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Dutch approach to EE

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Afgeschreven

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Environmental Education (EE) in the Netherlands.

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"To be educated is not to have arrived at a destination; it is to travel with a different view" (Peters '64)

State of affairs

Meanwhile it has been decided that EE should have a place on the curricula of all schools, both for primary and secondary education. A summary of the state of things so far follows.

The first initiatives in the Netherlands to develop Environmental Education, both at local and national level, were taken by Non Governmental Organisations (NGO's). Mostly those NGO's had no mutual points of reference. Two options for EE were distinguished: a green one and a grey one. In the green option nature studies and the perception of the environment are emphasized, which is closely related to nature conservation. It is supposed that in doing so we redefine our relationship with nature, and that as a consequence environmental problems will be solved or prevented.

In the grey option environmental problems are primarily seen as social and political problems. Reconstruction of our society can solve our environmental problems.

From 1986 till now a joint EE project (NME-VO) has been carried out by the IVN (Association for Environmental Education), the SLO (Institute for Curriculum Development), SME (Foundation for Environmental Education), CDβ University Utrecht (Centre for science and mathematics education). The central aim of this project was to enable pupils to make their own decisions regarding environmental issues, rather than to change their behaviour. The aim was formulated as follows:

pupils acquire knowledge and abilities which enable them, in their thinking and acting, to take into account a sustainable development of the relationship between man and his environment.

Important results of this (NME-VO) project were a plan for a core curriculum in environmental education, a few cross-curricular teaching units and...the focus on environmental education within many schools and institutes. The teaching units which were developed in the NME-VO Project have never been used by large numbers of schools.

Core curriculum Environmental Education

Knowledge

One of the requirements of the central aim of EE is for knowledge about the relationship between man and the environment, and about a sustainable development of this relationship. A brief perspective of these requirements is set out in the nine goals below (A-D).

A. Relationship between man and the environment

Environmental education is aimed in such a way that pupils acquire knowledge about:

1. the significance of the environment for man, both at a personal and societal level;
2. the nature of the influence that man exerts on the environment, both as an individual and as a member of society.

These goals indicate how the relationship between man and the environment can be characterised: the environment has a significance for man (Goal 1); and in order to increase the profit of this significance, man can influence the environment (Goal 2).

B. Environmental problems and their causes

Environmental education is aimed in such a way that pupils acquire knowledge about:

3. the conflict of interests and the shifting off onto other people of negative effects which play a role in environmental problems;
4. the physical-biological and social background and causes of major problems.

Man exerts his influence because he believes it will have a favourable effect on environmental significance. But the (unintended) side-effects are often unfavourable. In environmental problems we can see a conflict between the interests of privileged people and of those who are less privileged. Insight into the undesired effects of influences is important, as is awareness of a conflict of interests (Goal 3). Undesired effects are often shifted to another area (e.g. by high chimneys), to the future (e.g. by overcropping), to a larger group of interested parties (when pollution is diluted and spread out); or to a combinations of events. A general criterium for what is desirable and what is not lies in sustainable development.

The background and causes of environmental problems (Goal 4) can be seen in societal developments which create or aggravate conflicts of interests, such as population growth or technological progress; in physical-biological laws controlling the finiteness of stocks of natural resources and energy; and in the vulnerability of natural structures.

C. Solutions

Environmental education is aimed in such a way that pupils acquire knowledge about:

5. conditions necessary for solving important problems, given the perspective of a sustainable development of the relationship between man and the environment;
6. possibilities and restrictions of solutions to these problems, and the extent to which individuals can contribute to these solutions.

Criteria are investigated as to how far a possible action contributes to sustainable development (Goal 5). Natural laws also provide commonsense rules in judging possibilities, such as: be economical with natural resources and energy, be careful with vulnerable structures. This goal refers also to societal conditions for sustainability: individuals can contribute little if there are no appropriate provisions (e.g. separate-litter collection, legislation).

Both possibilities for altering one's behaviour, as well as the resulting restrictions, demand attention (Goal 6). Concrete possibilities will have to be evaluated in the light of the criteria investigated in the preceding goal.

Applicability

The application of insight into problems will of course have to be modified in every new situation. The central aim of EE will therefore also concern abilities.

D. Abilities

Environmental education is aimed in such a way that pupils acquire abilities enabling them to:

7. map out independently characteristics of a given environmental issue, to investigate possible solutions, and to report on their research;
8. express their own assessment of environmental significance, problems and solutions, and to pronounce their own preferences in given situations;
9. take actions which contribute to sustainable development.

Together these nine goals express how EE aims at improving the quality of decision-making with respect to the environment, and extending the possibilities for action. A good decision or judgement is characterised as one which the pupil is able to make in line with sustainable development.

In this curriculum design attention will also be paid to the applicability of knowledge by identifying roles where pupils are or will be confronted with questions concerning the man/environment relationship

Attitudes and behaviour

Knowledge and abilities relate to *possibilities* that pupils have in their behaviour (i.e. both thinking and doing). The nine goals above indicated how we intend to broaden the action repertoire of pupils. We have not yet mentioned the *inclination* or *willingness* of pupils to make certain choices from that repertoire; in other words, their attitudes. Society expects education to help pupils learn to know their own preferences, make their choices freely (within legal limits), and defend these choices with arguments. At the same time, there is obviously a more specific expectation where EE is concerned: that the willingness of people to contribute to sustainable development be strengthened.

The Dutch Law on Primary Education explicitly states that primary education should contribute to sound behaviour, and there is a clear connection between individual

health and environmental quality. Promoting environmentally sound behaviour entails stimulating both the *possibilities* and *willingness* to adopt that behaviour. In our project we suggest that the encouragement of a certain attitude of pupils not be part of educational goals at such a general level but that it be left to the choice of teachers. It is also up to schools themselves to decide in which ways these attitudes will be promoted.

The following cross-curricular subjects were developed by the Dutch NME-VO project (diagram 1).

TITLES NME-VO LESSONS

TITLE	TOPICS INCLUDED	AGE	SUBJECTS	NR.OF LESS-ONS
WETLAND	human use of wetland	12 -13 (transition class)	Biology Geography	10 10
MEAT	environmental effects and alternatives of meat production	13 - 14 (transition class)	Biology Geography	10 10
TRAFFIC NOISE	traffic noise and ways of reducing hindrance	14 - 15 (vocational education)	Biology Geography Physics	8 8 8
PESTICIDES	environmental effects of pesticides and alternatives	14 - 15 (vocational education)	Biology Geography	8 8
FUEL	local contributions to solving the energy (fuel) problems	14 -15 (junior general education)	Chemistry Geography Physics	8 8 8
WASTE DISPOSAL	compare different ways of waste disposal on environmental effects	15 - 16 (senior general education)	Biology Chemistry Geography Physics	10 10 10 10

It has to be emphasized that the supply side co-operation between educational support institutions and environmental NGO's was also an important achievement of the NME-VO project.

From 1989 on, the members of the former NME-VO project shifted their attention on different aspects of the EE field i.e. the research for concept development and skill-training by pupils. Unfortunately this project did not include a real implementation trajectory. So the real acceleration for the implementation of the innovation within large numbers of schools was not a direct spin-off.

