After showing and discussing the pictures of the polar bears and the penguins, the general polar picture was re-introduced and the children were asked about the effect of possible warming:

*What do you think would happen to the snow and ice if the weather became much warmer?*

*What would happen to the polar bear and penguins if the weather became much warmer?*

Where appropriate the children were asked further sub-questions. For example, if their answer was that the snow would melt, then they were asked what would happen to the melted snow. Also attempts were made to find out the sources of the children knowledge. The interviews were transcribed and analysed. Here we discuss only those results which helped the development of the training course which is presented later in this paper. (For detailed presentation of the full research, see other publications<sup>1-3</sup>.) For example the children answers about the inhabitants of the polar areas were put into the following categories according to the climatic zone in which the creatures named live:

<i>Category</i>	<i>Examples</i>
Polar	Polar bears, penguins, seals, whales, fish, dolphins, Eskimos (sic)
Northern forests	Wolves, brown bears, deer
Other	Lions parrots, squirrels, cows animals, birds, Santa Claus elves, monsters

None

The results show that even the 4 year olds have some idea about possible inhabitants. More than 38% of the children gave answers in more than one category and only 31 % gave incorrect answers<sup>3</sup>.

When the 4 year old children were asked about what would happen to the snow and ice when the weather became warmer, 90% knew that a change would occur. Some said that the snow would melt, others that it would disappear or would become soil. When asked about the effect of this on the polar creatures they gave various answers which were put in the following categories:

<i>Category</i>	<i>Example</i>
Short term effects	“They would go into the water. Splash” “Penguins will go into the sea, bears will go to the grass”
Long term effects	“They would go to another place where there is snow” “They would go where it is cold” “They would die”
Other	“They would feel warm because they have fur

Differences between six and four year olds were noticed. The interesting outcome of this research was the way in which it identified children early ideas, their lack of knowledge and misconceptions which together provided extremely useful data for developing educational materials for pupils and training courses for teachers.

### THE TRAINING COURSE FOR TEACHERS

The essence of this course is that it uses a drama in education strategy known as “Mantle of the Expert”, an approach developed initially by the well known drama practitioner Dorothy Heathcote<sup>4</sup>. This approach was chosen for a number of reasons:

1. It provides a powerful stimulus for engaging the learner.
2. It places the child firmly at the centre of the learning.
3. It provides the opportunity to reverse the classic teaching model by allowing, within an agreed fictional frame, the children to pass on their acquired knowledge to an adult.
4. It allows for a seamless integration of the curriculum. Tasks have a purpose as the drama unfolds providing increased motivation for learning.
5. It is an accessible and non-threatening form of drama for teachers who may be unsure how to organise and shape other forms of educational drama.
6. It is active and participatory.

The course is divided into four key components, with the majority of available time being given to the mantle itself which deals specifically with the concept of global warming. It requires a minimum of ten hours teaching time for teachers to begin to understand and feel enskilled sufficiently to be able to work in this way. Clearly more time would be needed if the activities designed by the authors to enhance the cross curricular/inter disciplinary elements are to be thoroughly explored. It is unfortunately beyond the scope of this paper to describe these activities.

**Part One** gives the course participants an opportunity to explore techniques designed to improve teacher confidence in working in role, a vital skill in ensuring success in this work. Teachers also have the chance to work on a variety of other drama techniques which are particularly appropriate for the intended age range.

**Part Two** engages the participants in a process drama operating at their own level in order that the teachers can begin to recognise the learning potential of drama and its powerful effect upon our attitudes, values and emotions. The chosen drama, adapted from the work originally devised by Geoff Readman<sup>5</sup>, takes as its theme the story of Minik Peary Wallace, an Eskimo (sic) “adopted” by New Yorkers’ in the nineteenth century. This section also allows the participants to question their own knowledge and value judgements about an indigenous people, how we come to stereotype a people we know so little about, the need to recognise mis-conceptions we personally hold and how easily and carelessly these can become “truths”, and the important relationship between indigenous people and their environment.

**Part Three** offers teachers possibly new to environmental education and education for sustainability an overview of the guiding principles and philosophies. This includes the notion of educating in, about and for the environment. Brainstorming techniques are employed to determine teachers personal knowledge of global warming in a non-threatening way. Information, alternative views and other pertinent resources are made available and discussed. Relevant aspects of the research (see earlier) are shared with the group and feedback encouraged. This reinforces the difficulties of learning and teaching about a distant place, particularly for the very young child, and forces us to consider how we might bring such a place (polar region) into the classroom.

**Part Four** attempts to answer that question. Teachers are invited to spend a little time in role as a class of children with the course leader in role as their teacher. They are told that something unusual happened today. A letter arrived addressed to the class. Who might it be from? Should they open it and find out? Would they like the teacher to read it to them?

