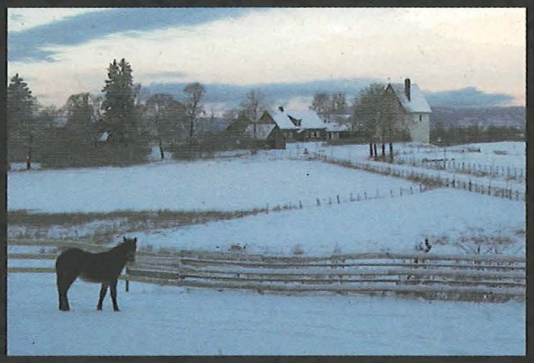
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FORSKNINGSDEPARTEMENTET

Ministry of Education, Research and Church Affairs

An OECD-ENSI Strategy Workshop
December 9 – 12, 1999, Hadeland, Norway

From the Pilot... to the Mainstream

Generalisation of good practice in Environmental Education



Foreword



The main features of effective environmental education or environment for sustainable development have been well-established through a wide range of excellent pilot projects in schools over the last 30 years or more. One can say that we know what constitutes good environmental education.

The challenge is:
How can educators, schools and policy-makers go beyond successful pilot projects and create the necessary culture of legitimacy, the organisational frameworks, the competence and the financial mechanisms to ensure that all pupils receive this kind of instruction?

"Mainstreaming" is a colloquial term often used to refer to such a generalisation or integration of good practice such that it becomes a sustained feature of the education system.

An international workshop entitled "From the pilot to the mainstream: A strategy workshop on generalisation of good practice in international environmental education" was held in Hadeland, Norway December 9-12, 1999 to discuss these issues.

The goal of the workshop was to develop, through an international exchange of information and ideas, **a shared understanding of the status and processes of mainstreaming at various levels in the school system.** This would then provide a basis for further work to develop effective strategies for mainstreaming and research to evaluate the effectiveness of various approaches.

The workshop was attended by 48 invited participants from 12 European countries and the United States including teachers, programme developers, researchers and policy-makers. The methodology was participatory with group work and presentations of the results. Invited discussion papers were used as a starting point for the working groups. In addition, each ENSI country co-ordinator submitted a short country report giving an overview of mainstreaming issues in their country: past developments, the current situation and future plans and strategies. The country reports and the professional experiences of the participants provide a sound foundation of international comparative material that underpin the discussions and conclusions of the workshop.



This report is a synthesis of the outcomes of the workshop, including a discussion of some possible implications of a "mainstreaming perspective" for the future of the ENSI programme. Full texts of contributed papers and other unofficial background materials are available from the OECD-ENSI secretariat.

This report is submitted by the workshop reporter Dr. Faye Benedict (Asst. Professor of Ecology, Telemark College, Norway) and does not necessarily represent the opinions of OECD-CERI, the ENSI programme, national ENSI co-ordinators or participating countries. The author extends special thanks to Astrid Sandås and Karen Junker for consultations from the planning stage to the editing of the workshop report. Sincere thanks also go to Dr. Michael Williams, representatives of the ENSI programme in participating countries, invited speakers, the ENSI secretariat and representatives of the OECD-CERI programme for their contributions, comments and stimulating discussions. The report is published by the Royal Norwegian Ministry of Education, Research and Church Affairs.

Dr. Faye Benedict
Workshop reporter

General Description of ENSI



The Environment and School Initiatives programme (ENSI) was established in 1986. ENSI is a decentralised international network under the umbrella of OECD's (Organisation for Economic Co-operation & Development) Centre for Educational Research & Innovation (CERI).

ENSI organises a network of school initiators, educators and other stakeholders in countries primarily across the OECD group (Europe, Asia-Pacific and North America). ENSI promotes activities relating to sustainable development in schools and their communities. ENSI supports educational developments that promote environmental understanding, active approaches to teaching and learning and citizenship education. This is implemented through research and exchange of experiences at an international level (ENSI Constitution 1999).

As a decentralised international network ENSI is part of CERI's project "Schooling for Tomorrow". ENSI is seen as a voluntarily co-operative group of member countries. The member countries are represented by officially appointed country co-ordinators at the Annual General Meeting, the highest decision making body of ENSI.

Definition of Environmental Education within ENSI

Environmental education as defined by the OECD project "Environment and School Initiatives" (ENSI) is premised upon the concept of interdisciplinary studies and the achievement of dynamic learning qualities in students in which knowledge is not passively appropriated but actively constructed. Furthermore it relates knowledge to spheres of socially important action and requires the interrogation of assumptions and values that configure controversial issues. Finally it encourages reflexive and responsible action.

Who are the principal audiences for ENSI?

One of the main characteristics of ENSI, is the variety and range of partners who co-operate within the network:

- School communities with teachers and pupils documenting and systematically reflecting on their Environmental Education classroom work,
- teacher educators and their students working on new methods of teaching and learning for a sustainable future,
- researchers and experts who co-operate with schools and teacher training institutions and work out comparative analyses or undertake evaluations,
- the governments, who order and fund the initiatives, mostly co-operate in a partnership like way and also gain background information as basis for developing or improving their national Environmental Education policy,
- the member countries in the international network use ENSI as an international forum for exchange and co-operation.

ENSI's overall aims are:

- to promote and facilitate sustainable thinking and acting within the educational system,
- to create stable learning networks which link schools, families, communities and workplaces,
- to foster the democratic participation of students as active citizens in shaping the environmental conditions of their life and work.

As Activity Areas, ENSI has, in the last two years, focused on the following programmes, wherein ENSI's work is based on national initiatives involving the partners named above with a focus on action research in the triangle: research, development and training:

- ECO schools. Over the next two years ENSI plans to develop, test and publish methods of teaching and learning by defining a set of best practices and recommendations based on quality criteria and comparative evaluations.
- Learnscapes. In the Learnscape trial a number of school grounds are being redesigned to allow school communities to interact with their environment and link their curriculum to the use of school grounds.
- Teacher Education. The ENSI teacher education project seeks to integrate innovative approaches to teacher education programmes through Environmental Education.
- Mainstreaming Environmental Education in National Educational Systems. In an effort to answer the request for a generalised approach to good Environmental Education practice, ENSI conducts a comparative study of official strategies for introducing EE into school curricula and teacher training.

The intended results of the work in ENSI are expertise, programme development, co-ordination including internal and external communication and, finally, policy recommendations.

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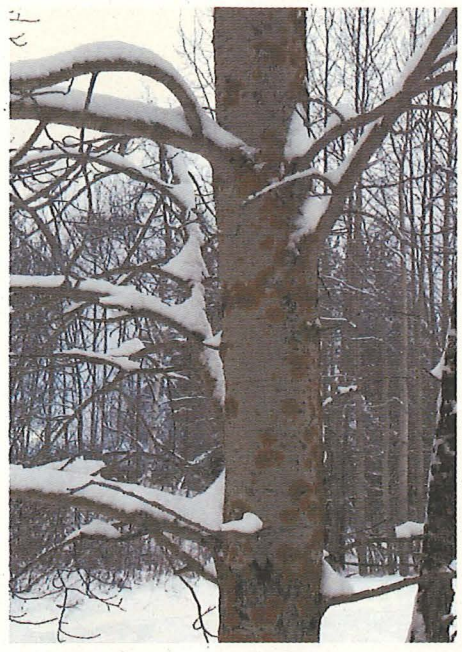
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1. Introduction



Efforts in environmental education over the past 30 years have been dominated by pilot projects and programmes. The main thrust of these pilot efforts has been to develop and test innovative instructional approaches aiming to develop the pupils' values, attitudes and ability to act in society. Transmission of knowledge at the blackboard and through textbooks is being replaced or supplemented with construction of knowledge through project work, group learning, investigation and reflection. Although these kinds of innovative learning methods are certainly not restricted to environmental education, we often associate them particularly with environmental education.

Emphasis on a new way of learning - rather than insertion of environmental topics - has also characterised the OECD Environment and School Initiatives (ENSI) programme since its inception in 1986. A main focus of the ENSI programme is action research as a way to develop pupils' "dynamic qualities". The results of these kinds of learning innovations have been documented in ENSI publications and in other environmental education literature.

There is a growing concern that the experiences gained through this rich period of pilot projects and programmes will remain as isolated occurrences in the education system. There is, indeed, very little evidence to suggest that "good practice" spreads spontaneously from the level of individual teachers to become incorporated into management of the school as a whole. Likewise, experiences from innovative pilot schools do not seem to spread spontaneously from school to school to become more generalised teaching practice. At the same time, the enthusiasm for seriously pursuing environmental issues in schools - and in society in general - seems to be waning.

Why, after several decades of these good projects, are they still only practised by only a small fraction



of the teachers? What strategic approaches could one take to truly integrate such learning into the education system, making it available to children in all classes and all schools?

Legitimisation, institutionalisation and generalisation of good practice have thus become central challenges in environmental education. While researchers and practitioners agree on what this kind of instruction involves at the classroom level, there are many systemic barriers to these methods becoming accepted and institutionalised practice for all teachers and schools.

This issue of "mainstreaming" involves a complex web of sub-issues at the level of the teacher, classroom, school, and educational system as a whole. To develop an effective approach or strategy for mainstreaming education for sustainable development, we need to first understand the issues of development at each level, including framework factors such as teacher training, school management, co-operative relationships between the school and society, curricula and evaluation methods.

In a process-oriented approach one would ask:

- how do we develop teachers' competence to provide this kind of instruction?

- how do we develop the competence of schools to provide this kind of instruction?
- how do we develop the competence of the education system as a whole to provide this kind of instruction?



One answer may be the action research approach embraced by ENSI. Action research involves an internally driven, participatory and self-critical approach to learning. It can be applied at all levels of an organisation as well as a link between levels. Action-research-based learning methods are a tool for teachers, schools and school systems to develop the competence to develop themselves: the competence to change.

In his book "Change forces: probing the depths of educational reform" (1993), Fullan calls for a deeper approach to educational reform based on building a capacity for organisational change. He describes the situation as follows:

"On the one hand, we have the constant and ever expanding presence of educational innovation and reform. It is no exaggeration to say that dealing with change is endemic to post-modern society. On the other hand, however, we have an educational system which is fundamentally conservative. The way that teachers are trained, the way that schools are organised, the way that the educational hierarchy works, and the way that education is treated by political decision-makers results in a system that is more likely to retain the status quo than to change. When change is attempted in such circumstances it results in defensiveness, superficiality or at best short-lived pockets of success...
The answer does not lie in designing better reform strategies. No amount of sophistication in strategizing for particular innovations or policies will ever work. It is simply unrealistic to expect that introducing reforms one by one, in a situation which is basically not organised to engage in change will do anything but give reform a bad name...
The new problem of change, then... is what would it take to make the educational system a learning organisation - expert at dealing with change as a normal part of its work, not just in relation to the latest policy, but as a way of life."