Although environmental education and environmental care got much attention in Dutch schools as an important innovation, adoption was not to a large degree followed by implementation and institutionalization (and reconsideration).

In the meantime also other initiatives started. "Stimulation groups" were formed, specifically aiming at the implementation of EE in the curriculum, one stimulation group for each relevant school subject. These small groups of 2-4 persons developed contacts in the world of textbook authors and publishers, and in-service teacher trainers, trying to bring more EE elements into regular textbooks.

Planned Assisted Introduction of Environmental Education.

In 1987 a remarkable initiative to support teachers dealing with environmental education started. Strongly influenced by Fullan's *The Meaning of Educational Change*, knowing the DESSI study, using the Concerns Based Adaption Model and aware of the possibilities of an existing network of consultants, Alfred Schermer (Free University Amsterdam) started Planned Assisted Introduction of Environmental Education.

The main points of Planned Assisted Introduction are:

- 1 EE must be brought into schools by credible and sensible people.
- 2 It should link up with the existing curriculum of the teacher or department.
- 3 The consultants stimulate the insertion of small units on EE (10 minutes to 1 period)
- 4 This adaptation is carried out by the teacher.
- 5 presumably in his dominant strategy
- 6 using existing EE materials
- 7 brought in by consultant
- 8 adapted to local circumstances and well founded.
- 9 The assistance is not free: a contract for five periods on EE should be signed.
- 10 Much attention has to be paid to institutionalisation.
- 11 This means: incorporation in the entire school.
- 12 Not before the other subjects are invited to join
- 13 and more difficult teaching strategies are proposed
- 14 to give the teacher the feeling he is innovating permanently.
- 15 A local network may constitute a substantial support to both teacher and consultant .

The Planned Assisted Introduction project was focused, in the beginning entirely on the process of implementation. And this in a period in which it was "en vogue" predominantly to develop EE materials. How to get EE-materials into the school and structurally used was unfortunately out of focus.

Time has proved, that EE without an implementation trajectory has hardly any chance of success.

EE project management

From 1989 on six ministries were preparing a joint project to stimulate EE in all sectors of general and vocational education. After three years of decision-making a structure was found acceptable for all ministries .

The government would have a supporting role: manage and distribute the available funds (a total amount of 78 million guilders in four years), give advice on EE strategies, support the distribution and implementation by other schools of positive results and of materials developed, present overviews of existing materials and expertise, detect the 'white spots' in supply and development, strengthen regional networks and permanent local support structures, stimulate communication in the field of EE and enlist influential support groups involved in the EE integration process, such as parents, local authorities, school boards and relevant intermediary organisations, etc.

In order to prevent inefficient inter-ministerial management as much as possible the six ministries agreed, in May 1992, on an external management structure. Four external managers were appointed for the different sectors of the educational system: primary, secondary, vocational and agricultural education. An external process manager would co-ordinate the efforts in a way which left much of the sectoral decision-making to the sector managers.

A multi-year plan for Environmental Education (1992-1995) was produced. The project was meant to give an extra impulse and more structure to already existing and future EE projects. The long term objective was, and is, to incorporate EE in all school types and in every school, mostly on a voluntary basis.

Project leaders in schools and intermediary institutes present their proposals to the sector manager to receive for financial support for EE.

The following principles serve as a guidelines

- 1 Environmental Education should be based on the broad concept of sustainable development (grey and green approach).
- 2 Support is given to projects which integrate EE in (different) subjects (regular curriculum and textbooks) but also to projects which elaborate the environmental care aspects of EE- e.g. in the school building and surroundings.
- 3 More attention than before is paid to the role of school management and school leaders in EE developments in and around the school.
- 4 Schools should be involved in each activity. The project fosters a demand-orientated EE market. EE integration is adjusted and related to other educational innovation.

The research is based on:

- materials and services made possible by use of EE funds
- assessing which policy objectives are reached
- gaining insight into the effect of different measures
- obtaining insight in desired, possible and attained quality of the EE innovation

Evaluation of this environmental education project takes place on the following points.

- communication
- project management
- projects
- adjustment between supply and demand for EE products and support
- involvement of schools
- EE in subjects and clusters of subjects
- participation of teachers
- realised EE (products, lessons, courses etc.)

Changes in the Dutch education system, the new core curriculum Basic Education.

A recent development is the acceptance of so-called *Basic Education* by parliament as a national minimum for primary and secondary education (diagram 2). For primary education content areas are described which have to be dealt with in the lessons, and which must be reflected in the schools' work plans. Since the pupils knowledge will not be assessed in any form of external examination, the introduction of basic education does not bring about drastic changes in *primary education*.

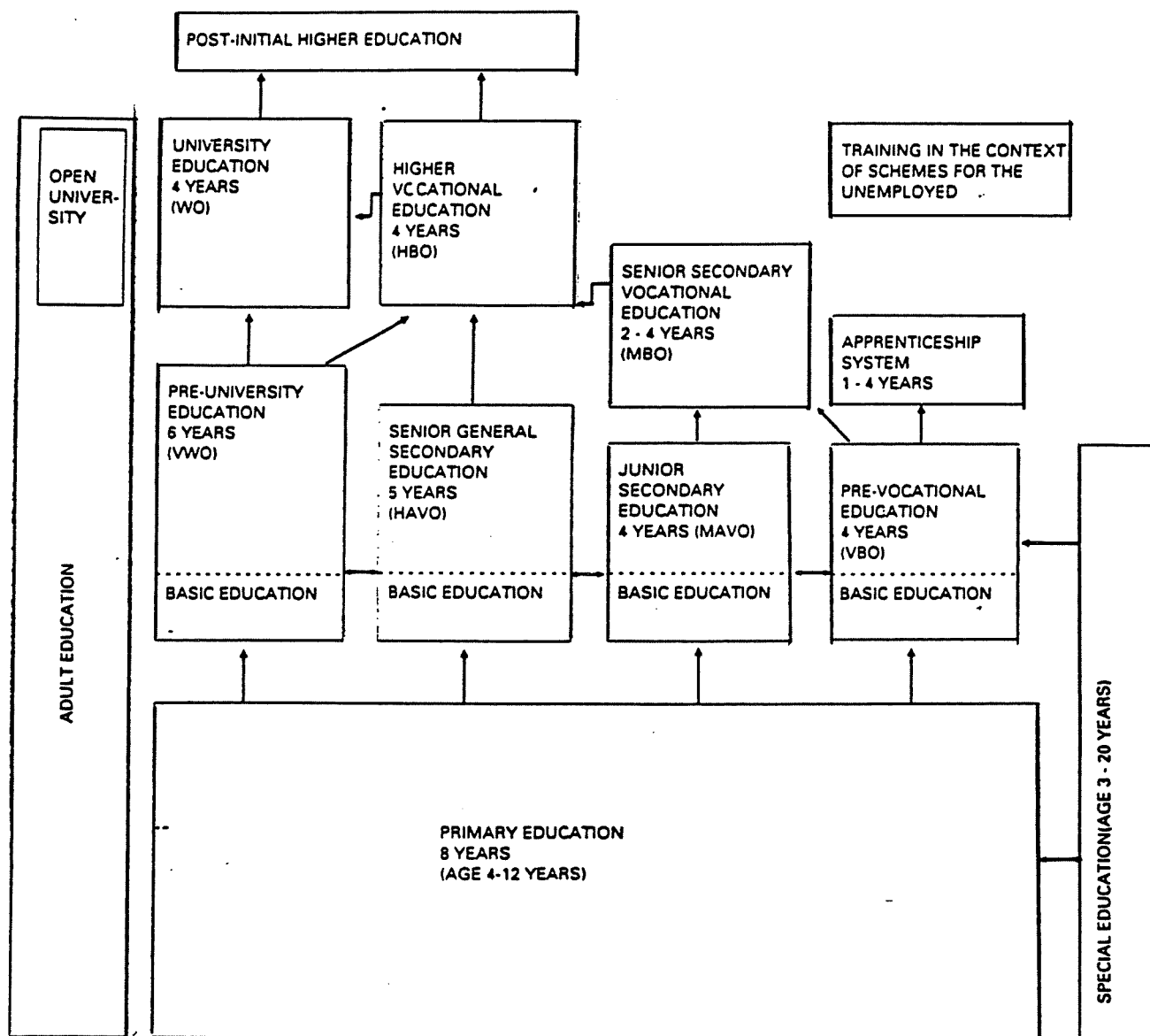
Since August 1993 the new core curriculum has been introduced in the first phase of secondary education in the Netherlands.

