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CHILDREN AS CATALYSTS OF ENVIRONMENTAL CHANGE

SUMMARY FINAL REPORT

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I. OBJECTIVES

The objective of the research was to examine three of the important institutional means (local government, schools and museums) by which children acquire environmental knowledge and action competence, and the social process by which the family and the wider community in turn, acquire action competence as a consequence of inter-generational communication and influence. In detail, the research aimed to examine: i) the psychological and sociological foundations of environmental action; ii) strategies for the development of environmental knowledge, action possibilities and action competencies in social learning processes related to children's participation in organised environmental activities and actions initiated by schools; iii) the personal, social, institutional and technological constraints which hinder attitude and action in the local community, by critically assessing their structure and location and how such barriers night be removed; iv) to identify the conditions which can facilitate a pathway to a developing environmental consciousness and action.

II: METHODOLOGY

II.1 Theoretical Context

It is part of the rhetoric of the concern about global environmental problems that children are regarded as a key audience for environmental messages because they are seen as tomorrow's opinion leaders and stewards of the earth. Many environmental problems are, however, immediate and while there is a strong argument in support of the need to educate tomorrow's environmental stewards, it is nevertheless children's parents who have the direct power or influence to introduce policies and practices essential for immediate global environmental change. Given the already considerable investment in environmental education directed at children, the initial research question which this research sought to examine was whether children themselves can be the mechanism for bringing about these changes? The research team believed that children can act as important catalysts for change in both the home and the community, passing on environmental knowledge and influencing the attitudes and behaviour of adults. This research sought therefore not only to find innovative ways to address the environmental attitudes, behaviours and competencies of today's decision-makers, but also those of the decision-makers of tomorrow.

It was the view of the four nation research team that if these serious national and international research issues are to be addressed with any real hope of bringing about effective, sustainable and lasting change then it is necessary to empower people - teachers, parents, children, the larger community - to believe that they should not be passive but play an active part in the future environment of Europe.

While the project supported and advocated environmental education as a means of bringing about change, it had serious reservations concerning the way it is currently practised and whether it can bring about the kind of changes identified above. The project challenged, for example, the top-down, expert-dominated socialisation model of teaching and learning which dominates environmental education. It questioned the values which lie behind environmental education, laudable though they may be, they are often superordinate to democratic values. As a consequence, the team questioned the assumed source of environmental knowledge, and support a meaning-making rather than meaning-taking approach to knowledge, ie. knowledge is socially constructed and therefore environmental education programmes have to recognise and build upon this.

Environmental education is more than just about raising levels of awareness and changing attitudes and behaviours. Environmental education has to be seen in a larger context. For this reason the team framed the discussion of environmental education in the context of the acquisition of action competence. To have action competence is more than just being aware of or having an attitude towards environmental problems, or even having a set of skills. Although action competence comprises a consciously solution-orientated approach to societal problems, it also assumes much more besides. It requires a positive approach to cooperative decision-making, a respect for democracy and an understanding of participatory processes. Action competence provides a useful prescriptive framework for thinking about, making links with and implementing environmental, health, peace and other education programmes. The project challenged the notion that schools can be used in the way they are at present for an environmental education that will be truly effective in changing society and the environment. Since the school, just like any other institution (or individual or social group) is part of the environment, it too will have to be changed. The school will have to open itself in new ways to families and the local community; it will have to be come to be seen as an active agent in the creation of change rather than a passive transmitter of information or values.

This research provided a critique of the dominant thinking behind environmental education as it is typically taught and practised. As an alternative it offered an action-orientated approach which will support children becoming catalysts of environmental change by encouraging them to become active citizens within the wider community. This alternative model is founded upon more appropriate conceptions of learning/teaching, the role of the school and other educational institutions (e.g. museums), social influence and the environment. It is argued that environmental education founded on such concepts should provide the necessary societal conditions for children to become catalysts of environmental change.