Carrying Fullan's idea of "competence for change" one step further, experiences with mainstreaming environmental education would seem to be relevant for educational reform more generally in at least two ways. First, programmes such as the ENSI network provide the opportunity to test the idea that action research does in fact lead to a fundamental change in competencies and capacity for change. One might expect to find "spin-off effects" in ENSI schools that use action research methodology: signs that action research methodologies introduced in an environmental education context can also build the competence and capacity of teachers, schools and education systems for other kinds of educational change.



Second, an analysis of policies and programmes in environmental education aimed at mainstreaming these innovations could provide insights that are highly relevant for other kinds of educational reform. To the degree that environmental education has been in the forefront of educational innovation, its successes and failures in terms of mainstreaming should be highly relevant for other kinds of educational change as well.

With this background, participants in the ENSI programme proposed to look more closely at the mainstreaming issue and relate it to experiences in ENSI. A 3-day workshop was organised in December 1999 as a first step towards several goals:



- To better define and clarify what is meant by mainstreaming at the policy, research, teacher training, school, class and pupil level;
- To compile, discuss and present examples from the participants of ENSI of successful mainstreaming strategies or approaches
- To compile, discuss and present experiences by the participants of ENSI about barriers to generalisation of good environmental education practice;
- To present any available research results on the topic of mainstreaming and discuss possible future research approaches; and
- Based on an exchange of experiences in participating countries, to identify policies and strategies for development work that can promote a wider legitimisation and integration of environmental education.

The aim of the workshop was thus to help develop the state of knowledge about this topic rather than to reach a consensus or decide on a course of action for the ENSI network. As stated in the letter of invitation from the ENSI secretariat to participating countries, "The workshop in Norway aims to bring a range of policy options and experiences to the table for discussion, and to provide policy makers with examples of how these can function to bring good practice in EE from the periphery to the sustainable mainstream of educational activity."

2. Key questions

Mainstreaming of contents

First, and most importantly, we need to clarify what is being mainstreamed at the classroom, school and policy levels. Is it:

- Environment as a topic or set of topics, often to be inserted into existing school subjects?
- A way of conceptualising and working with environmental issues?
- A more general pedagogical approach meant to develop pupils' habits of critical and reflected thinking and taking responsibility for their own learning?



The degree to which these various dimensions of environmental education are articulated and weighted in national education policy varies from country to country. The first approach, integrating environmental topics into schools having traditional curricula and teaching methods, was prevalent in the early stages of environmental education development. It is now generally viewed as insufficient to reach the goals of developing not only knowledge, but also attitudes, capabilities and behaviour for sustainable development.

Most European countries today are setting higher ambitions for their environmental training and have revised or are revising their curricula and reforming teaching practice to be more problem- and issues oriented, and to emphasis development of the pupils' critical thinking and responsibility for their own learning.

Environment or sustainable development?

For many, the term "education for sustainable development" has replaced "environmental education" in the 1990s, apparently indicating a wider content than environment per se. The intention of this semantic shift is to signal a widening of focus from concern primarily for nature and the non-human environment, to an approach emphasising the interdependency of human welfare and a healthy environment.



"Sustainable development" as a concept was introduced in UNCED's report "Our Common Future" and followed up by Agenda 21 and Local Agenda 21. In the sustainable development approach, peoples' economic and socio-cultural welfare are central developmental goals on equal footing with environmental protection.

The idea that "environmental education" has erroneously left out human developmental needs and needs to be revised to be compatible with the concept of sustainable development, is misleading however. One of the very first definitions of environmental education was the Tbilisi Declaration of 1977 which was signed by many UNESCO member states.

The goals of environmental education as stated in the Tbilisi Declaration were:

"to foster clear awareness of, and concern about, economic, social, political and ecological interdependence in urban and rural areas;

to provide every person with opportunities to acquire the knowledge, values, attitudes, commitment and skills needed to protect and improve the environment; and

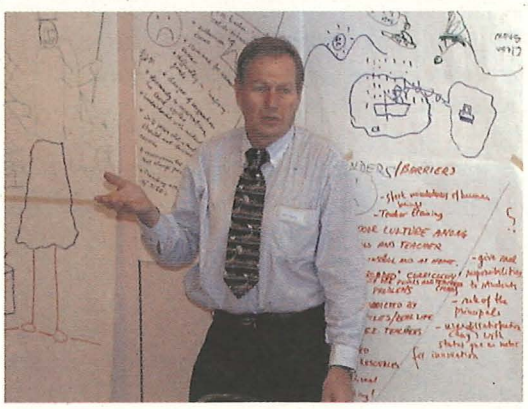
to create new patterns of behaviour of individuals, groups and society as a whole towards the environment."

These goals leave no doubt that the human and socio-political dimensions of environment were present from the start as goals of environmental education. It is therefore not correct that the term "environmental education" implies a nature conservation approach. However, the Tbilisi goals were perhaps not fully understood by many practitioners and policy-makers. When interpreting the goals and implementing environmental education projects and programmes in the 1980s and 1990s, the result was indeed often a more narrow focus on nature preservation than the intentions embodied in the Tbilisi Declaration.



Adopting the term "education for sustainable development" may indicate a subtle but important ethical point. It implies a primarily anthropocentric view in which fulfilment of human needs is the foremost justification for environmental protection work. Idealistic concern for nature per se, on the other hand (a biocentric or ecocentric view) is an ethic which many people in both the developing and developed world clearly do not identify with. The innate value of species and ecosystems - apart from their value for people - is not an argument that garners widespread support in the public debate today.

"Environment" per se is not as popular a cause as it was in the 1970s. Replacing "environmental education" with "education for sustainable development" may therefore be a necessary move if environmental education is to receive widespread support and legitimacy. In terms of mainstreaming, the shift to "education for sustainable development" is thus probably prudent. The term reflects, as mentioned above, the prevailing ethical view of nature and leaves no doubt that present and future human welfare rather than altruism or identification with other life forms, is the primary motivation for environmental protection work.



One would think that with an increasing emphasis on sustainable development as a goal, there would also be increasing importance attached to education about global environmental issues such as resource distribution and alleviation of poverty. However, it is not clear whether the global issues are being mainstreamed as content to the same extent that local environmental issues such as water quality and waste treatment tend to be.

Mainstreaming as a process

Mainstreaming environmental education involves introducing specific content and teaching practices in the learning arena where pupils and teachers meet. However, we may also understand mainstreaming as the personal and organisational learning processes that underlie and enable these pedagogical and didactic changes.

If we understand mainstreaming as a system-wide process leading to a collective (rather than individual) change in classroom practice, then we need to ask what mechanisms or instruments are effective in inducing such change?

Key factors might include, for example: creation of legitimacy/authority, teacher training and other kinds of competence-building, organisation and support structures in schools, financial resources and networks of co-operation.

Understanding mainstreaming as a process of educational change leads to a host of other open questions about school development and change processes that are ripe for research and development work:

- How can the education system provide these kinds of support structures schools need? How can schools be supported to work actively in the local community?

- What human resource development and teacher training is needed to ensure adequate competence in environmental education?
- How can the whole teaching staff and school staff become involved in school development and school management?
- How can results be "spread" or more schools become involved?
- How can internet, publications, meetings, etc. be used most effectively?
- How can environmental education be related to school reform more generally?
- How can environmental education be linked more closely with environmental priorities and action plans?
- How can educational development, activities and change be documented?
- What research is needed to support efforts to mainstream environmental education?
- How do evaluation and reporting procedures need to be changed to reflect changes in goals and practice?
- How can EE gain widespread support, legitimacy and authority in an era of school reform with many priorities, and decreasing interest in the environment?

3. Status of mainstreaming in ENSI countries



This chapter summarizes overall impressions from the country reports submitted by ENSI co-ordinators from 13 member countries and discussion of these at the workshop. Based on this material, comments can be made about general trends as to the degree to which environmental education is mainstreamed, the status of policy to mainstream environmental education and research on mainstreaming processes in ENSI countries

Mainstreaming goals and strategies

The nature of environmental education, the overall role of the education system in sustainable development and goals of mainstreaming were clear to the workshop participants. Mainstreaming means extending the goals of environmental education to the entire education system so that all pupils receive instruction that develops the knowledge, awareness and skills needed to contribute to sustainable development in their personal and working lives.

The concepts of environmental, economic and socio-cultural sustainability should be integrated into instruction at all levels where it is relevant. Furthermore, the instruction should have qualities of active learning and the learners should become involved in resolving real-life sustainable development issues at the level of the school and local community. Pupils will thereby not only gain interdisciplinary knowledge and understanding of complex issues, but also develop attitudes, values and the ability to act.

In contrast, strategies and approaches to achieving mainstreaming (actual or possible) were not as clearly conceptualised and formulated. Many of the country reports revealed a lot of activity and development work going on that could contribute to mainstreaming and that had mainstreaming as an implicit or explicit goal. But at the same time there is a surprising absence of both quantitative and qualitative research about the degree and pace of mainstreaming and the success of various approaches to integration and legitimisation at the school and policy level. Evaluations in Sweden and other countries (see box) confirm the impression that the environmental dimension is still far from being adequately mainstreamed.

"An evaluation of environmental education was carried out in 1996. It showed that many schools have a praiseworthy, ambitious and constructive approach to the environment and that the environmental dimension has become much more prominent in schools over the preceding 10 years. But the evaluation also revealed that universal implementation was lacking. It is still primarily the most committed and interested people – the real enthusiasts – who are involved in environmental education."

Siv Sellin, Sweden

It is a serious dilemma that excellent pilot projects and programmes may spread and give a mainstreaming effect, but they need not necessarily do so. They could possibly even work against mainstreaming by giving teachers, schools and the school system as a whole an alibi for not introducing these methods and contents more universally. If some schools and teachers are doing good projects on environment and sustainable development, then everyone else can work on other pressing areas!

There is therefore a need for greater focus on and awareness of the "mainstreaming challenge" and for a body of theory and research to support policy development for mainstreaming.

Legitimacy through the curriculum

National educational authorities have the power to directly or indirectly instruct schools and create a favourable environment for change by endorsing the aims and methods of environmental education in curriculum plans, letters to schools, published guidelines, requirements for reporting, examinations, etc.

In a number of countries where such legitimisation

from the top down is weak, good environmental education projects may well happen in schools due to the efforts of teachers, principals, non-government organisations, etc. Without support from the top, however, mainstreaming at the school management level and in all schools and teacher training is difficult if not impossible.

"Pedagogical and methodological approach is free in Flanders and therefore the implementation strategies of the educational authorities are: information, evaluation of schools by the inspectorate, basic competencies for the starting teacher through initial teacher training, in-service training priorities, and research priorities."