The shape of the new core curriculum in the first phase of secondary education is determined by fifteen subjects. Each school must offer these subjects to all pupils. Besides these subjects the school is free to offer additional subjects. This will depend on the school's choice, which may reflect its identity or denomination.

For each of the fifteen subjects core objectives have been formulated (approximately 10 to 20 core objectives per subject). A core objective is defined as: "a description of qualities of pupils in the area of *knowledge, insight and skills*, that the school should minimally employ as goals in its educational activities."

Another aspect of change is the increasing influence of (academic) science on education: education should pay more attention to the core (basic structures) of the disciplines and independent study by pupils. Applicable knowledge, insight and skills for pupils is one of the objectives of the educational approach in Basic Education.

Diagram of the Dutch education system



The general aims for basic education are:

General aims

1. Alone or together with others, pupils can carry out a simple investigation on the basis of a given, not too complex problem, formulated by themselves or together with other pupils.
 - a. They can formulate for themselves a simple, easy to investigate question or proposition for an experiment or investigation, which is limited in scope.
 - b. They can obtain, select and/or arrange information from sources that are suitable for their purposes, such as books, databases, persons, authorities; in this process they can make functional use of the computer, and present the results in completion of their work.
 - c. They can carry out specific or detailed observations.
 - d. With a view to obtaining information or forming an opinion they can hold a conversation or take part in a discussion and draw conclusions in completion of their work.
2. The pupils can express in words a point of view in a simple manner on the basis of arguments and/or by pointing out their own values and standards. In given situations they can distinguish between facts and opinions, cause and effect, reason and consequences.
3. Within the framework of interactive learning the pupils can work together on assignments (making something, carrying out an investigation, etc.). They can work on the basis of a plan drawn up by themselves, divide tasks among themselves, explain something to a classmate and present the outcomes together.
4. In relevant situations, the pupils can see the connection with the practice of various professions.
5. In each subject the pupils learn to discover their own potentialities and interests that are relevant to the choice of further education. They obtain some insight into the meaning of each subject in subsequent studies and professions.
6. The pupils can handle previously laid down, functional criteria in the assessment of a paper or a project by themselves and also take the development process into consideration.

Incorporation of core objectives concerning Environmental Education within several subjects is one of the cheerful changes. The subjects geography, biology, economics, history/political science, physics and chemistry, technology, health education and home economics have EE-core objectives. These objectives can easily be linked with the existing design for a core curriculum in environmental education.

EE core objectives of 7 subjects

BIOLOGY

Diversity and unity

13. The pupils should be able to recognize and describe the similarities and differences between man and other kinds of organisms.

Unity and diversity

18. The pupils should be able to illustrate, with the use of examples from their own environment, how plants and animals have adapted to their habitats and explain the roles the plants and animals play in that environment.

Man and his environment

26. The pupils should be able to explain, with the use of concrete examples, the principles, methods and effects of different agricultural methods and what measures can be taken (also in the interests of the pupils) to guarantee a sustainable development of the relationship between man and his environment.
27. The pupils should be able to identify the most important causes and effects of damage to nature and the environment by certain types of waste, by traffic and by the use of energy and give examples of measures (including those chosen by the pupils themselves) which contribute to a sustainable development of the relationship between man and the environment.

GEOGRAPHY

The Netherlands

9. The students should be able to illustrate and explain in broad terms, the relationship between the following issues and to form an opinion on these issues:
 - environment and traffic-related problems in urban and rural areas;
 - the spatial and social segregation of ethnic minorities in urban areas.

Europe

13. The students should be able to give examples of and recognise cross-border environmental problems at a European level and relate these problems to the situation in the Netherlands. They should be able to form an opinion on these problems.

The world

15. The students should be able to illustrate the continual deterioration of the environment on a global level and in doing so be able to discuss the effects of deforestation, the deterioration of the ozone layer, desert formation and the "greenhouse effect". They should be able to relate these aspects to human requirements, human behaviour and the explosive growth of the world population.
17. The students should be able to indicate:
 - that global environmental problems and development issues concern the students themselves;
 - which concrete possibilities are available to them in order to contribute to sustainable development and to development projects in Third World countries.

ECONOMICS

Pupils as consumers

5. In a given situation, the pupils should be able to judge a concrete (intended) decision to purchase something, basing that judgement, among other things, on the following aspects:

- requirements/needs and priorities;
- budgetary possibilities and consequences;
- consumer information of a varying nature;
- social and commercial influences;
- the economic and social effects this has on the environment, on employment and on the Third World;
- on their own standards and values and those of others.

Pupils in relation to production

6. The pupils should be able to indicate in a elementary way the different forms of production: particularly in the primary forms of life, in voluntary work, in companies and in institutions (agricultural, industrial, services sector), and in the government.

They should be able to:

- relate these forms of production with the following factors: labour in the wide sense of the word, capital, nature;
- relate the concept "added value" with forms of production and services, the fixing of prices and with taxes.

7. The pupils should be able to indicate in different, concrete situations, as described in C6, that problems occur with regard to the choices one makes due to the scarcity of resources and time when considered in relation with the costs set against the yield in narrow sense and in the consideration of social costs and yield.

The pupil as a citizen

17. The pupils should be able to indicate, with the use of concrete examples, the importance of the environment to production and consumption. In doing so, they should be able to discuss the measures taken within the framework of the environmental policy and how their own activities contribute to the protection of the environment.

HOME ECONOMICS

Consumption and Environment

16. Pupils can mention the effects of domestic consumption on the Environment and indicate measures that can reduce these effects.

HISTORY AND

CONSTITUTION OF THE STATE

Social-economic orientation

2. Industrial revolution in the 19th and 20th century and the social economic consequences of them for working conditions and the Environment.