The approach of the project is theory-driven. It started with a critique of the dominant learning/teaching concept within environmental education and the traditional role assigned to the school within society. The natural science approach in environmental education, though it leads to increased concern about the environment among children, also results in the individualisation of environmental problems and responsibilities. The end result is a feeling of powerlessness and action paralysis. Given such conditions children are unlikely to become catalysts of environmental change. An alternative framework for environmental education was put forward in the project which is action-orientated, interdisciplinary and aims to promote the development of action competence. The development of an action-orientated approach relies on a new understanding of the role of the school in society and how the school is organised. It is argued that action-orientated environmental education can only be effective within schools which are not structured in a top-down manner or based on a strictly discipline-specific academic curriculum. Catalysis will be facilitated by a new view of the school as an agent of environmental and social change which works in partnership with the community (parents, local authorities etc.).

The project discussed in-depth the concept of catalysis and how the catalytic process is promoted and constrained within society. Catalysis is seen as a process of social influence. The 'genetic' model of Moscovici[1] is favoured over traditional 'functional' models of social influence which are unidirectional and asymmetrical in nature. Three consequences of using Moscovici's model for the conception of children as catalysts were identified: (1) the process of influence operates at an intermediate level between the interpersonal and institutional planes; (2) the level of interaction between social actors (e.g. children, parents and teachers etc.) is pertinent; (3) these interaction are situated in a physical and social context which is influential in the catalytic process. The focus is upon people's pre-existing social representations, the role of the school in society and the expected social roles of children and adults. The notion of 'authenticity' is defined and it is argued that environmental education centred around *authentic* action which deals with real, not '*as if* ' situations is more likely to promote action competence and catalysis.

A critique was also provided of the dominant environmental concept that underlies both environmental education and environmental policies or strategies. This paradigm views humans as separate from the laws of nature, superior to all other animals and the rulers of the earth. It also regards the earth as a machine which is there only for the benefit of humans where environmental strategies are top-down and scientific/technologically oriented. This perspective is a barrier to catalysis since the public are not seen as active agents in the process of socio-environmental change but as passive objects to be manipulated. The implications of the dominant environmental concept for environmental education and environmental policy were discussed. More recently, a new environmental paradigm has begun to replace the dominant environmental concept. This paradigm argues that humans are equal partners in the natural world and are subject to its rules and consequences. According to this perspective humans are stewards rather that the rulers of the natural world. This too has implications for environmental education and environmental policy, suggesting a more pro-active and participatory citizenry sensitive to and supportive of sustainable environmental actions.

II.2 The Design of the Research Studies

It was not the intention of the project team to compare the same environmental education initiatives in each country. Even if they had wanted to do this, it would have been fraught with methodological problems. The most serious impediment to carrying out cross-national studies where one tries to duplicate the same study in each country is that the different institutional and cultural context make comparisons at best of doubtful ecological validity and at worst misleading and of dubious value. But more than this, it would not have been within the 'temperament' of each national team to conduct similar studies. It is a particular strength of the international research teams that they all came from different methodological traditions and had different

1Moscovici, S. (1976) Social Influence and Social Change, London: Academic Press.

theoretical perspectives on the issues under investigation. They were keen to capture the variety of environmental education experiences which exist within Europe, from the strongly classroom and curriculum based 'as if ' type of engagements which are typically found in the UK through to the more action-oriented 'real-world' experiences of Denmark. The team saw the connection between countries in terms of intergenerational processes - the communication between children and adults. The research teams were concerned to compare the differential effects of environmental education initiatives which share certain feature in common. The comparison between countries was at the level of process using similar educational strategies but in different contexts.

Each team has selected and worked with a number of cases and carried out one or more interventions. The nature and number of these differed considerably, and the deliberateness with which differences in them were controlled, also varied. Finally, and again in a general sense, each team has examined outcomes - changes in the selected cases themselves or in associated individuals with which those cases are in contact - which are to be evaluated in terms of their relationship with the interventions

The case studies that eventually developed included varying combinations of children, teachers, support groups for teachers (ie. groups which provide training and/or financial support) and coordinating entities which include supra-school societal bodies. These cases are the elements which enter into the process of intervention, the process which in turn can be described as catalysis or agency. Environmental change denotes changes in persons and groups, as well as changes in the physical environment in itself. Changes in people, or in groups of people, which render them more capable of effecting environmental change, count as environmental changes. In this wider sense, the research teams looked for changes in all the elements of their cases, the children themselves, the teachers or the coordinating entities, as well as in other people (parents, community adults), social structures and the physical environment.