*Dear Friends,*

*Hello! My name is Isapik and I come from a cold place which is covered in snow and ice all the year. This place is called the Arctic. This is a picture of the place I live in. People like me, and my friends and my family are called the Inuit. We have lived in this part of the world for a very long time, perhaps as long as people like you have lived in Greece, but now we have a big problem. May I tell this to you?*

*You see, I have been told that the place where I live will soon become much warmer, and that the ice will melt. So, I need to learn to live in a warm place. Is Greece warm? If it is, will you show me how to live in a warm place? If I visit you, when will be a good time to come? Will you help me?*

*Please write back to me as soon as you can. I would love to come and see you all soon. I'm afraid I do not have a photograph of myself to send you, but here is a much nicer picture of one of the animals that lives here. Do you have animals like this where you live?*

*Goodbye for now,*

*Your friend*

*Isapik*

There are many ways the teacher can use the interest generated by the letter. Children can ask questions about the pictures, Inuit life, what other creatures live in this place, etc. or, if adequate and appropriate resources are available, and the

age of the children suitable, they may be tasked with finding out as much as possible for themselves. Note that the word melt is used in the letter. This is one of the concepts children in the research displayed a very mixed understanding of. Through the use of judicious questioning, the teacher can establish the level of understanding, thus using an element of the letter as a diagnostic tool.

The letter demands that the children consider their own knowledge of what happens during warm weather which they will then teach to Isapik. One suggestion is that an area of the classroom be set up with the children as a summer café, which presents a wide range of learning opportunities. In the café they can return to the concept of melt by undertaking appropriate activities. It is important at all times to contextualise the learning for the children. They are far more likely to remember what happened to the ice, to observe the changes, to record the effect with genuine enthusiasm if they have a purpose for this.

After this “research period in the real world” is complete, the duration and depth being at the discretion of the teacher (the training course offers a substantial amount of tasks in all curriculum areas), the children must meet Isapik. This should be a time of great excitement for the children, but it is strongly stressed on the training course that it is not meant to be a “theatrical” performance by the teacher. Full Inuit costume is not necessary. No accent or foreign language need to be adopted. Instead teachers are encouraged to slide into the role in full view of the children and with their total agreement that this can happen. So, the teacher needs simply to explain that when they are wearing a scarf, or holding an Inuit artefact they will be Isapik, and will talk to them as Isapik, and when not, they will return to being their teacher. Children readily accept this convention. It is close to their own world of creative play and they will believe in the fiction provided the teacher represents their role with sincerity and fidelity. Time is spent on the training course de-constructing this process to help teachers further enhance their developing role playing skills.

Following the initial encounter, it is stressed to the course participants that they will have a number of choices about which learning opportunities they wish to pursue. Ultimately, the threat of global warming must be introduced. There are many ways of doing this. One is for Isapik to arrange to visit a factory as he has heard that this may have something to do with his problem. Indeed, some of the children may already have told him that this is where his problem comes from. Simultaneously, the children prepare for their visit, at Isapik’s invitation, to his land, thereby encountering the polar environment. But it is a changed Isapik who meets them again after his brush with western technology and pollution. Subdued or angry or frightened at what he saw and its possible implications, he nonetheless sets off on the journey with his friends, the children.

The visit to the land of the Inuit provides a plethora of learning opportunities which can address many of the misconceptions identified by the research. As the children skills of survival in this initially inhospitable place improve, their knowl-

edge of flora and fauna increases and so they are ready for their final encounter. The training course ends with the teachers in role again as the class meeting with a polar bear who has the following tale to tell:

*I live in a changing land. The land of the bears is no longer as it was. Each year, my land is less. The snow and ice of my land is melting, vanishing, leaving the land and returning to water. The great oceans are filling with water. The ocean becomes warmer and melts yet more ice. What will become of me? What does the future hold for my family, other bears, the fox and the ptarmigan which live on the snow land? The whale and the seal which live in the icy sea? What will become of the Inuit people with whom we have shared this domain for longer than memory? What will become of the great ice fields and the mighty glaciers and what, my friends, will become of you? What will become of you as the oceans of the world are filled with water from this land, and the snow of the high peaks of your land melts and fills the great rivers with water, water and more water. Water from the melting snow. Water from the melting ice. Water which will cover the land of all who live unprotected from the sea. As surely as I will lose my land as the ice melts, so you shall lose yours as the sea advances. Creeping. Rising. Warming. Day after day after day. So the fate of all of us is intertwined. I know nothing of the cause of this. I know not if it can be stopped. I know only that this life, which has lasted since the dawn of time, this life of snow and ice, of seals, fish, whales and birds, this life of man and bear with lightless day and endless night must soon end. And I am sad.*

The teacher in role as Isapik needs to draw the strands together and make it clear that what is happening is connected to what he saw in the factory. The teacher out of role can task the children to carry out some action which may alleviate the problem, thereby setting in motion the next phase of the project, WHAT CAN WE DO ABOUT THIS.

This paper has attempted to describe a major research programme and to give a picture through description of a narrative of a teaching strategy which enskills teachers and offers them an approach to dealing with the concept of global warming which is exploratory, discursive, critical and meaningful.

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