PHYSICS & CHEMISTRY

The use of water in the home

Core objectives

2. The pupils should be able to indicate the differences and similarities between drinking water, seawater, rainwater, surface water and ground water;
 - indicate which methods of water purification are applied in the preparation of drinking water, why this must be done and what function this serves;
 - explain why the concentrations in which certain substances may occur in drinking water vary for each substance;
 - indicate the significance and function of the use of water as a solvent, as a cleaning agent and as an agent in the preparation of food.

Energy consumption

6. The pupils should be able to
 - calculate the energy consumption of appliances connected in a parallel circuit and indicate which factors affect the quantity of energy consumed;
 - calculate the capacity of appliances in a parallel circuit and calculate the costs of energy consumption;

Measures and effects

8. The pupils should be able to
 - explain the function of heat insulation measures, applying such concepts as convection and conduction;
 - explain the importance of saving energy and give examples of measures that can be taken to save energy in connection with the heating of houses;
 - indicate the health and environmental effects of the combustion of fuels and indicate that these effects are noticeable in other places and will be noticeable also in the years to come.

Sources of energy

9. The pupils should be able to
 - indicate that electric energy is generated by electric power plants and that it is then distributed to industry and households;
 - indicate the advantages and disadvantages of the use of various sources of energy.

Noise nuisance

13. The pupils should be able to indicate sources of noise nuisance based on measurements and also the possible health hazards related to the volume of sound and make suggestions for preventive measures that can be taken.

TECHNOLOGY EDUCATION

The environment

4. The pupils should be able to:
 - give examples of the effects technical developments and technical production processes have on the environment;
 - illustrate with the use of examples, how pollution of the environment and depletion/exhaustion of raw materials can be prevented or reduced with the use of technical applications.

For the curriculum and student evaluation, concerning the core objectives, the national institute for test development (CITO) is responsible for the development of the instruments. In every school pupils will undergo evaluation of their personal achievements in Basic Education. This includes, of course, the core objectives for environmental education. Although these evaluations are no examinations, they give the school information about the pupils qualities in the area of knowledge, insight and skills.

This new core curriculum demanded new textbooks and sometimes a different approach towards teaching.

In general few Dutch schools or teachers develop their own curriculum in detail. So, textbooks and other materials are also influential for the implementation of environmental education. Because environmental education has core objectives in several subjects "the free market economy" of educational goods and services will support environmental education to a certain extent. We can see that textbook authors and test developers are influential groups for the syllabus contents, and teachers and textbook authors for the educational approaches.

Simultaneously with the changes mentioned above the Education Ministry gives secondary schools the right to develop their own identity. School boards have now constitutional freedom to establish the contents of subjects in the curriculum. In future schools will be considered as independent, educational institutes recognized by their own identity. A green accented identity is one of the many possibilities.

Supporting the schools

An extensive structure of educational support as a collective service to the school system exists. Tasks and parameters of the institutions concerned are specified in the so called Educational Support Act, which will be revised within a few years.

The support structure comprises the National Institute for Curriculum Development (SLO), the National Institute for Test Developing (CITO) and the National Institute for Educational Research (SVO), all of which work for both primary and secondary education.

Since 1980 a network of regional/provincial Consultants for environmental education (EE) also has existed in the Netherlands. These Consulted Schools can receive guidance from these institutions for the implementation of environmental education.

Environmental Education (project) activities at the moment.

At present there are many NME projects in the Netherlands. We shall briefly discuss some of them.

A. Planned Assisted Introduction of Environmental Education.

Teachers are taught to prepare lessons with EE at the back of their minds, (Source: VO koerier, the journal of process management.)

"To make them EE-minded" is the objective of PBI in five words. PBI stands for Planmatig Begeleide Introductie: (planned assisted introduction) of EE into secondary education. This method is characterised by an educational staff-member of an EE centre assisting a teacher to enlarge the amount of EE in his program. PBI was developed and field-tested in the years '87-'89. Since '92 in Gelderland and since '93 in Noord Holland it was and is being tried again in two-year projects. What are the field-workers' experience with this method?

PBI is a strategy to achieve that EE is incorporated permanently in secondary education. This is done by systematically checking the teacher's existing program. In the program a number of issues are chosen for further development. After that the consultant provides additional relevant material, the teacher works it up and adapts it. The lessons are given and the two discuss them, evaluate them and try to find ways to improve them. It is usual that for every forty periods (or

thereabouts) the consultant devotes to teacher-guidance the teacher gives full periods EE lessons or a larger number of shorter periods. In order to ensure the progress of the project it is important to make binding arrangements on either side. In the second (and last) year of the guided period the teacher himself is supposed to be able to expand his lessons with EE elements. Attention then shifts to securing the innovations, for instance in a school-curriculum end extending EE to other subjects. In this way Nature and Environment can receive the necessary attention in many lessons. One might think of Environmental care in school or try to join a project that already existed. Alfred Schermer of the Free University supervises the counsellors taking part in the project. Every counsellor advises three schools.

The Biology teacher at a secondary school "De Rietvelden in Wormerveer" , Evert van Veldhuizen, considers some aspects of the method a bit schoolish. "Now and then there is too much paperwork. Writing summaries and time-bookkeeping made me think of my own teachers training time. Sometimes it is a little too much and a waste of time." He is highly satisfied with the intensive guidance of the counsellor. "I was afraid that the guidance would be somewhat haphazard, but it turned out to be far better than I had expected. I could always go to Gerard with my questions."

Gerard Verwey is counsellor for three schools in the Zaanstreek. His impression is that other teachers too are less satisfied with the paperwork but quite content with the guidance.

Alfred Schermer, the originator of PBI is surprised that filling out one plan which contains what the teacher does in one year and thinking up possible EE additions is considered bureaucratic paperwork. Time bookkeeping is not specifically PBI strategy. Only for the counsellors who might spend far too much time in one school. We did ask a few teachers, though, to write down how much time they spend on this innovation because we would like to know how much they set against the time investment of the counsellor. Actually this is a research question, but with the intention to make teachers realise how much time they spend on things, for they haven't the slightest notion of that.

The ultimate aim of PBI is to teach the teacher to prepare his lessons with EE at the back of his mind. The counsellor offers practical support and refers a teacher to local EE centres where he can get information and guidance. Gerard Verwey: "Many EE centres have geared their supply of information to elementary schools. When the demand from secondary educational institutes increases, it is a signal for them to adjust their supply. In this PBI stimulates that schools pose clear questions that local EE centres can deal with.

"No time" is one of the most important arguments of teachers not to start with EE. "You must take this seriously" says Alfred Schermer. "Because all teachers say so there exists a tendency to say: "yes, yes, we have heard it all". It is important to remove as many obstacles for introducing EE as possible. When one speaks to the school-management it often appears to be possible to provide non-teaching periods for this. Arguing that EE is so important is unnecessary, they know that. Their problem is that they really have no time to spare and that is why we try to help them to introduce EE as efficiently as possible. In doing so we encountered the fact that teachers do this rather unsystematically.