For each national team in the research, and separately for the two French sub-studies, the diagram shows (left-hand column) which elements entered into the cases and (right-hand column) which outcomes were intended to be effected. In addition, the diagram represents the process of intervention with a two-way arrow, along which at least two dimensions of variation are known to exist. The central column refers to the focus and level of educational intervention. The focus of the intervention refers to the characteristic of the process having been directed at individuals or at groups. This focus is independent of the number of cases and their nature and combination. The intervention may have been aimed at children as individuals, at teachers as individuals (even if with support systems) or at municipalities as coordinating entities. Or it may have been aimed at children or teachers as groups, at children and teachers together as a group, or at groups of children and teachers together in a super-ordinate group. The level of the intervention refers to the following classification of environmental education (EE).

EE1 is information oriented; teacher directed; children passive receivers; a concentration on *activities* which are teacher chosen (not problem-oriented). The significant aspect of EE1 is that the activities are chosen by the teacher. The children only undertake work that the teacher chooses, designs and organises without any constructive commitment to these activities. Essentially, EE1 is a form of behavioural manipulation or teacher influence on pupils. EE1 has no actions and no activities that are related to a specific environmental problem.

EE2 is teacher-directed; pupils actively engaged with constructive commitment; concentration on *activities* which are effect-level oriented, ie, they are symptom-oriented activities, not solution-oriented; attention focuses on '*as if* ' situations. In EE2, there are activities which are teacher-chosen or adopted with constructive commitment by the pupils. EE2 has pedagogical actions at a weak level (ie. teacher directed but with some child commitment). There are activities which are problem-oriented and only at the level of symptom not solutions.

EE3 involves teacher-child collaboration and partnership; constructive commitment on the part of the children, leading to symptom-oriented actions. The essential difference here is that the teacher and the children collaborate throughout in terms of the selection of the problem, in understanding its specific local manifestations, in analysing its causes and maybe even in generating alternative solutions and anticipating barriers to effective action. Children (and teachers), however, never take solution-oriented actions. EE3 has strong pedagogical or investigative actions with teacher-children collaboration and commitment. This leads to actions which are still oriented, however, to the problem (eg. cause, symptom).

EE4 involves teacher-child collaboration and partnership; constructive commitment on the part of the children, leading to solution-oriented actions, ie, actions which have the potential for contributing to the solution of real

environmental problems. EE4 has pedagogical actions and environmental actions (not '*as if* ' situations) which are not merely problem-oriented (eg. cause, symptom) but also solution oriented.

It is not possible in this Report to describe in any detail either the methodologies or the findings of the individual national case studies. The research design of each national study is described in terms of the framework above and for which the diagram may serve as a guide or map.

The Danish case study focused on a project about environmental improvements and environmental education which was introduced in the municipality of Jaegerspris. This project together with projects in three other municipalities made up the QUARK collaboration. There were five collaborating parties altogether: three internal partners: the school, the technical department of the municipality, and the local community; and two external partners: the Royal Danish School of Educational Studies and the Technical University of Denmark. The purpose of the project was to develop an environmental education where pupils work with concrete actions with reference to real existing environmental problems and also to ensure that pupils' and the community's environmental action competence is increased.

The first French project focused on children attending a one week workshop at La Classe Villette (at the Cité des Sciences et de l'Industrie) where there was an exhibition on the environment. Upon returning to school the children made a presentation (a newspaper or an exhibition) aimed at other students/parents. The second case study comprised a partnership between a school and the town of Taverny and centred upon the resolution of an environmental problem. The project involved communication campaigns aimed at the inhabitants of the town - in particular, the parents of children participating in the project - which would reinforce communication between parents and children. It was expected that the project (in conjunction with industry) would assure a level of involvement on the part of pupils that would favour education for the environment and interactions with parents.

The original design for the Portuguese study took the form of a quasi-experiment. Teachers from four groups studying for the Diploma of Specialised Higher Studies took part. There were two distinct points of intervention in the Portuguese study, the first having to do with the preparation of the teachers. The outcome of this became the intervention with children. That is, a study was undertaken to assess whether environmental education projects could be influenced by the teachers' preparation and whether these, in turn, could influence children and consequently, by catalysis, adults as individuals or in community structures.