Christine DeConinck, Flanders

In some countries such as Australia, Germany and Belgium, authority for the curriculum is delegated to regional authorities. Legitimacy here is achieved not through a common national curriculum, but through all of the regional curricula or indirectly at the national level, for example by follow-up of Agenda 21 or through decrees.

Environment as a topic has been widely incorporated in new curriculum plans and reforms in most countries and top-down legitimacy would therefore seem to be in place. However, the broadness of the environmental education concept varies, as does the pedagogical content. Environment often appears as a set of environmental topics in various subjects, or as a cross-curricular theme which is the responsibility of all teachers and subjects (see comment from Austria, in box).

National curricula traditionally focus on specifying the subject contents of education and to a much lesser extent the learning methods to be used. In some countries such as Norway, project work is prescribed in the national curriculum. In addition, methodological guides have been produced by the ministry to supplement which describing in greater detail methods such as active learning, project work, analysis of issues and conflicts of interest, etc. If followed up in teacher training and school development work, such methodological guides could have great significance for mainstreaming.

"Environmental education is an instruction principle, i.e. its educational and vocational training tasks cannot and should not be assigned to one or a few instruction objectives, but are rather only to be mastered in a cross-curricular co-operation of many or all instruction objectives."

Günther Pfaffenwimmer, Austria

As discussed in the introduction, early efforts in environmental education tended to emphasise nature conservation and management of environmental problems even though the goals as expressed in the Tbilisi Declaration were consistent with a sustainable development framework. Sustainability and the societal framework for sustainability includes economics, politics, attitudes, culture and the formation of culture, environment in everyday life and as part of vocations. This broad perspective and societal agenda has not been integrated in school curricula to the same extent as the more narrow "environmental problems" approach.

Just as there is tension between environmental protection and sustainable development, there is also

"Following the TIMMS study on mathematics and science education we have a great discussion about the core curriculum and a discussion about the main issues of school education versus cross-curriculum activities."

Reiner Mathar, Germany

tension between the traditional school disciplines and a more cross-curricular, problem-based approach. Interdisciplinarity is not yet fully legitimate and understood in many countries and in the culture of school management (see comment from Switzerland, box). The degree to which a cross-disciplinary and project- or problem-oriented approach is authorised by the curriculum varies from country to country.

Good interdisciplinary instruction depends on and complements a sound foundation of disciplinary knowledge, yet is often viewed as conflicting with traditional views of knowledge and of teaching as

transmission of knowledge. Some countries reported that international quality criteria based on measurement of disciplinary knowledge in maths and the sciences have tended to fuel this conflict and increase the emphasis on subject knowledge, traditionally transmitted.

Enabling factors for implementing the curriculum

Strong official legitimisation can be considered a "necessary but not sufficient condition" for mainstreaming. In countries lacking strong legitimisation in the curriculum, researchers and practitioners often felt they were working in opposition to official priorities. As a result they often allied themselves with NGOs and other partners outside the education system. Some countries reported having the advantage of strong national or regional legitimisation of environmental education, but many additional policies and programmes were needed to support and successfully implement the instruction prescribed by the progressive curriculum.

In most countries, responsibility for organising and implementing instruction and for school buildings and grounds is devolved to the schools themselves or their owners. Overcoming barriers at the local level needs to be addressed in terms of *what schools and local communities need to become motivated for and capable of changing their instructional practice* in line with education for sustainable development.

> *"The mainstream of development for EE means to prepare teachers, to publish new teaching and resource materials, and to work out new methods for effective EE collaboration with the local civic sphere for environmental protection."*
>
> *Peter Havas, Hungary*

The country reports suggested a number of critical enabling factors for schools (see for example quotes from Flanders and Hungary, in boxes). These factors include:

- adequate financial and time resources for planning and implementing the instruction
- general competence in environmental education by the entire school staff
- competence in interdisciplinary subject material and learning methods in environmental education in the teaching staff
- support services and teaching materials to supplement and develop teachers' competence
- school development and school leadership to develop a school-level organisational framework for environmental education (co-operation among teachers, co-ordinated lesson plans, time for projects and excursions, etc.)
- school development and school leadership to establish a network of links with the local community, businesses, local authorities, NGOs, centres of competence in sustainable development issues, etc.

Support for school development

In light of decentralised authority for school curricula and/or a high degree of local autonomy in many countries, many of the workshop participants felt that the most effective instruments for promoting environmental education would be those giving direct support to schools for their development work. This might take many forms: teaching materials, programmes, consultants, networks of information and co-operation with environmental experts, training, environmental studies centres, etc. All of the country reports mentioned at least one of these support measures for schools as an important instrument for mainstreaming.

> *"The National Board of Education has sent this year to all its schools instructions for the self-evaluation of activities promoting sustainable development and two guidebooks titled Sustainable development and school work and Sustainable development in educational establishments – a guide to eco-auditing. With the help of these instructions and guidebooks the schools are supposed to be able to identify their strengths and weaknesses with regard to sustainable development."*
>
> *Eero Nurminen, Finland*

School development support measures will promote bottom-up development at schools, which hopefully corresponds with the top-down goals set by the national curriculum, Agenda 21 and other central guidelines. By supporting schools directly one stimulates active learning by the teaching staff and a participatory school development process.

Organisation and financing of environmental education

Many schools do environmental projects, but the institutional framework and qualities of these projects varies greatly. While some focus on developing attitudes, behaviours and understanding complex interactions in society, others may be ecological in focus. Some are the result of teacher or school-level innovation, while others are organised by the educational authorities, research institutions, environmental NGOs or even economic interest groups such as oil companies.

"New institutions are becoming interested in EE...In many cases these new institutions are starting from the beginning, mainly offering to schools information about ecology and environmental problems or rules for environmental behaviour and using the schools as a 'resonance box' for announcing their existence to citizens. It is not clear whether the Ministry of Environment network will be able to connect all these new entries in the system... This will be a very important point for future evolution. Because of their new autonomy, schools will be interested in the outside support given by local authorities, associations and agencies, especially if this also means some form of financial or training support. The out-of-school system could become more important than the educational system for going from the pilot to the mainstream.

Michela Mayer, Italy country report

Financial resources and support structures for innovative schools and projects exist in many countries, but these are usually organised on a short-term project or programme basis. Sustained funding was present in a few countries in the form of permanent positions or assignment of responsibility to various bodies in the education sector, and integration of environmental education into regular teaching training programmes. Development and financing of permanent support structures is a central issue for mainstreaming.

Environmental education and school development

Environmental education is often viewed as competing with other priority areas in schools. Many countries mentioned this problem in their reports and in discussions (see quotes from Germany, Denmark and the Netherlands, in boxes).

"In the Danish Department of Education there is a clear understanding of the gap between the formal requirements of the school act of 1993 and follow-up publications, and the reality for EE in schools. But at the same time other challenges for the schools are in focus. The competition between EE and all these expectations are intense, and many teachers react as overwhelmed. It seems crucial that EE should function as a vehicle for the integration of such challenges to avoid fighting for room and resources at schools."

Søren Breiting and Finn Mogensen, Denmark

Alternatively, environmental education could be viewed as a catalyst for school development work more generally: both development of the school as a dynamic organisation and development of educational approaches that promote dynamic qualities in pupils.

School development appears in many cases to be an unopened Pandora's box. Environmental education has a high potential to promote pedagogical and organisational development of the school as a whole. However, few if any concrete examples of this could be presented from the ENSI countries. Research, documentation and communication of the findings about how environmental education can promote school development are greatly needed.

A change of focus - away from more pilot projects in

"The interest for EE from schools or from teachers has sharply declined. It appears extremely difficult to find teachers who are willing to join a project or network explicitly labelled as environmental education or education for sustainable development. Why? Because they are all so busy with the overwhelming task of making practice out of the more general innovations stated in the new rules and laws."

Maartin Pieters, Netherlands

schools and towards environmental education as an entryway to school development more generally - will go a long way toward legitimating continuing financing and interest in environmental education research and development.

Agenda 21 and sustainable schools

In addition to the official curriculum and financing, another powerful but often overlooked source of legitimacy for environmental education is national and international environmental policy. Coupling of environmental education and national environmental policy, including follow-up of Agenda 21 and Local Agenda 21 commitments, will also lend authority to environment and sustainable development work in schools.

One dimension of the interaction between the education and environment sectors is that schools and pupils can be important resources for concrete environmental work at the local level. In Norway, pupils will soon be involved in a national programme to census and map biological diversity, a task that might otherwise not be possible due to the costs. The pupils will have access to taxonomists, ecologists, museum collections and other resources through a network and national database with a common methodology. Communication and presentation of results will be on the internet.

A deeper and perhaps even more significant reason to couple educational and environmental policy is that all environmental policy rests on its acceptance by citizens. What better method to engage the support of citizens for government policies to protect the environment, than to involve them in analysing and gathering information in their local community?

Of all of the instruments available for environmental protection, changing attitudes and values is the most important of all because it underlies all other management, economic and regulatory policies. The environmental authorities are beginning to realise the benefits that can be reaped by investing in co-operation with the educational authorities.

Systems for environmental auditing of schools are being developed in several countries. Starting with the school building and operations is an obvious and genial starting point for engaging pupils in concrete work to improve the environment. In Finland a research project is being completed giving data on sustainability practices in schools. Schools have been sent guidelines and methods for conducting an environmental self-evaluation and auditing (see box). In Australia, all schools will be required to have an environmental management statement (EMS) according to ISO 14001 drawn up as part of their annual plans by year 2001. This is part of the national follow-up of Agenda 21.

"All these activities and the fact that EE is not reduced to a few pilot schools in Italy does not mean that EE has really reached the mainstream, especially in secondary school. What we have is a considerable number of teachers and classes involved in EE activities, but it is rare that the whole school decides to consider EE as one of their strong points and to adopt an ecological point of view for the school management."

Michela Mayer, Italy

In Sweden the "Green Flag" project rewards schools that have environmentally friendly operations and integrated an environmental dimension into their instruction. Eco-auditing of all schools is being done in Finland, as mentioned earlier. The European "eco-schools" certification programme is also called "Green Flag".

Internet and spreading of good practice

Many countries mentioned the internet as a key tool for mainstreaming. The assumption seems to be that by putting information about successful projects and pilot school development work on the internet, other schools will find this information and use it constructively in their own development work (see for example Mauri Åhlberg's comment, in box). Internet is clearly a tool for spreading of information with great potential. Unfortunately no research or other evidence was presented at the workshop that could document the effectiveness of the internet in spreading information or developing competence among schools, teachers or pupils.