Often teachers are of good will, but do not get round to taking the EE bull by the horns. Evert van Veldhuizen: "For years I had been planning to do something about EE, but somehow there was a barrier. I did not know what information there was and where to look for it". We are doing that now. Next year we shall try to make other colleagues enthusiast too. By scoring with popular subjects it is easier to win over students and teachers. We want to establish an environment committee which will deal, amongst others, with environment at school. The management sees the importance of this and provided non-teaching periods for it. The introduction of EE and the assistance of PBI has meant a material change in Van Veldhuysen's manner of teaching: "In the first form I started with a new method in which EE was incorporated. Next year I shall continue with it in the second form. This method is well established then and can be extended to

the third and fourth form. I now see many more possibilities to do something with EE. Furthermore, I have changed my ideas about it and articles in newspapers I now read with other eyes. I cut them out and consider in which way I can use them in my lessons. It is refreshing and rejuvenating"

Alfred Schermer's reaction: Now you see how splendidly PBI functions. This teacher's way of teaching and thinking has changed and that is exactly what it is all about.

B. EE and school management

Because the structure or even the character of a school may be affected when E.E. and EC are introduced heads of schools are offered postgraduate courses for this aspect of the innovation. Through regionally organised day meetings school leaders are informed broadly about possible problems that may arise when E.E. is introduced. After this one can subscribe to guidance according to individual wishes or needs.

1. Information day (afternoon) for School leaders.

The school-leader acquires:

understanding of the various facets of NME information with which the process of introducing NME in school can be set in motion understanding of the relations of NME with other educational developments. Understanding of environmental care.

2. Analysis and advice made to measure.

- Every school is offered a free advisory talk. On the basis of the talk, of extensive questionnaires, of an analysis of strong and weak points the school leaders are informed about the possibilities to introduce NME in their own school situation.
- From this point onwards relevant support can be offered by the regional NME centres and organisations. Further management support can possibly be given by LPC.
- The advisor has at his disposal a bagful of sufficient information for the school leader.

C. EE Coordinator course

At the moment a great many innovations are on the move in secondary education. A school as an independent organisation will have to develop middle management functions. An example of such a function is the E.E. coordinator. This functionary will spend some periods every week on the introduction of E.E. and E.C. in the school. In order to prepare teachers for this task a course NME-co-ordinator is organised. This course, financed by the project management E.E. has meanwhile turned out the first qualified co-ordinators. Amongst other subjects the course pays attention to:

The characteristics of a good environmental care system within the school Developing an environmental school policy. Linking EE. (Waste, garbage, canteen). In this course too existing teaching material is discussed.

D. School as central point

Almost all schools organise cross-curricular projects each year. EE can be one of the subjects. Because of their open character, pupils' activities are the most important part. Assessment is usually based on their seriousness of pupils' involvement and the quality of presentation of completed work. Because of the diversity of learning experiences no standardised assessment of contents is possible. This kind of cross-curricular projects can be seen as good starters (warming-up) for EE.

A drawback of projects like these is that every school year the subject is changed. A number of schools has entered independently an NME project with the process management. Sometimes schools have sought co-operation with EE organisations. Of course there are many schools that launched EE activities irrespective of the possibility of getting additional finances.

E. Network development

Led by Groningen University networks of schools have come into being. During meetings colleagues exchange practical information with regard to the introduction of NME.

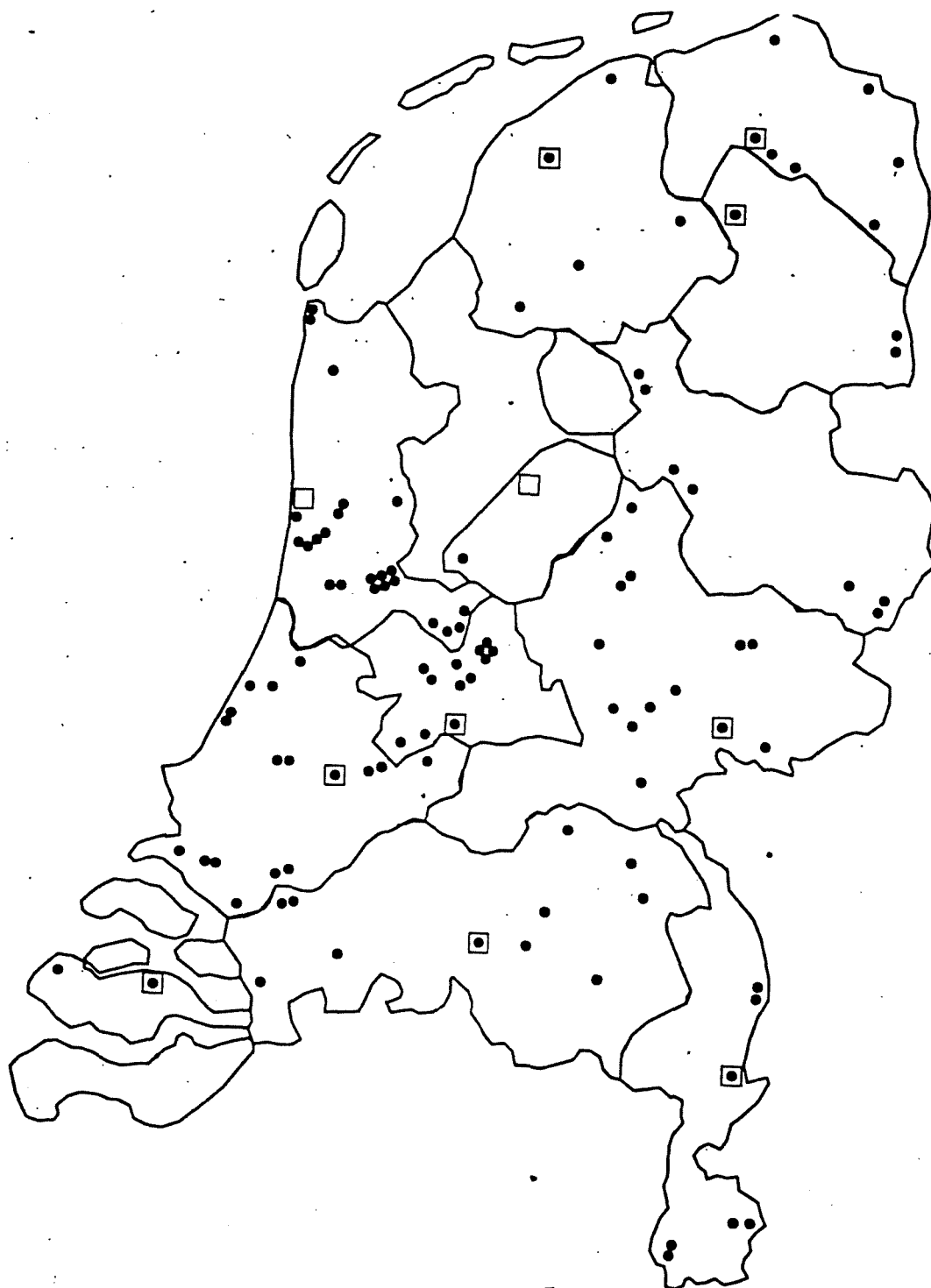
F. Postgraduate courses

At a number of post-graduate institutions NME is offered as a refresher subject. Although the attention of many teachers is directed at the innovation: Basic Education, yet various modules are presented.

G. Initial Courses (training)

During teachers training ample attention is paid to NME especially in biology lessons. Second phase students in all subjects may follow optional modules NME.