The UK study, modelling the intervention on a 'typical' teacher-directed approach to environmental education, used an experiential encounter with the environment (testing the water quality of a local river) which was essentially problem rather than solution-oriented. Three models of intervention, using the concept of action competence, aimed to encourage a dialogue between the children and parents, to initiate a catalytic process and engage in environmental action. The quasi-experimental design included four independent groups or classes of children.

III. MAIN RESULTS

At the outset of the research it was assumed that children would act as spontaneous catalysts of environmental change. It was found from the empirical research that educational programmes alone are insufficient to bring about change. It is necessary to support the catalyst process itself. In order for catalytic effects to occur it is necessary to work simultaneously with the child *and* the adult and to support both children and adults in the catalytic process.

What differentiates those children and parents where a catalytic effect occurs is that within these families children and parents readily communicate with each other about the environment. The environment is seen as a legitimate subject for conversation. Furthermore, the conversation is not one-sided with the parent 'lecturing' the child, but there is a dialogue between parent and child with as much likelihood of the child being accorded with 'expert' status as the parent. In other words, 'pupil' and 'teacher' roles could and will be reversed depending on the circumstances. In the French case study in particular the parents' decision to participate in the survey was motivated by their children's involvement in the project, a project that was positively reinforced not only by the school but also by industry and the town. Furthermore, it was a project through which children changed their social status. In so doing, parents learned to listen to their children who had ceased to be merely pupils and had become "agents" with something to contribute.

There was evidence that as a consequence of the various environmental education interventions, children act as catalysts of change in respect of adults, including their parents. This is the case where: the level of consciousness, knowledge and concern for the environment among parents is greater; parents are in the habit of helping their children with school work and extra-curricular activities; discussions about the environment as well as other subjects that are of interest to children are part of everyday life. There was some evidence that, not surprisingly, these criteria correlated with class and the socio-cultural level of the parents.

In order to encourage all members of the family and local society to participate more in environmental affairs, actions and activities have to be concrete, both in terms of problem and solution identification. Second, participants must be able to see the effects of the actions in the short as well as long term. This provides important feedback to encourage further involvement and participation. Third, actions have got to benefit the participants and others at an environmental level (eg. a less polluted environment), a psychological level (eg. their sense of self-esteem, self-efficacy, altruism) and a social psychological level (eg. enhance the participants sense of identity, encourage group membership and a feeling of group involvement).

The analysis also revealed, however, the existence of many barriers to carrying out (catalytic) action-oriented environmental education. These barriers are encountered in all educational systems and within such systems the curriculum is a major constraint. A traditional curriculum which establishes in detail what is to take place in the classroom does not leave room for this kind of environmental education. What is necessary is a curriculum which defines a framework for learning rather than detailed control. The team noted that a highly centralized school system does not provide the scope for changing from a traditional '*as if* ' education towards greater *authenticity*. A certain level of decentralization is necessary if there is to be democracy and pupil-teacher participation, an integral part of an authentic environmental education programme. A catalytic effect is more likely to occur where the situation in which teaching and learning take place is an '*authentic*' one and not an artificially contrived '*as if* ' state.

Despite the ubiquity and unavoidable experience of school for all children, it is clear that the school is not regarded as a principal source of information and influence about the environment for children, at least according to the children's own accounts. The mass media - in particular, television - was found in France, Portugal and the UK to be the most oft cited source of influence. But perhaps more significantly, the world of school appears to be totally divorced from the everyday world in children's minds. The consequence of this is that a marked division clearly exists within children's minds between the world of the school and the world outside the school. They appear to be separate domains - two different experiences - worlds which touch but rarely overlap with each other.

The social, cultural and political context in which action takes place is an important ingredient in determining whether or which of the conditions will permit change. Children can influence adults in the sense that they can help them to change. Environmental changes brought about through community initiatives spearheaded by children will have a physical effect on the environment and a social and psychological effect on the inhabitants and the community at large. The goal of these types of initiatives should be seen as wider than just having direct environmental effects; they include instilling a sense of pride in communities, a sense of place, and improving community's own self esteem and perception of themselves as being able to contribute to a sustainable environmental future.