"We know that innovations are spreading, sometimes slowly and sometimes quickly. Through the internet, the spread of those kinds of innovations which withstand continual theoretical and empirical testing would probably be very fast. We also need plenty of real dialogue, listening to each other, thinking together, not just defending earlier positions."

Mauri Åhlberg, workshop paper

It is therefore unclear whether putting information about environmental education on the internet will actually give the desired mainstreaming effects, and how the results can be optimised.

Successful projects may spread experiences, materials and methods to other schools and thereby contribute to competence-building and mainstreaming. Case studies and school projects have been put onto the internet in many countries, but the internet as a tool for information flow is still young. Research has not been done on how this information is used, whether this actually leads to a spreading effect, and the quality of the resulting instruction. This will be a rich and important field for research in the coming years.

In addition to the internet, traditional communication channels such as journals and conferences should be used fully to give exposure to research and development work in environmental education. Interdisciplinary journals are becoming more common and interdisciplinary studies are gradually gaining acceptance in the academic world.

Co-operation with research centres

Co-operative relations with teacher training institutions, environmental research institutions and other actors can be mediated using the internet. The Norwegian Environmental Education Network is an example of such a meeting-place (see box). The pupils perform environmental monitoring tasks using quality-controlled methods supplied by environmental research institutions. The results are shared nationally and internationally over the internet and the pupils also have contact with the research institutions over the internet if needed for supervision and advisement. The importance of out-of-school actors is also underlined in the report from Italy (see box).

"Experience has shown that interdisciplinary and action-oriented education outside of the classroom is difficult to achieve... The Ministry of Education has realised that it is necessary to build up structural support within EE. The Environmental Education Network is intended to help motivate schools to further develop their own environmental programmes. Within the Network, schools have the opportunity to present their work to a wider audience and to exchange ideas through co-operation with other schools. Information technology and Internet are used to help this information flow."

Astrid Sandås, Norway

Other programmes, such as the Globe programme, are also based on the same model of co-operation with scientific centres of competence. Bringing highly credible national scientific institutions into a close co-operation with schools lends a high degree of scientific quality and credibility to the studies and actions carried out by the pupils, and is also inspiring.

Research needs

The researchers represented in the ENSI network signalled a need for funding for intensive research

and development work on topics such as school development, active learning and interdisciplinary approaches. A strong foundation of academically credible research results documenting learning effects and environmental effects of environmental education is a pre-requisite for permanent mainstreaming and acceptance of these learning methods.

Research is also needed on a wide range of other topics related to sustainable development, attitude and value formation and school development.

Training and human resources needs

None of the ENSI co-ordinators could report that training for education for sustainable development was adequately integrated into pre-service and in-service teacher training. Several countries reported positive developments in terms of curriculum changes and various initiatives. Teacher training has been highlighted in other ENSI workshops and this is clearly one of the most essential factors for mainstreaming. Continuing emphasis on this fundamental aspect of competence-building is required.

"Environmental education is still regarded as a subject of importance in spite of economically dominated developments in schools and in other areas of society. A representative survey in the region of Basel however revealed that only about one third of teachers teaching either natural or social sciences and languages are concerned with environmental issues. This fact shows that environmental education is still not conceptualised as an issue relevant to all subjects."

Regula Kyburz-Graber, Hans C. Salzmann and Christine Bachmann, Switzerland

In addition to pre-service teacher training, training and competence-building can also be achieved through networks, workshops, internet, co-operation and exchange. Short in-service training courses are by themselves generally considered inadequate to bring up the level of competence in schools, but they may be effective when coupled with other kinds of supervision and support. Involving the local authorities, parents and other citizens in such training and competence-building would widen the base of community support and legitimacy for the school's activities. Local Agenda 21 work is expected to increasingly provide opportunities for this kind of competence-building in co-operation with other local actors.

4. Dimensions of mainstreaming

The policy level

Mainstreaming at the policy level has to do with how governments use various policy instruments to create framework conditions and facilitating factors promoting desired kinds of educational practice. These framework factors then directly and indirectly steer change in pedagogical practice in the classroom. Among the most important framework factors are:

- the school curriculum, including goals, contents and organisation of instruction
- the curriculum for pre-service teacher training
- the budget and budgetary guidelines
- priorities and funding for developmental work and research
- in-service teacher training
- other competence-building measures or programmes
- structures of support for schools (guidance, instructional materials, programmes of co-operation, etc.)
- evaluation policy



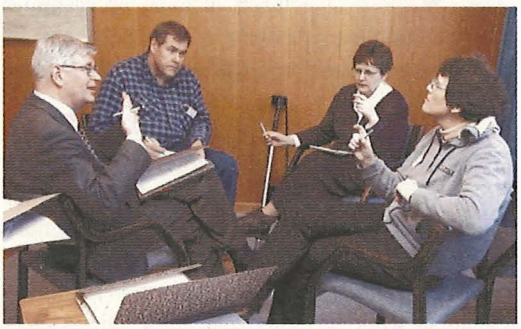
Government-driven strategies are often viewed sceptically by schools and teachers who are fatigued by a seemingly endless series of reforms and circular letters. Such reforms from the top may seem coercive or poorly managed when there are too many changes too fast, or when they are not adequate prepared and accompanied by the necessary support.

For policy initiatives to be well-received and a real help for teachers and heads of schools in their work of school development, a close dialog and understanding between the policy-makers and the practitioners is necessary. Without vertical communication and shared goals, a gap forms between policy intentions and their local interpretation and practice. This dialogue becomes especially critical for effective policy in light of increasing school autonomy and the freedom of schools to develop local syllabuses.

Evaluation is the tool that "oils the works" of the vertical policy-practice dialog. Evaluation and analysis of educational practice informs policy both during initial policy formulation and later during implementation and revision. Professor Michael Williams raised a number of central issues at the workshops related to evaluation and mainstreaming of environmental education:

- Is formal evaluation at the national level important as a strategy?
- Are the new curricula operative documents, and why do teachers have difficulty implementing them?
- How can one reach an understanding of national documents and how they are implemented at various levels? How can evaluations bridge over all levels of the school system?

As evaluation links policy and practice, a national strategy for evaluation is essential for mainstreaming.



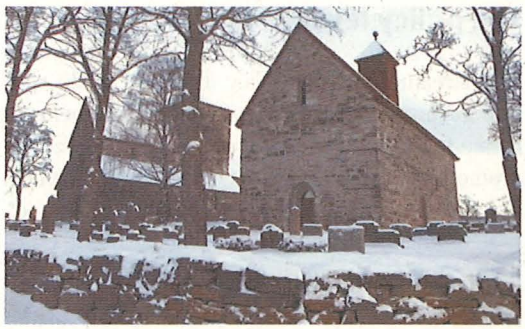
The educational reforms may often be extremely ambitious, requiring not only changes in content and organisation, but also changes in school culture. Lars Monsen (1999) discusses the example of a reform in Norway to introduce a greater level of pupil involvement in planning and implementation of instruction, called "pupils' responsibility for their

own learning". His evaluation of this initiative showed that such reforms were likely to meet resistance in both the school culture, the pupil culture and the teacher culture. "Curriculum change implies more than taking new ideas and methods from the curriculum and implementing them in classrooms," he comments. Thus, educational policy and educational reform and their implementability are inseparably linked to processes of action learning and competence-building at the school level.



Evaluation of environmental education has a history that goes back to the 1970s. The earliest work focused on defining environmental education and its goals, trial projects and programmes and curriculum development. Much of the work was either internal at the level of the school (or even individual teachers and classes) or international. This was followed by more structured national programmes and programme evaluations in the 1980s, and by strategy development and strategy evaluation in the 1990s.

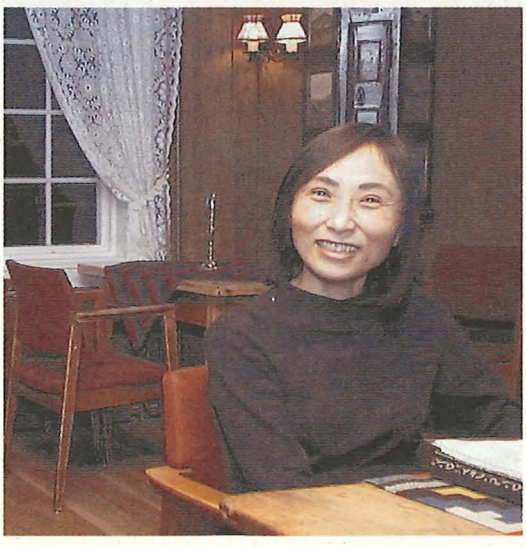
Strategies for evaluation should be adapted to new kinds of goals and working methods in the curricula. For example, as committal co-operative relations with partners in other sectors, NGOs, businesses, etc., become increasingly more central in school development work and curricula, these other actors will also play an increasing role in evaluation. Greater emphasis is already being placed on forming practice through self-evaluation by teachers, students and partners rather than "official" evaluation for the purposes of monitoring and control. Another alternative is external evaluations that are designed primarily to serve the developmental needs of the schools involved.



Thematic evaluations on issues such as methods of delivering environmental education, environmental education as a cross-curricular theme, and criteria for quality and effectiveness (such as knowledge production) are also needed. These are examples of topics that could be further researched through ENSI. As one workshop participant commented, the more important the goals, the more difficult they are to evaluate. How do you evaluate whether environmental education improves participation and democracy, and how do you evaluate the outcomes of action research?

The school level

The goal of mainstreaming at the school level is much more ambitious than occasional environmental projects carried out by a few inspired teachers in a few subjects. Sustainable development perspectives are relevant for most or all school subjects, and

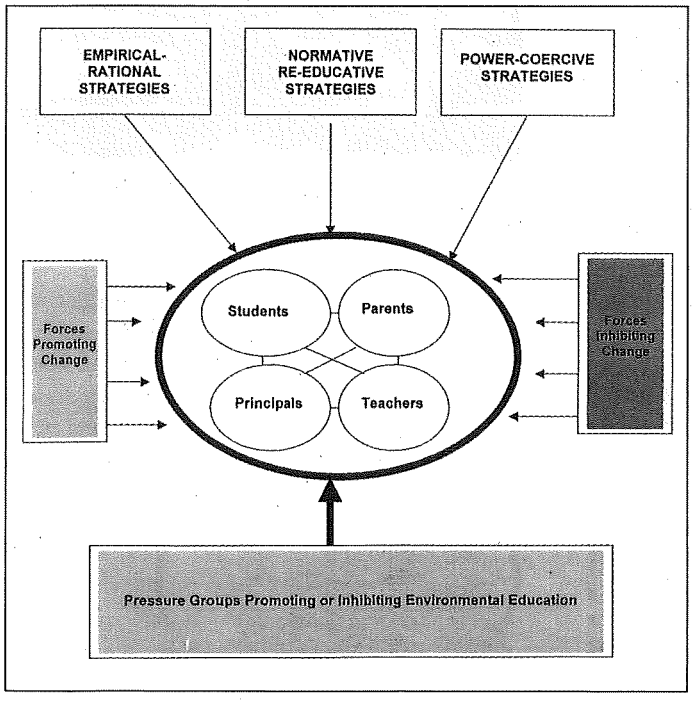


the majority of national curricula give a clear mandate for instruction to develop knowledge, skills, attitudes and behaviours related to the environment. The culture of change and culture of sustainable development should therefore permeate both the instruction, the physical operation of the school and the values and behaviour of everyone involved in school life.