EE CENTRES ALWAYS IN THE NEIGHBOURHOOD OF THE SCHOOL



cm = 18 km

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Appendix:

Articles

- 1) Schermer, A.K.F. (1992). *How do we support schools to impement EE? in: report, Conference on Environmental Education in Europe, 8-14 November 1992, The Netherlands*. Leeuwarden/Rotterdam: Hogeschool Rotterdam e.o./Noordelijke Hogeschool.
- 2) History of Environmental Education. From: Process Management Environmental Education, the Netherlands (1994). *National Review of Environmental Education in the Netherlands, A contribution to the OECD/CERI-project Environment and School Initiatives (ENSI)*. Utrecht: Procesmanagement EE.
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History of Environmental Education in The Netherlands

The 1980s

EE appeared in official documents of national policy since the alarming UN Conference on the Human Environment at Stockholm in 1972 and the first intergovernmental conference at ministerial level at Tbilisi in 1977, organised by UNEP and UNESCO. However, it was NGOs which became really active 'in the field'. Some NGOs were not satisfied with the fact that EE at school level was, by tradition, oriented towards nature experience designed to produce knowledge about nature, and they tried to implement new content and new ways of teaching.

However, in the course of the 1980s, NGOs had noticed that the many materials and services they offered to schools were hardly used in classroom. It seemed obvious that these products did not fit well enough into the existing school curriculum and everyday practice. This offered an opportunity for currents from both educational reform sources and NGO sources to meet, and join their energies. It was not by chance that the expiry date of the PLON Project, 31 December 1985, was immediately followed by the starting date for the first big environmental education development project: 1 January 1986. Co-operation started, under the name of *NME-VO*, (environmental education in secondary education) between NGOs and institutions for educational support, including the physics education department of the university of Utrecht which had housed the PLON Project. NME-VO was funded by three ministries.³ A project board was set up which consisted of civil servants from the three ministries and managers from the participating organisations.

1986-1989

In the period 1986-1989 attention was focused on developing, revising and publishing teaching units for secondary education in order to quickly offer some good examples of what could be possible (Pieters, M., 1991). This focus on materials was motivated by the need to lower the 'threshold' for teachers: offer them "safe" examples of environmental education, closely related to the usual content and practice in their subjects. About ten schools participated in the work, each with three or four teachers from different subjects. They contributed to the selection of themes, commented upon blueprints and draft texts for a series of lesson, taught the lessons concerned, wrote short accounts on their experiences and made proposals for changes. Teachers and project staff members met regularly in smaller groups, and twice a year in conferences with the whole group.

The policy was, to restrict the development to teaching materials and a curriculum design for environmental education in biology, geography, physics and chemistry. Attention was also to be paid to evaluative research of pupils' conceptual and skills development.

³ The Ministries of Education and Sciences, of Housing, Spatial Planning and Environment Management, of Agriculture, Nature Management and Fishery.

Implementation or teacher training strategies were explicitly postponed by the project's board: they proposed that firstly good examples of *what* and *how* had to be developed. This was justified by the argument that the connection between environmental education and the contents of curricula should be clarified, after the disappointing results of "wild" implementation attempts of NGOs, producing teaching plans and giving guest lessons. The problem of these attempts were that there was hardly any connection with existing contents or cultures, mainly by the use of the wrong language for both teachers and pupils. Another important justification lay in the possibility in the current period of educational reform - the basic education was in preparation - to influence new programmes by effectively writing EE contents into them. This was a clear top-down strategy in the approach taken in those days. Indeed, although teachers were closely involved in the development of teaching units, the connection between those experiences and the mainly pen-and-paper development of curricula was weak.

Also, some small and easy-to-handle teaching units, *infusion tips*, were to be developed offering opportunities for safe changes in teaching practice for teachers who wanted to make a tentative start with environmental education.

However, the pilot school teachers asked the project staff to develop teaching units which would suit for two or three subjects at the time. Indeed, most of the teachers were motivated to participate from their desire for cross-curricular co-operation. Teaching units which treated one issue in two or three different, but integrated, ways were expected to be helpful for fitting the issue into regular programmes of the subjects concerned, without losing the interdisciplinary aspect. Teachers involved in this production process felt it as a stimulant; the process seemed more important than the product.

A natural science teacher reports

'In spring 1986 the science teachers of our school read in an educational journal that a project for curriculum development in environmental education was looking for experimental schools. We decided to participate and took the first steps on the long road to an environmental school. We formulated a number of goals for our school, which we hoped to achieve by participating in the project:

- * the environment should become a part of the pupils' world of thinking by understanding its significance for man,
- * the pupils should become able to involve environmental interests in their decisions and behaviour,
- * therefore they had to know why the sustainable development of the relation between man and the environment is in danger, and which conditions were necessary for solutions to some important environmental problems,
- * EE should result in the integration of subjects,
- * EE should provide us with a framework for useful outdoor education.

Because we were a very newly-opened school, having been operating for only

3 years at that time, and still very busy with the development of our school curriculum, we welcomed good, ready to use teaching units. Especially when we could influence the contents and design of those units.

As a positive side-effect of this project, we - being rather new colleagues - were forced to discuss why it was important for us to confront pupils with environmental issues. In that way we accelerated the process of getting to know each other. We had to find a common view on the issue of how far we would want to go with behavioural change and ways to promote this. A typical question was: where did each of us draw the line between accepted socialisation and unacceptable indoctrination or intimidation?’

Thus, several multidisciplinary units were developed, each containing separate parts for the school subjects concerned. Only in the final year of the NME-VO Project, the planned small one-or-two-lesson units were produced.

The bigger, multidisciplinary teaching units were all tried out in several schools. Teachers kept logbooks, and in some cases also inventories were made of changes in pupils’ conceptions. On the basis of the data and comments, the units were revised. All units have been published, and made available for schools.

The teaching units which were developed in the NME-VO Project have never been used by a large number of schools. For most of the participating schools, they marked the start of structurally-adopted EE activities. Still, even this seems difficult without additional support.

A natural science teacher reports

‘Parts of the EE program lose their place in our curriculum in favour of new developments. Now, three years after the NME-VO Project, the units *Wetland* and *Meat* are a structural part of our school curriculum, while the others are used as variations of the Science program on a yearly basis. As a result of that, the Science-Social Studies tuning has been reduced to an incidental moment every year to confirm the usual planning. Most of the teachers involved think that is a loss, but don’t see an opportunity to blow new life into the co-operation. A paid EE co-ordinator or concrete and challenging decisions about new strategies seem necessary to continue such co-operation at our school.’

In the following years, it appeared that many teachers who had got interested in EE, had bought one copy of all units, tried one or two of them in classroom, and felt that they tasted reasonably agreeable. The bigger units were especially attractive for teachers who wanted to carry out a cross-curricular project, with opportunities to deal with some common subject matter. The NME-VO units were also used as examples of environmental education in teacher training courses.

If one wants to characterise the period 1986-1989 in a few words, it can be said that there was a *focus on school subjects* in EE development. Both educational innovators and environmentalists saw this as the best way to raise teachers' confidence in EE.