The political, economic and cultural context interacting with psychological factors can provide a major barrier to change. The majority of parents and other adults with whom these children live and make contact are so occupied with survival and security that the call for collaboration with others in the resolution of environmental problems does not correspond to any felt reality. This was brought home in Portugal, in particular, where historico-cultural factors have served to collude with overriding survival and security needs to reduce the likelihood of social networking to resolve community problems and, particularly, of the school being seen as an appropriate site for the fostering of such networks.

The structure and organisation of provincial and municipal organisations is often antipathetic to accepting and implementing the kinds of changes advocated in the recommendations in this report (see later). The way municipalities view environmental problems typically excludes local people in general and children in particular from being involved in planning decisions. Despite the existence of legislation which enables the public to participate in planning matters, this is typically at a reactive rather than pro-active level and has usually involved unimaginative techniques to encourage the kind of creative participation and involvement that would harness the

public's skills and vision. Municipal governments typically do not trust local people to take responsibility and participate in change.

This research discussed the development of inter-generational action competence in the context of the environment. It is misleading and counter-productive, however, to partition and 'pigeonhole' societal problems into discrete boxes as if there is no link or relationship between them. Environmental problems, for example, are often health problems. Indeed, interpreting and exemplifying environmental problems as health problems may make environmental problems more understandable for some people. Health education programmes, where appropriate, ought to incorporate environmental education material in order that people can see the link between the two. The link between the environment and health is, of course, not the only link where public education can raise people's level of action competence in respect of the environment. Literacy, human and civil rights, peace and justice are all domains of public concern and policy which have an environmental dimension. Increasing the action competence in one ought to have implications for increasing the action competence in another. An important corollary of increasing the levels of individual action competence is that one should, through the inter-generational and peer influence process, increase collective levels of action competence. The development of these competencies has the goal of building civic competence and developing the competent and action-oriented citizen.

IV SCIENTIFIC INTEREST AND POLICY RELEVANCE

The international research team made thirty two recommendations which they considered will promote and facilitate children acting as catalysts of environmental change. These were grouped around recommendations for changes in pedagogical institutions (school; museum); recommendations for changes in local society/the community; recommendations for changes in the relationship between pedagogical institutions and local society/the community; recommendations for changes in the family; recommendations for local, national and European Union environmental policy.

It is suggested that the ideas discussed in this research could be an essential part of teacher-training programmes. They could also be the subject of in-service teacher training programmes for experienced teaching staff, whatever level in their career they have reached. Special consideration should be given to training in the concept and use of action competence; collaboration with other teachers and partners; involvement with work groups (ie, groups in business, industry, etc). Adults may present barriers to socio-environmental change in the community. In-service training related to projects such as these could not only involve teachers but also people from the local community if one wishes to bring about changes in local society.

The project recommended that the development and implementation of teacher and community education programmes focusing on an action competence approach should be encouraged in all Member States. Such a policy would be enhanced by the dissemination of different examples from different cultures and contexts of this approach.

It was recommended that curriculum development projects be established which: develop and evaluate environmental education projects with an emphasis on EE3 and EE4 programmes; develop and evaluate environmental education projects that facilitate the catalytic process.

The above recommendations would require such initiatives to address the shortcomings of contemporary environmental education (e.g. failure to treat environmental education as a lifelong process; top-down and non-participatory; 'authentic' situations required). Environmental educational approaches should be developed on the principles of pupil participation, authenticity, concrete actions and change.

If the school is to be open to the community and have an 'dialogue' relationship with it, it must be a place physically worthy of receiving and playing host to that community. Investment must be made in schools to make them places that inspire an idea of the dignity of the work that takes place in them and which recognises their potential catalytic role in the community.

Children must see themselves as a respected group within the community who through their educational activities or actions can have an effect on the environment. As a consequence, children should be encouraged to feel a sense of belonging to a community in which they have some responsibility for the common environment. Those responsible (in the broadest sense) for environmental education need to nurture a feeling of community identity among children at all levels - school, neighborhood, town, nation, Europe and global. With such community

identity children might begin to feel they have the status and resources to become fully-fledged catalysts of environmental change.