Mainstreaming of environmental education at the school level involves changing classroom practice, school organisation and school culture. In particular, meaningful and sustainable improvement in schools means developing a culture for development and change in the school as a whole.

As the person responsible for orchestrating and leading school development, the head of the school is obviously a central person in terms of motivating and involving the entire school staff in developing a culture for change.

In his workshop presentation, Prof. Michael Williams described the school community and the forces for change and resistance to change (see figure). The "inner culture" of the school is created by students, parents, teachers and principals, while various forces in society promote or inhibit change. Strategies for change may be investigative and constructive (empirical-rational), they may be based on re-educating teachers to adapt to changing norms, or they may more coercive in nature.



Williams described mainstreaming of any given curriculum change at the school level into four stages, during which both the sets of actors, activities and organisational processes involved change and develop.

- Stage 1 is the **awareness** stage, in which an informal team of individual enthusiasts becomes interested in the innovation. In a more or less structured process, they review and evaluate the school situation, including staff, resources, curriculum and current teaching practice.

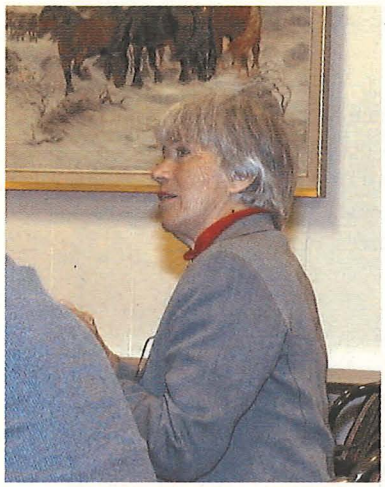
- Stage 2 is **experimentation**. Here the enthusiasts often form a committee to plan, implement and evaluate limited experiments in innovation such as isolated projects, local curriculum development, use of information technology, etc.

- Stage 3 is **consolidation**. Organisational structures are clarified (which subjects or courses are involved) and collaborative relations with partners outside the school are formalised. The methodology and contents from the experimental stage are further refined and a wider range of activities are developed in connection with the reform. By this stage the staff is organised in self-sustaining groups.

- Stage 4 is when the developmental stage is over and the new practice has become **habit**. The entire staff and school community is involved and developmental work consists mainly of competence-building and routine periodic reviews, evaluations and modification of the programmes.

A few key aspects of this school-level mainstreaming should be noted.

The internal action research - discussion, evaluation, planning, evaluation and revision - will to a large extent determine the quality of the result and whether it becomes internalised in the school culture as a habit. Good management and support of these processes by the school leadership is also crucial. If the head of the school is unsupportive of the innovation, it will most likely remain isolated and experimental rather than becoming integrated and mainstreamed, stage 3 and 4.



School management issues in secondary schools were recently the topic of an ENSI workshop hosted by the German ENSI programme, in connection with efforts to mainstream environmental education into all German secondary schools. Competence-building to improve managerial and organisational skills among heads of schools is expected to be one of the most powerful tools to promote mainstreaming of reforms and to develop a culture for change in the school.

Teachers are of course not all alike, some being more receptive to change than others. Prof. Michael Williams referred to recent research identifying factors influencing teachers' openness to change. Among the most important factors were the teachers' educational ideology, uncertainty about the practicality and consequences of the change, expected outcomes, degree of official support for the activity and personal investment of time and energy. This means that it is important for the innovators to be as clear and concrete as possible about the practical implementation, consequences, costs and expected outcomes of the change, in order to increase the motivation and involvement of the entire school staff.

Co-operation with actors outside of the school can strengthen the mainstreaming process at the school level in several ways. Interdisciplinary content is a natural result of contact with the real world outside the school, which is not divided into academic disciplines. Co-operating partners can also suggest a range of interesting activities for pupil participation and a change from the usual classroom situation. A relationship with a partner outside the school also commits the school to evaluating and following up the work, and thus may function as a kind of quality control. Co-operation among schools seems to be inspiring and gives both the school staff and pupils a wider perspective on their own work and alternatives.

Committed and innovative teachers have always been key actors in developing environmental education. Their role changes somewhat, however, if the goal is not just "pockets" of excellent teaching, but development of the school as a whole. Environmental educators have often been mavericks who may feel they are pioneering good educational practice in spite of their colleagues and the education system they are a part of. Many of these innovators may prefer to focus on their own pupils and classroom and view themselves as working in opposition to the education system.



Mainstreaming at the school level will require more of them. Innovative teachers should view themselves as leading actors in an internal change process aiming to involve all teachers at the school, not only a few like-minded colleagues. More re-

search is needed on the roles and potential of such innovators for school development.

Systemic work at the school level in which innovative ideas are captured and to at least some extent incorporated in the overall school development work, will also tend to lessen the "burnout" syndrome that the maverick teachers also experience. The photo above is the Swiss exhibit, illustrating the problem of "burned out ideas"! Sustainable enthusiasm on the part of the enthusiasts requires that they be heard and appreciated as the valuable resources they represent for school development work.

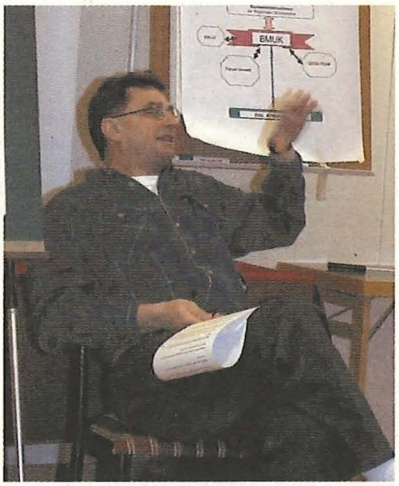
Whole-school development work can be stimulated by challenging schools and teacher training colleges to make action plans and design their curricula. Profiling of schools and colleges can also be a way to cut through overcrowded curriculum, social and language problems to develop a school identity everyone can identify with.

Just as environmental education can benefit from research on other kinds of school reform, school development work in general can also benefit from ENSI experiences. For 15 years, ENSI has experimented with and documented a wide range of action research and development processes in schools. The workshop participants felt strongly that this material should now be more actively profiled and used as a contribution to the more general debates on school development and educational reform. For example, case studies should be put on the internet with examples showing how the action research was conducted and how this promoted school development processes as a whole.

The pupil learning level

The "bottom line" of mainstreaming is whether the learning culture of schools - the meeting place of teachers and pupils - improves. ENSI has emphasised active involvement of pupils and the quality of learning that takes place, for example:

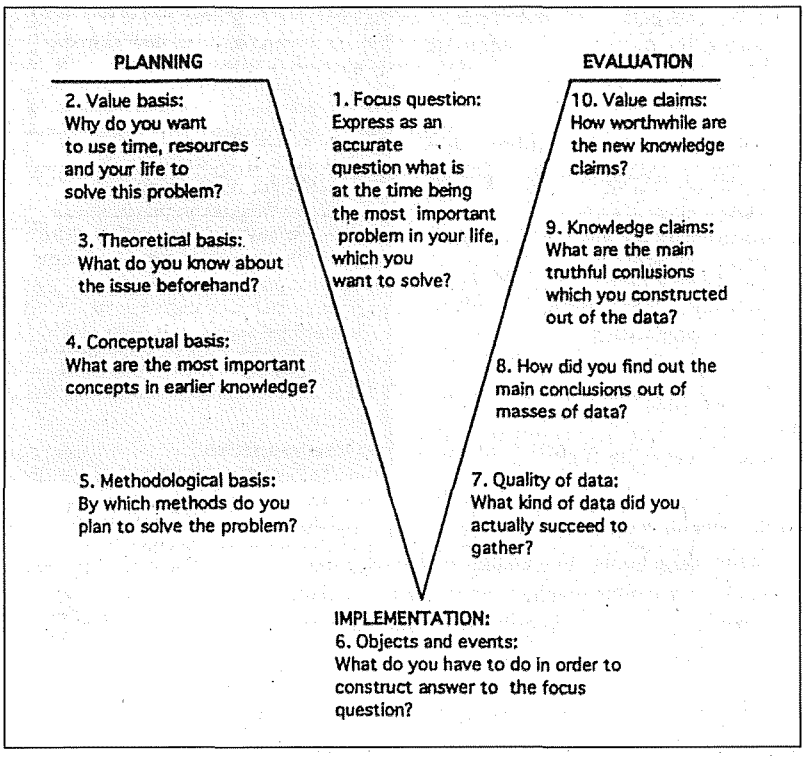
- pupils construct/produce knowledge rather than receiving knowledge transmitted by teachers and textbooks
- pupils are active and take responsibility for their own learning, including planning and evaluation/reflection.
- pupils develop skills, attitudes and behaviours related to the environment
- pupils develop dynamic qualities by participating in real-world issues and contributing to sustainable development.



There are many prerequisites for this kind of learning environment. The culture of interaction between teachers and pupils changes, as does the entire learning process: what pupils and teachers undergo in schools. For pupils to become equal partners in learning, teachers need to learn to listen and work together with pupils rather than directing their activities.

This requires a very different kind of teacher training and teacher competence than is traditionally provided by teacher training colleges. Thus, either a revision of pre-service training or additional in-service training is needed to mainstream this fundamentally different approach to learning. Such revisions are underway in many countries, and research is needed on the results. If those who train the trainers don't have the needed competence either, the results will be accordingly. Additional strategies would then be needed to raise the competence of the teacher trainers or bring in additional competence to the teacher training colleges.