During a formal conference in 1989, closing the NME-VO Project, little could at the time be said about the intended results in terms of teachers' adoption of EE, the "demand side". As a major result, however, the fact was stressed that at the supply side co-operation had been possible between educational support institutes and environmental NGOs. Obviously, at that time, policy makers had the development of an implementation *structure* for EE as their main target which they saw as pre-eminently in the supply side: joining educational and environmental expertise.

1989-1992

Schools' activities

It seems that by the end of the 1980s, more schools had become involved in EE than in the years previously, although it might also be the case that more schools than before were *noticed* as active in the field. There has never been any research to the number of schools with any EE activity, nor to the kind of activities that they regarded as EE. Along with the rising popularity of environmental issues in public opinion, there was a broadening of EE interpretations in the world of schools: environmental care measures at schools were also now introduced, the development and execution of which were regarded as environmental education.

Primary schools could easily introduce EE because of their more flexible and open curricula. It seems that most primary schools chose the way of taking more and more environmental themes into their world orientation lessons, where nature study as well as issues from the humanities easily find their place. National or international festivities such as the World Environment Day formed occasions to dedicate some lessons to environmental issues. Excursions to a natural history museum or children's farm, nature study activities in and around the school, waste collection actions, with varying amounts of reflective moments - all could be found in the collection of EE activities. But there is no data about the frequency of such contents.

At conferences on EE and in magazine articles, secondary school teachers mostly presented either cross-curricular project work or environmental care activities, or both, as their main EE efforts. The school descriptions collected for the ENSI Project (SLO, 1994) show these elements in all cases. Fieldwork always plays a major part in the project activities, but it should be remembered that the teachers who presented their activities formed a selective group. As for secondary education, it could easily be seen that EE occupied, at most, a small part of the curriculum because most teachers follow textbooks for the major part of their programme, and the textbooks did not offer any EE activities.

On the whole, we can also say that in the period 1986-1992 there still was a very incomplete idea of what the "demand side", the schools, were doing as EE, and what they would like to do. The introduction of the new basic education in those years,

however, was regarded by many schools as one of those enforced ideas from The Hague, causing teachers a lot of efforts. In that climate, secondary schools were not very anxious to adopt yet another innovation invented by others, as environmental education was viewed

So far the demand side has been discussed. As for the supply side, the period 1989-1992 shows a multiplicity of activities:

- * more activities were involved e.g. classroom research, research of school books, development of programmes and lessons, involvement of local EE support centres, involvement of teacher training institutes, development of assessment examples, activities influencing the content of textbooks from commercial educational publishers
- * more school types were targeted in the whole set of curriculum development, teacher training, etc.; now the whole range of general education and some initiatives taken in vocational education
- * more school subjects were included e.g. the humanities
- * attention grew for school organisation and management as influencing factors in the development of any kind of environmental education.

Curriculum development

More and more organisations became involved, and in order to present a certain coherence in contacts with the schools, goals and core concepts were negotiated among participating organisations, and formulated in a common curriculum design (*Starting points for environmental education*, in: Pieters, 1990). These are presented in the next chapter. The strategy was that the core curriculum design was elaborated into partial curricula for several school types and school subjects; elements of these partial curricula were in turn expanded into a series of experiential lessons which were then tried out and evaluated in the classroom. It was called *development research*, because of its strong research character and its importance for curriculum development. This development research was carried out by a staff consisting of personnel from an NGO and from institutes for educational support. Thus, it brought together once more supply organisations from various corners, with teachers, as representatives of the demand side.

Preceding the design of the lessons, some pupils were interviewed, in order to collect ideas about pupils' beliefs and initial knowledge of the issues. All pupils had to complete questionnaires, one just before the start of the lessons and a second one at the end of the series. Thus, pupils were one source of information about the effects and the appreciation of lessons. The teacher formed a second source by keeping short diaries, and in some cases by being interviewed. A third source of information was from the project team members who took on the role of observer during several lessons.

Because of the relatively strong influence of teachers on the process, this development research approach came closer to the methodology of action research than the development work in the previous period. Also, the "triangular" approach was used, as was also recommended in the ENSI action research workshops. Still, there were

some differences with the kind of action research that was promoted by the ENSI Project.

- * The role of teachers was not immediately that of a co-researcher, reflecting intensively on his/her own experiences. It developed into that during the second round
- * Not so much stress was put on open-ended research activities in the school's environment, although they were part of all lesson series; but stress was placed on thoroughly discussed educational strategies, aiming at the development of concepts and abilities.

Gradually, teachers grew into the role of "reflective practitioner". Most teachers became increasingly enthusiastic about this change in role, because they now felt capable of facing up to questions which had so far always been hidden under slogans (as they saw it) like "EE should elaborate the concept of sustainable development" and "EE should foster environmental awareness": OK, but how? The climax was a meeting with project teachers at the end of the second year, where ideas for the next year were discussed. The spark that lit the fire was a discussion on constructivistic learning/teaching approaches: the importance of the initial knowledge of pupils, the need to see knowledge as a collection of personal constructions, and to match these with "public knowledge" (Driver & Oldham, 1986). The shift to a more reflective strategy, with more attention for learning questions than for the suitability of a teaching unit, had caused one teacher to withdraw from the project. Both this negative reaction and the enthusiasm of others illustrates that the changes in the project were felt to be very fundamental.

This episode in the context of the history of environmental education is mentioned because it strongly reflects an approach that could be called "educational innovationalism". Obviously, the needs as they were felt by this group of teachers, and as they are known from other changes in education, were developing strongly in the direction of the *how*-question.

A biology teacher puts it thus:

'I have no problems in finding words to describe what sustainable development means, but I do have problems in finding ways to make my pupils understand what happens with animal populations when their territory is cut by a motorway, or when nitrates enter the soil. For most pupils, animals smaller than a dog do not seem to exist. As soon as sustainable development is boiled down to ecological questions, the old problem of the two languages appears: that of the teacher and that of the pupil.'

Even bigger problems were expected in the area of social questions and of values, where teachers feel to have hardly any tools to handle the questions.

A physics teacher:

'I don't want to avoid social questions, but on the other hand I often have nothing to add to what pupils read from the newspapers. And I hate talking

in a dilletantish way, only to show that I recognise the importance of the question.'

Similar development research activities were carried out in some primary schools. There, the role of teachers was less reflective than in the secondary schools' part. But it also focused on questions of concepts and abilities.

The development research in secondary education was carried out with teachers in geography, biology, physics and chemistry. The relative emphasis on natural sciences can be explained by the fact that in these subjects educational research had already made progress over many years. In the humanities, this kind of research is still in its infancy. For economics and history education, curriculum development activities remained restricted to the preparation of exemplary teaching units, comparable to what was produced for the natural sciences and geography in the NME-VO period (1986-1989).

Environmental care

In the same period, schools started to pay more and more attention to the environmental effects of school life: eating, drinking, heating or the use of paper. "Environmental care in school projects" were often combined with temporal changes in school curricula e.g. for project weeks. The NGOs especially started to develop support to offer schools in this field e.g. by making checklists of relevant changes in school building management and organising the exchanges of experiences among schools.