Environmental education must involve the family and encourage children and parents to establish a dialogue at home if it is to facilitate the catalytic process. It must provide children with the skills and self-efficacy to become confident 'experts' in their home who gain respect from their parents. Parents also need to change their role in the family. They need to work in a more democratic manner, listening to their children and attempting to learn from them. Many of the barriers to children becoming catalysts of environmental change result from the children's perceived status within the family and the inability of parents to recognise that their children can actually teach them about the environment.

It is recommended that further research is undertaken in order to devise more sensitive measures of attitudinal and behavioural *change* that reflect the subtle and multidimensional nature of change in environmental attitudes and behaviour.

Community Environmental Action Centres should be established which should collaborate with schools in child-school-community initiatives. Such Centres could: devise and validate Certificates of Community Environmental Education (CCEE) which would be awarded for action competence programmes both to individuals and organisations (local government agencies, trades unions, industry); encourage 'preferential status' in respect of contracts and commissions to those organisations and individuals which can present CCEEs; provide incentives to Centre-developed initiatives that foster collaboration between schools, local government, industry and the local community.

It is recommended that it is made a condition of the funding of certain local government environment programmes or the funding of industrial environmental impact and pollution elimination programmes that they include an environmental education component, either as part of a public education programme or a programme for employees in the case of industry. Such programmes could be co-ordinated through Community Environmental Action Centres.

It is suggested that prior to the funding of educational and environmental programmes there is evidence of intended local participation in the planning and implementation of projects. Action competent environmental education should be an essential component of that participation.

To train individual teachers or pupils solely within the framework of an educational institution is not enough. The project recommended the financing of projects that will encourage and facilitate a relationship between children and adults in order to produce concrete actions; one whose importance should be recognised by local authorities. Such a project could be realised through collaboration and co-financing between the EU, Member States and local communities. Such support and financing should allow municipalities in particular to play an appropriately central role in an undertaking which links schools, businesses and social and cultural institutions. This role could consist of supporting the emergence of the job of 'animateur' trained in what is known as environmental mediation. It would be important to determine for each Member State of the EU the optimum institutional support.

The project recommended the introduction and extension of the role of 'médiateur pour l'environnement' to Member States within the EU. The role of the 'médiateur pour l'environnement' guarantees the possibility of a practical, intellectual and civic training for young people through the organisation of a partnership between schools, businesses and social and cultural institutions. The role of the EU is not only to be an instigator or catalytic agent for a new politic of education but also to help in the promotion and training of 'médiateurs', one of the new environmental professions. This training could be promoted and supported on a European-wide scale, thereby encouraging the development and dissemination of common models and good practice. At the same time, it should recognise and reflect the parameters of national distinctiveness.

It is becoming more widely accepted that societal problems such as environmental pollution have to be seen in a systemic and structured way. Society's response to such problems has to be formulated in an equally systemic and structured way. Environment policy has to be an education policy, a local development policy, an employment policy, an industrial policy and a scientific policy.

The concept of subsidiarity, an accepted part of EU policy generally, is not at variance with the ideas presented in this Report. The decentralisation of decisions and responsibility means the active involvement and

participation of an informed citizenry in environmental policy and planning. The EU should, through the encouragement of lower level tiers of government and by incentive mechanisms, promote, stimulate and further the kind of social developments in which citizens individually and collectively have the motivation, commitment and determination to undertake informed environmental actions.

The philosophy which underlies the ideas and actions proposed in this Report are entirely in sympathy with Agenda 21, the agenda for the 21st century as agreed at the Earth Summit in Rio in 1992. Agenda 21 and Local Agenda 21 actions are more likely to permeate the community and be more effective if they are informed by a coherent and theoretically sound approach to environmental education and participation. Therefore, consideration should be given by governments at all levels, but in particular municipalities, to adopting the philosophy and supporting mechanisms practised and advocated in this Report in order to assist in the achievement of the aims and objectives of Local Agenda 21 initiatives.

The EU is recommended to stimulate the development of *local* democracy at all levels. The 'school view' within local institutions (such as in the Technical or Planning Department of the Municipality) is essential. An open-minded attitude where schools and especially children are considered not as passive recipients of environmental policy but rather as dialogue partners in the formulation of policy and action should be promoted.