A second prerequisite is a basis for interdisciplinary, action-oriented learning in the local curriculum. This often means setting priorities and simplifying the teaching plan (at least for some hours, days or weeks) to allow for more unstructured time in which the pupils are active. In some, but not all countries, the general curriculum authorises or even mandates local teaching plans with a strong element of topical, thematic, issues-based and project-based learning. In other countries revision of the local curriculum along the lines of environmental education doesn't have the benefit of such clear legitimacy. Prof. Mauri Åhlberg presented an example of how Vee-heuristics can be used to promote active



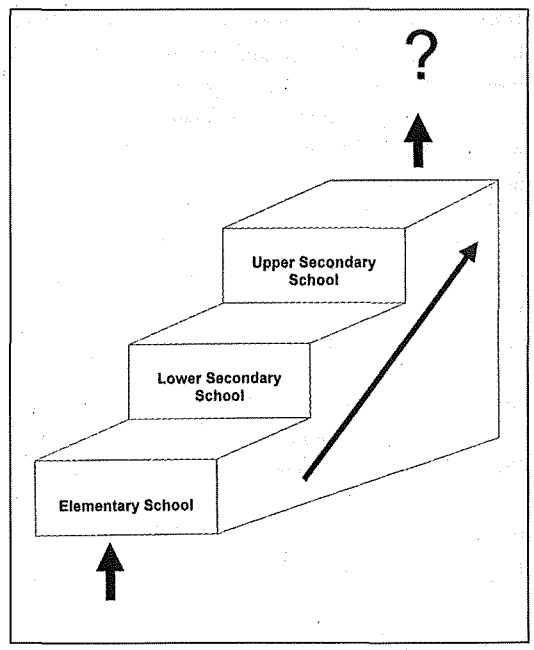
learning (see figure), together with concept mapping. His pupils have applied these methods with success in Finnish primary schools.

Changing established practice to creating a more active, dynamic learning environment requires extra resources in the developmental phase. This does not necessarily mean that such teaching will be more resource-demanding in the long term than traditional teaching methods, however. The pupils are independently active and their interaction with the teacher happens both as a class, in groups and individually. Methods for monitoring and evaluating learning set new kinds of demands for teachers, for example, reading and commenting on log books and reports rather than traditional grading of examinations. Research is badly needed on the teachers' use of time in this kind of learning situation. Many teachers report that project work is demanding, but this may not be the case in the longer term if the entire school staff becomes involved and external partners also actively support the instruction.

One often hears about insufficient funding for project work and investigations. Transportation to investigation sites, research materials, literature, etc., may all present insurmountable economic barriers, even though the amount needed is a minuscule percentage of the entire school budget. One could say that the requirements of this kind of learning have not yet been mainstreamed into budget priorities.

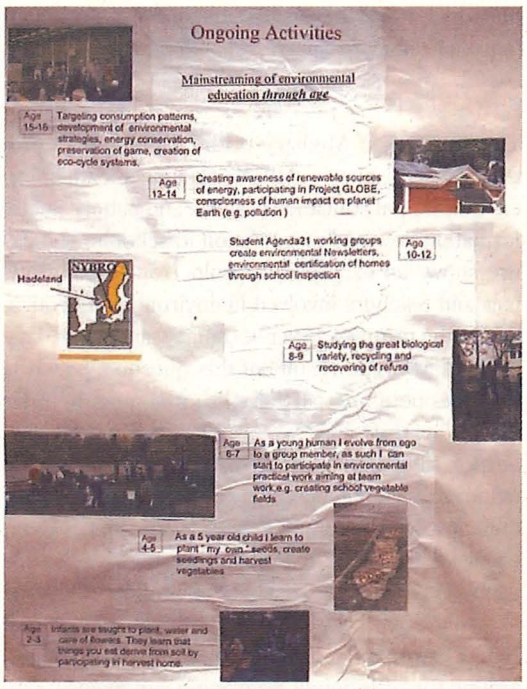
Lifelong learning

The ultimate goal of environmental education must be to integrate ecological and sustainability thinking into the minds of both pupils and teachers. The school years should build a foundation for the pupils' lifelong learning (see figure, Williams 1999).



It is almost a contradiction in terms and a hopeless starting point to have teachers who have low competence and little concern for the environment and sustainable development, to construct local curricula and be role models for the coming generation. Real life in European countries and western lifestyles clearly do not pass the "sustainable development test." But how can teachers and schools present and work constructively with these contradictions between what we should do and what we do?

Knowledge, attitudes, skills and behaviours are built over a lifetime and are the result of the pupil's



contacts with society outside the school as well as inside, and his or her experiences both before and after formal school education (see figure). As an adult, one is bombarded with new and constantly evolving information about serious environmental and development through the media. This perspective of environmental education as a lifelong project is often missing. Higher education and adult education seem to be treated largely as separate matters.

The Swedish ENSI programme presented an example of how activities at different ages can be unified or mainstreamed into a progressive development from age 2 to 16 (see figure). More of this kind of work and research on the learning results is needed.

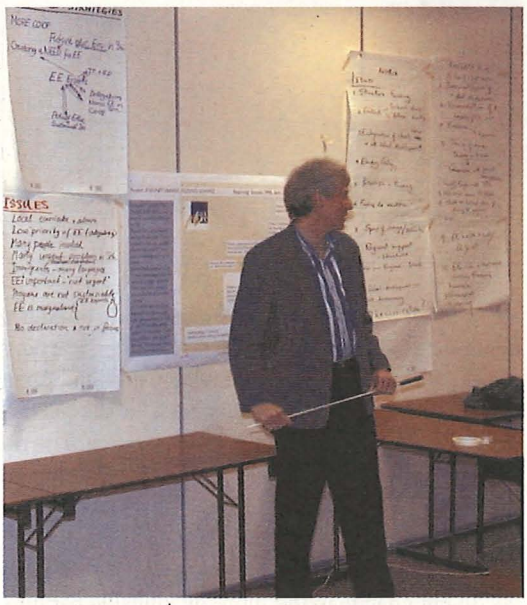
Research

Critical and reflective research on mainstreaming processes is necessary to inform policy-makers. Whereas evaluation is directed toward specific policies, programmes and strategies and their effects, research is directed toward elucidating developmental processes and the school as an organisation more generally.

When the research elucidates key mechanisms and processes in the education system, it provides a basis for formulating effective strategies and may be called "strategic research", meaning research with a strategic purpose (as opposed to basic research whose purpose is to generate knowledge). For example, a programme of strategic research could be developed toward the specific goal of supporting mainstreaming of environmental education.



In the sections above, a number of strategic research needs have been pointed out in the area of policy, school development and learning in the context of environmental education. The goal of this research should be to produce information that is actively used to build competence and stimulate discussion and reflection about the programmes and strategies in question. In other words, it should be fed back into action research at the appropriate level (schools, policy-makers, other researchers or teachers and pupils). The medium for presentation



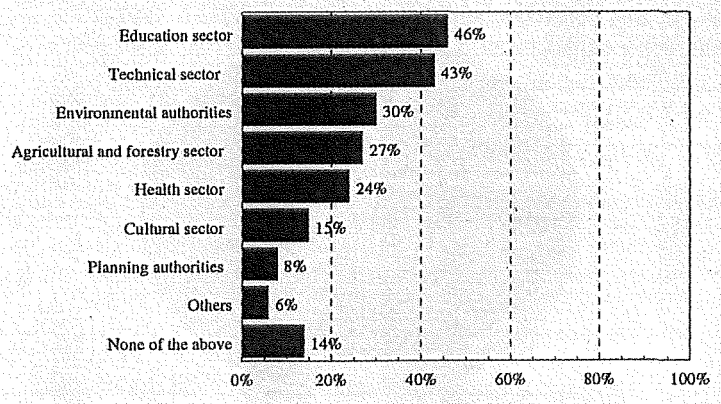
and discussion can be workshops, the internet, and co-operation. Publications and information are not a goal in themselves, but rather a means of communicating ideas, developing human resources and cre-

ating a learning environment for change.

Since mainstreaming is essentially a process of educational change, one obvious kind of strategic research that is needed is documentation of change and factors and processes leading to change. Both quantitative and qualitative methods are needed.

Qualitative accounts and case studies are appropriate when researching processes such as organisational development work in the school or learning effects for pupils. Such research, using an action learning approach, then feeds back to the participants who learn by conducting the research. The research itself becomes an integral part of the change process.

Question 8:
Whom do the school co-operate with at the municipal/ regional level regarding environmental issues?



Quantitative surveys and censuses are also useful to document change in the more quantifiable parameters such as teaching practice, curricula, co-operation, competence, information flow, etc. Censuses and surveys are a less participatory approach in which the research itself is not a learning process, but which nevertheless give quantitative documentation of change that are reliable and strategically useful.

The Norwegian Ministry of the Environment presented such a survey at the workshop, documenting environmental education practice and patterns of information flow and co-operation in schools. The figure shows an example of results from 1600 principals and teachers involved in environmental education at the primary, lower secondary and secondary school level. The results of this question, which is able co-operating partners, shows among other things that the technical sector is an important partner for schools whereas, perhaps surprisingly, the cultural sector and planning authorities are only seldom involved in environmental education. About one-seventh of the teachers have no co-operative partners when teaching about environment.

Has a strong "culture of research" developed around the question of developing and mainstreaming environmental education? The answer must unfortunately be no: research on educational change processes related to environmental education is still dominated by descriptive documentation of cases and pilot programmes and their learning effects, rather than a systemic understanding of the forces and instruments of change.

Williams describes a "mature research culture" as having, for example, strong international funding and opportunities for training; a sustained core of theory and research issues independent of personnel; and an established infrastructure of journal, textbooks, conferences, etc. While this can be argued to be the case for environmental education, the same cannot be said about environmental education research. ENSI could play an even more active role in the future in developing a mature research culture in the field of environmental education and school development.

5. Toward a strategy for mainstreaming

This workshop documents that after more than two decades of substantial and significant research, development work and policy strengthening in many countries, environmental education is still far from being integrated and mainstreamed into the education system as a whole.



The participants discussed gaps of knowledge and a range of approaches to effectively achieve a wider and more permanent integration. There is little or no evidence to indicate that the prevailing "lighthouse policy" which focuses on developing good pilot projects, actually leads to a more generalised change in practice - mainstreaming.

There is no shortcut to mainstreaming. The recipe includes ingredients of government policy, school organisational development work, pedagogical and didactic development related to education for environment and sustainable development, and not least the creation of a culture of evaluation and research to inform, support and guide these efforts at all levels. The action research paradigm can be applied to all of these levels.



This is a comprehensive agenda. If progress seems slow, perhaps it has to be. Deep-reaching changes in the school system and in the competence and working methods of teachers cannot be expected to happen within one or even two decades. A great deal of progress and learning has occurred in the decades since the Tbilisi Declaration in 1977, but the challenges and ambitions are continually changing.

The challenge of the future is to adopt a systemic view of the change process and to how government policy, school organisational development, pedagogical and didactic development and research and evaluation work all interact to impact how and what pupils learn in schools. Permanent change - mainstreaming - requires an understanding of dynamics of the total situation. Many barriers to mainstreaming were discussed at the workshop. Perhaps the greatest barrier of all is the absence of a systemic understanding of what is involved in successful, wide-reaching educational reform.

A successful multi-pronged strategy for mainstreaming environment for sustainable development will need to address several limiting factors simultaneously. These can be generalised under the following headings: legitimacy, human resources, co-operation, sustainable financing and evaluation. A set of potential goals for such a strategy might be:

Goal 1

Establish the legitimacy of environmental education

The educational and environmental authorities clarify through available steering instruments (curricula, circulars, budgetary guidelines, etc.) that environmental education/education for sustainable development is a mandated component of education

at all levels and for all pupils and a central priority in environmental work.

Goal 2

Ensure an adequate base of competence and human resources

Pre-service and in-service education and other competence-building strategies (networks of co-operation and other support structures for schools) ensure that school staff and heads of schools have necessary didactic and pedagogical competence in environmental education and in school development work based on participatory, action learning approaches.

Goal 3

Build networks of co-operation to strengthen and improve the quality of instruction

Establish long-term co-operation with actors and sectors outside the school system for the purpose of environmental education, and create favourable conditions for such co-operation by establishing funding mechanisms and model agreements for co-operation at various levels.

Goal 4

Develop sustainable financing modes

Through allocations in regular budgets and budgetary guidelines, ensure a reliable base of government funding for school development work, implementation of environmental education and research and evaluation activities.

Solicit long-term funding support for environmental education from relevant international organisations and businesses.

Goal 5

Continual adjustment and improvement through programmes of participatory and external evaluation and research.

Establish and further develop programmes of strategic research and evaluation to inform and guide work at all levels to mainstream environmental education.

Establish modes of communication and information exchange to make the knowledge generated available and ensure its active use in development work at all levels.

6. Implications for the ENSI programme

Workshop participants reported that environmental education is now to a large extent integrated in formal curricula and educational goals, yet this form of instruction is still far from being universally implemented in schools. Ironically, as global environmental issues become more pressing by the day, "environmental fatigue" and "reform fatigue" is setting in.

The general decline in interest and momentum in environmental education is due to a number of factors internal and external to the school system per se. The demands of general school reform activities and the large number of urgent topics schools are being required to deal with, tend to compete with rather than complement environmental education.

In order to meet these challenges, the workshop participants emphasized the need to focus and define the identity and role of the ENSI network. The following points were raised in a short discussion about implications of the mainstreaming dilemma for the contents and working methods of ENSI.

1. ENSI activities should be explicitly linked to the official priorities of the education sector. By demonstrating the relevancy of ENSI and environmental education to school reform activities in general, they will gain legitimacy as one dimension of educational reform. ENSI should be viewed as an example and forerunner of general educational reform and results from the ENSI programme applied more widely in this context.

2. The work of ENSI and environmental education in general should be explicitly linked to national and international environmental priorities and strategies, including Local Agenda 21. ENSI should be oriented towards globalisation and developing a culture of sustainable development: global ecological citizenship. Education is an essential component of work for global sustainable development and schools should be viewed as a resource to be actively used in concrete work at the local level toward this goal.

3. The principal audiences and benefactors of the ENSI network need to be clarified and offerings made by the network to specific groups such as students, teachers, teacher trainers, researchers and policymakers. For example, ENSI experiences in the area of active learning could be offered as resources for pre-service and in-service teacher training. The CERI series "What works" should be considered as a model.

4. ENSI should clearly address the issue of lifelong learning needs of pupils, teachers and communities. ENSI should encourage a view of environmental education as a long-term and continuing process throughout a lifetime rather than isolated incidents.

5. ENSI's function as an active international forum for debate and exchange of experiences within environmental education policy, research and development should be strengthened. The ENSI school networks and the national ENSI co-ordinators have a high level of competence and experience which should be highlighted and made available to others outside the network. In particular, ENSI has long experience with research, innovative instruction and evaluation and organisational development at various levels of the school system, ranging from the classroom to the policy level.

6. The international visibility of ENSI programmes can be strengthened by building stronger alliances and co-operation with like-minded organisations nationally and internationally.

7. Full exploitation of the potential of IT to promote information flow, competence-building and co-operation networks should be given high priority in ENSI programmes and strategies. The ENSI website should if possible be interactive and function as a site for co-operative learning in the spirit of ENSI.

7. Afterword

Mainstreaming has proven to be an exceptionally complex topic, involving deep system change at several levels of the education system. This workshop represented only a start to what may become a fruitful area of work for ENSI.

We initially approached the subject of mainstreaming with the idea that barriers could be identified and strategies developed to spread and integrate the kind of educational practice that ENSI stands for to all teachers and schools. After holding these initial discussions, one is struck by the previous lack of attention to and awareness of this issue, the absence of national strategies explicitly addressing the issue of mainstreaming and the need for research on the effectiveness of various mechanisms and instruments promoting mainstreaming. Mainstreaming is clearly a topic calling for much more work.

As Fullan suggests, the success of school reform hinges on developing the capacity for organisational change. ENSI's founding concept, "action research to develop dynamic qualities", is thus more relevant than ever. Action research and development of dynamic qualities can be applied much more widely than just in the classroom, as a tool for mainstreaming. ENSI has demonstrated that group learning, critical thinking and knowledge construction through investigation and discussion develop dynamic qualities in schools pupils. The same processes may also be applied elsewhere in the education system to develop and improve school management, teacher training programmes, lifelong education and policies for sustainability reaching over the education, environment and other sectors.

Outside the formal education sector, action learning can be applied toward the goals of sustainable development and lifelong learning in a wide range of contexts ranging from community development programmes and the work of non-government organisations to municipalities and companies. Action research, participation and development of dynamic qualities is not only a key to mainstreaming environment and sustainable development in the education system, but also to achieving sustainable development in society as a whole.

8. Summary

1. About the workshop

A strategy workshop was held December 9-12, 1999 in Norway on the topic "From the pilot to the mainstream: generalisation of good practice in international environmental education". The workshop was organised by the Royal Norwegian Ministry of Education, Research and Church Affairs, the Environment and School Initiatives decentralised network for environmental education, and the OECD Centre for Educational Research and Innovation. Forty-eight invited policy-makers, teacher trainers, researchers and environmental education practitioners from 12 European countries and the United States participated in the workshop. The workshop was participatory in its methodology, combining presentations, discussions, poster sessions and working groups.

The purposes of the workshop were 1) to discuss what is involved at various levels in mainstreaming and attempt to clarify and define this concept by presenting and discussing experiences in their countries, and 2) to discuss barriers to widespread change of practice from their standpoint and attempt to identify successful strategies for effectively bringing environmental education from the pilot stage into a more central role in educational reform processes. The workshop thus aimed to identify main issues related to generalisation of good practice, and to initiate a discussion of what this implies for school development work generally and for ENSI network activities specifically. While answers were not found to many of the questions, the discussions were lively and brought the issue of mainstreaming "onto the table".

2. The status of mainstreaming and strategies for mainstreaming

Environmental education has been integrated into most general school curricula. In addition, educational authorities in a number of participating countries have delineated strategies for widespread and permanent introduction of environmental education. These strategies may include actions such as integration of environment into teacher training, financial and consultant support, production of materials and a range of EE programme offerings to schools.

Despite these efforts and agreement as to the importance of global environmental responsibility and its integration into curricula, the degree of goal attainment in instructional practice seems to be generally low. There are many pre-conditions for successful universal implementation, at all levels of the education system: policy, curriculum, teacher training, research, the school or the classroom. Many of these pre-conditions will require long-term organisational development and establishment of new ways of working and new, permanent structures for co-operation and information exchange.

Through the years of its existence, the ENSI decentralised network has particularly focused on developing dynamic qualities in pupils as well as action research and reflected practice at all levels of the school system as a means towards this end. These characteristics of high quality environmental education, as it is understood in the ENSI network, pose a much greater challenge with regard to mainstreaming and widespread adoption in schools than environmental education in the more narrow sense of "teaching about the environment".

The ENSI approach involves building competence in action research and creating structures and processes at all levels of the school system to encourage and support a self-critical, innovative and interdisciplinary approach. The goal of widespread introduction and adoption of such a critical, reflected approach was thus viewed as closely related to the more general school reform taking place in many countries.

The transition from pilot projects in environmental education to wide-scale integration as a permanent feature of school systems will be a central challenge for policy-makers and programme developers in environmental education in the coming years. Strategies to achieve such mainstreaming require further research and development work and follow-up both nationally and internationally.

3. Towards a strategy for mainstreaming of environmental education

Some of the common denominators for success are: frameworks for sustainable financing, interdisciplinary/intersectoral co-operation, long-term compe-

tence-building and school development/school evaluation work in general to encourage and support educational innovation.

Overriding these pre-conditions for implementation, however, is the assumption that education for sustainable development has the required political support and legitimacy. Without legitimacy, authorisation and adequate resource allocation, EE will remain on the periphery and will not take a permanent and secure position in the education system as implied by the term "mainstream". The workshop participants strongly emphasized the overriding importance of legitimacy issues and consensus at all levels of policy-making as to the necessity and urgency of EE.

There seems to be greater consensus about EE in the sense of global environmental citizenry and developing pupils' ability to act to improve the environment, than more traditional studies of environmental problems. This broad approach to environment is in agreement with ENSI's approach to EE since its initiation in 1986.

The issue of mainstreaming needs to be more clearly addressed at the national level and strategies developed to promote development of environmental education in all schools. Such strategies will be adapted to the priorities and situation in the country involved but may include common elements such as the following.

3a. Secure legitimacy and priority

- Legitimacy can be built by orienting ENSI's environmental education programmes and EE more generally with national environmental priorities, including follow-up of Agenda 21 and Local Agenda 21. This implies clarifying and communicating the role of education in promoting global environmental responsibility and sustainable development, as well as documenting the positive environmental benefits of pupil activities such as energy-saving.

- Legitimacy can be built by endorsing an approach which aims to balance environmental, social and economic interests rather than taking a primarily environmental perspective.

- Legitimacy can be built by orienting ENSI's environmental education programmes and EE more generally with other high-priority development areas in the school system, for example general curriculum reform, school organisational development and IT. This also implies clarifying and communicating the relevance of ENSI research on topics such as dynamic qualities, critical thinking and action research to the ongoing debates on school reform and school development.

3b. Build competence

- National strategies should include measures to ensure that pre-service and in-service teacher training provides teachers with the competence to participate in school development, cooperation with actors outside the school and to provide instruction that achieves the goals of environmental education.
- The competence of the school system for development can be continually built through cooperation, action research and evaluation (see below).

3c. Ensure sustainable financing

- Financing at the national level is needed for the development and implementation of strategies for mainstreaming environmental education.
- Financing of strategies and actions can be justified by demonstrating how environmental education can be a means of attaining existing environmental, curriculum and school development goals.
- In the long term, financing should be integrated into the regular budgets at all levels rather than as a short-term priority area.

3d. Build sustainable cooperation with actors outside the school

- Long-term co-operation and partnerships with other actors in environment should be developed at the international, national and local level to strengthen and improve the quality of environmental education.

- Internet and other publishing channels should be used more actively to communicate success-

ful methods, experiences, research and case studies.

- Internet and other publishing channels should be used more actively to establish and facilitate co-operative networks and result-sharing. Websites should preferably be interactive and promote co-operative learning among a range of actors.

3e. Participatory evaluation and action research as a tool for development

- Research and development work on school management/school development in the context of interdisciplinary EE needs to be strengthened. This will give insight into how to progress from the awareness and experimentation stage to consolidation and integration of EE as a permanent part of the habitual instruction practice of all teachers.
- ENSI can play a role in highlighting action research as a tool for school management and development, including successful examples of school-based development work.
- There is a need to demonstrate the potential of action research at the policy level (for example, participatory strategic workshops and consultation processes to improve vertical communication in the education system.)
- Research and development work is needed on pre-service and in-service teacher training initiatives and evaluations of existing programmes to assess effects on teachers' competence and practice in implementing environmental education.
- International co-operation and collaborative comparative research and dissemination of results through the decentralised ENSI network should be continued and strengthened.

Appendix 1. Workshop programme and methods

Workshop programme

FROM THE PILOT TO THE MAINSTREAM

A strategy workshop on generalisation of good practice in
international environmental education
Hadeland, Norway December 9-12, 1999

Organised by:
The Royal Norwegian Ministry of Education, Research and Church Affairs
ENSI - Environment and School Initiatives
OECD CERI - Center for Educational Research and Innovation

WEDNESDAY DEC. 8
Co-ordinators arrive.
Evening visit to the Stone House.
Poster room at Sanner Hotel is open for setting up posters after 12.00.

THURSDAY DEC. 9
9:00 CO-ORDINATORS MEETING - OECD CERI's network ENSI. Meeting of fishbowl and group work facilitators.
Workshop participants arrive and check in at Sanner after 12.00. Poster setup.
17:00: WORKSHOP OPENING
Chair: Anne Berit Kavli, Norwegian Ministry of Education, Research and Church Affairs (KUF)
WELCOMES by: Anne Berit Kavli, Asst. Director General, KUF; Motoyo Kamiya, OECD-CERI; Isabelle Etienne, OECD-Programme for Educational Building (PEB); Regula Kyburz-Graber, President ENSI
KEYNOTE ADDRESS "Environmental Education in the Mainstream: International Perspectives" by Michael Williams, Education Network of the International Geographical Union
OPENING OF THE POSTER SESSION with Johannes Tschapka, ENSI. Brief introduction of poster presenters.
VISIT SISTER CHURCHES: guiding and organ music

FRIDAY DEC. 10
MORNING SESSION: National strategies for moving from the pilot to the mainstream Moderators: Karen Junker, Educator Director of Aust-Agder County, Norway and Franz Rauch, IFF, Austria
PRESENTATION "Mainstreaming by building co-operation to support school development, the Norwegian strategy" with:
Astrid Sandås, KUF; Olaug Vetti-Kvam, Network for Environmental Education Univ. of Bergen;
Geir Endregard, Norwegian Institute for Air Research; Elsa Goderstad and Frank Beck, ENSI III in Arendal municipality. Discussion
METHODS FOR THE FISHBOWL SESSION by Johannes Tschapka, ENSI
FISHBOWL SESSION Each group discusses two country examples of mainstreaming strategies Presentation of fishbowl results. Decide topics for group work and sign up.
AFTERNOON SESSION:
Mainstreaming issues and strategies GROUP WORK
Group 1. Mainstreaming at curriculum level
Introduction by Lars Monsen, Lillehammer College: "From curriculum reform to school practice; evaluation as a steering instrument."
Group 2. Mainstreaming at the school level
Introduction by Øyvind Wistrøm, Vestfold College Department of Education: "From school projects to school development: evaluation of ENSI III in Norway."
Group 3. Strategic research and information as tools for mainstreaming
Introduction by Marianne Moltke-Hansen, Adviser, Norwegian Ministry of the Environment: "Research results from a survey of environmental information in schools."
Group 4. Mainstreaming at the learner level (suggested by workshop participants)
Evening: CULTURAL EXCURSION to Midtre Olimb farm.

SATURDAY DEC. 11
MORNING SESSION: Continue group work on issues and strategies for mainstreaming and prepare presentations
AFTERNOON SESSION: Presentation, discussion and conclusion of the workshop
Chair: Regula Kyburz-Graber, ENSI
PRESENTATION OF GROUP WORK AND DISCUSSION
CLOSING REMARKS by Michael Williams and Günther Pfaffenwimmer, ENSI

CONCLUSION OF THE WORKSHOP by Faye Benedict and Astrid Sandås, KUF
VISIT HADELAND GLASSWORK

SUNDAY DEC. 12
MEETING OF ENSI NETWORK COORDINATORS

Workshop methods

Country reports
Workshop participants prepared in advance short country reports and/or posters presenting information from their country relevant to the topic of generalising good environmental education practice. In the country reports the participants were asked to describe past efforts and the present state of affairs regarding mainstreaming, as well as plans for mainstreaming efforts in the future.

The participants were also requested to bring to the workshop any examples of:
* success stories as to how pilot programmes could be generalised to many or all schools;
* research results documenting mechanisms or degree of spreading of good practice; and
* effective policy instruments, support structures and mechanisms to support mainstreaming.

Mainstreaming issues and strategies described in the 14 country reports are summarised in an appendix to this report.

Presentations
The workshop was participatory in its methodology. A keynote address by Prof. Michael Williams entitled "Environmental Education in the Mainstream: International Perspectives" and short, prepared introductions to the group work provided a starting point and focus for the discussions, along with the country reports and posters. As an example of a strategy for mainstreaming, a presentation was also made of the Norwegian Network for Environmental Education.

Case studies
One half-day session was used to look at the situation in each country in more detail. A discussion technique dubbed "fishbowl sessions" was used. One person from each country presented their situation, after which the other group members could ask questions for clarification purposes. Finally, there was an open discussion in which the group was free to comment, discuss, make suggestions, compare, critique or draw conclusions. Three groups discussed two or three countries each and then summarised their findings in terms of
1. issues, problems and challenges related to mainstreaming, and
2. promising strategies or approaches to address these issues.

Group work
The second discussion method that was used was group work on four topics related to mainstreaming:
1. Mainstreaming at the policy and curriculum level
2. Mainstreaming at the school level
3. Mainstreaming at the level of the pupil and learning
4. Strategic research and information as tools for mainstreaming

One group member gave a short introduction to the topic, followed by group discussion. The discussions continued on the following day and each group presented and discussed their results in plenum.

Appendix 2. Workshop participants

Participants can be reached through the OECD-CERI ENSI project.

Mauri Åhlberg, University of Joensuu, Savonlinna, Finland
Christine Bachmann, Stiftung Umweltbildung, Switzerland
Frank Beck, Arendal Municipality, Norway
Helge Beitland, Stjørdal Municipality, Norway
Faye Benedict, Telemark College, Norway
Stig Bjørshøl, Vestfold College, Norway
Søren Breiting, Danish School of Educational Studies, Denmark
Giuseppe Busini, European Commission, DG Environment, Belgium
Peter Blaze Corcoran, Florida Gulf Coast University, Florida USA
Eva Czobod, Environmental Education and Communication Dep., Budapest, Hungary
Christine DeConinck, Department of Education, Belgium
Geir Endregard, Norwegian Institute for Air Research, Norway
Isabelle Etienne, OECD/PEB, France
Elsa Goderstad, Nesheim School, Norway
Eivor Hagen, National Centre for Educational Resources, Norway
Peter Havas, Institute for Public Education, Budapest, Hungary
Jarle Haugen, Reithaug School, Levanger Norway
Grethe Heer, Denmark
Randi Schiøll Heneide, Ministry of Education, Norway
Karl Hetland, Vest-Telemark Resource Centre, Norway
Karen Junker, National Education Office, Aust Agder, Norway
Motoyo Kamiya, OECD, France
Anne Berit Kavli, Ministry of Education, Norway
Olaug Vetti Kvam, University of Bergen, Norway
Regula Kyburz-Graber, Dept. of Teacher Education, University of Zurich, Switzerland
Reiner Mather, Department of Environmental Education, Germany
Michela Mayer, CEDE-European Centre of Education, Italy
Erling L. Meisingset, Tingvoll Secondary School, Norway
Finn Mogensen, Royal School of Education, Den mark
Tor Moholt, Sunndal Secondary School, Norway
Marianne Moltke-Hansen, Ministry of Environment, Norway
Lars Monsen, Lillehammer College, Norway
Karl G. Nordlund, Nybro Municipality and School Department, Sweden
Eero Nurminen, Ministry of Education, Finland
Gunther Fr. Pfaffenwimmer, Ministry of Education and Cultural Affairs, Austria
Maarten Pieters, SLO, Netherlands
Franz Rauch, Klagenfurt University, Austria
Virpi Ripatti, National Board of Education, Finland
Geir Sandholm, Vinne School, Norway
Astrid Sandås, Ministry of Education, Norway
Siv Sellin, National Agency for Education, Sweden
Hans C. Solzmann, Stiftung Umweltbildung, Switzerland
Johannes Tschapka, International Secretary, ENSI, Austria
Gisele Vergnes, Ministry of Agriculture, France
Inge Vinje, Vestfold College, Norway
Michael Williams, Great Britain
Øyvind Wistrøm, Vestfold College, Norway
Rita Aanerud, National Centre for Educational Resources, Norway

Appendix 3. Bibliography of invited papers and background materials

Åhlberg, Mauri. 1999. Good practice in EE needs good theories and good tools - systemic research and a success story in Finland. Paper prepared for the ENSI strategy workshop, Hadeland, Norway Dec. 9-12, 1999. 20 pp.

ENSI country co-ordinators. 1999. Country report on issues and strategies for mainstreaming of environmental education.

Monsen, Lars. 1999. Reform of upper secondary education in Norway: from implementation to adoption of pupil participation in curriculum planning. Paper prepared for the ENSI strategy workshop, Hadeland, Norway Dec. 9-12, 1999. 13 pp.

Norwegian Ministry of the Environment. 1999. Report from an investigation on environmental information in schools. Paper prepared for the ENSI strategy workshop, Hadeland, Norway Dec. 9-12, 1999. 25 pp.

Posters and displays from ENSI countries.

Williams, Michael. 1999. Environmental education in the mainstream: international perspectives. Paper prepared for the ENSI strategy workshop, Hadeland, Norway Dec. 9-12, 1999. 12 pp.

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