Implementation

"Stimulation groups" were formed, specifically aiming at the implementation of EE in the curriculum, one for each school subject. These small groups (of four persons) developed contacts in the world of textbook authors and publishers, and of in-service teacher trainers in the respective school subjects, trying to bring more EE elements into regular textbooks and PRESET and INSET activities: the 'hardware' and 'software' of educational change influences on teachers. The successes of these groups are difficult to measure, apart from the fact that there was strong variance between the groups. There have at least been changes in some textbooks.

When compared to what happened in the previous period, 1986-1989, the development research in this period *focused on teachers and pupils: on pupils' concepts and learning problems, and on teaching strategies in terms of fruitful activities. The stimulation groups focused on pivots in educational change: textbook authors and publishers, teacher training institutes, both pre-service and in-service, and in the last phase, also on school leaders.*

Since mid-1992

In May 1992, six Ministries agreed on an EE management and financing structure (see section 2.1). This project is a first attempt at inter-ministerial co-operation on a large scale in the field of sustainable development. Four managers were appointed, for primary, secondary, vocational and agricultural education; and a process manager to co-ordinate their activities in a moderate way. The managers were recruited from outside the world of EE, to be sure of a neutral stance in the field of the many competing EE supply institutes. The task of the managers is mainly to link between supplying parties and schools, by assigning money to institutes on the basis of proposals made. They were also in charge of formulating two-year policy plans, including a view on the nature of environmental education and on the preferred implementation strategy. Chapter 5 returns to this subject. However, we can already characterise the plans for 1992-1995 in comparison with those stated earlier.

The period 1992-1995 will *focus on schools' abilities to develop autonomously their own form of EE*, and on the *development of a demand-oriented support structure* on the local, regional and national levels, in school networks and in external expertise. Also, school leaders will continue to be approached as pivots in educational change.

HOW DO WE SUPPORT SCHOOLS TO IMPLEMENT ENVIRONMENTAL EDUCATION?

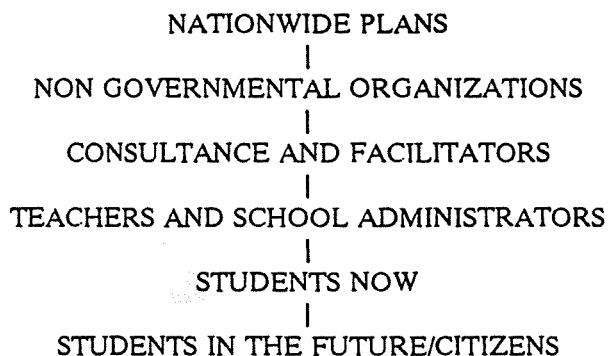
**Dr. A. Schermer,
Biology education,
Amsterdam, The Netherlands.**

Now we have defined the aims and objectives of Environmental Education in terms of desired insight skills and behaviour of both students (Mrs. Mayer on Tuesday) and teachers (Mr. Nagel on Wednesday), we face the problem of implementation. What are some of the difficulties and problems we encounter when we introduce such an innovation in schools? How can Environmental Education be incorporated into the existing curriculum? The aim of this presentation is to address these questions.

Environmental Education must be considered a major innovation because it not only introduces new subject matter (knowledge) about a large range of topics but also tries to influence people's attitudes and behaviours. The new subject matter can be derived from the most pressing environmental problems. The inspiring, as well as politically strategic, concept of "sustainable development" has been used in many countries to launch innovative EE projects. See the contribution of Mr Maarten Pieters

It is the aim of Environmental Education to change the behaviour of students, not only in their present roles in society but even more so in their future roles as adults. This change in the attitudes and behaviour of the future generation of adults is the first innovation we are pursuing.

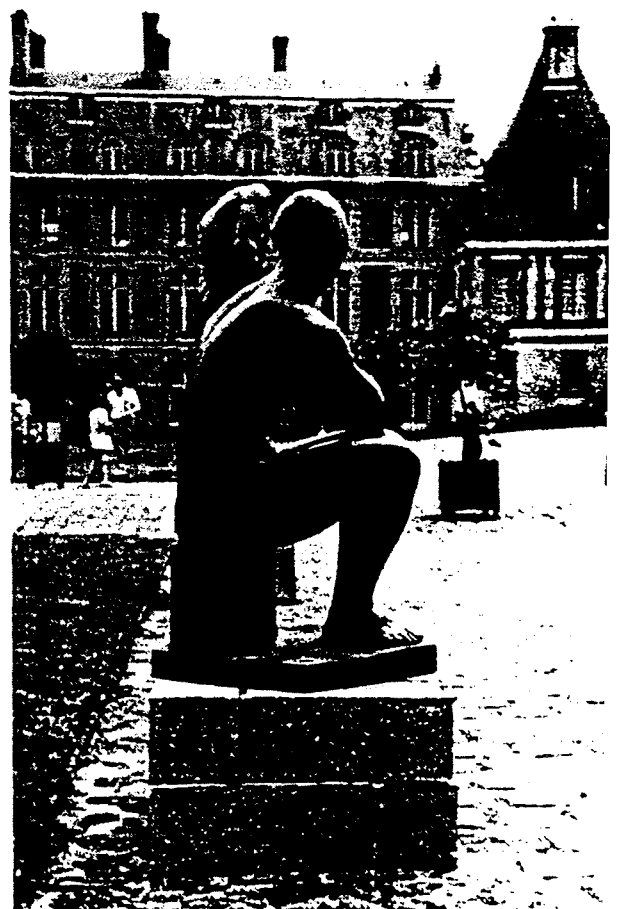
LEVELS OF IMPLEMENTATION



In order to achieve this goal, Environmental Education tries to persuade teachers to change their own behaviour. We ask them to embrace Environmental Education and to incorporate it into their curriculum. This is the second innovation we are striving to introduce.

In the past twenty or thirty years, environmental organisations both governmental and non-governmental, have tried to achieve this mainly by publishing convincing articles, organizing conferences and producing truck-loads of educational and instructional materials. Obviously, the results of all these efforts have not been satisfying, or we would not be not gathered here today.

We must develop new strategies to implement EE in schools, but should also bear in mind that those strategies will meet with the same resistance that EE itself encounters, simply because people find it hard to change their habits and everyday routines. After all, in the past EE promoters have changed strategies often enough in their efforts to gain more ground, only to encounter the same kind of resistance. "Well," says Michael Fullan, the Canadian authority on innovation, "when it comes to implementation, more is less" (Fullan, 1982, p. 66). We must acknowledge that the new strategies we have developed to implement EE more effectively, will also meet with substantial resistance on the higher levels of the implementation pyramid. Overcoming this challenge is the third innovation.



To sum up, we have identified three innovations. The first innovation is geared towards school students, the second innovation involves teachers and schools, and the third approaches facilitators and their organisations and governments. However, in time the sequence of these innovations will be reversed. We, as policy-makers and innovators, will deal with the facilitators first and the students last.

Why are innovations so difficult?

"Before I go into that question I would like to point out that I take my starting point in implementation theory. Some people do not like theory. "It is not practical", they say. Well, let us consider shortly the relationship between theory and practice. I show you this photograph of a statue... And here is another photograph of a statue. Now what do you think. Are these different statues or is it the same statue. Approximately equal numbers of the audience believe either proposition. Well, it is the same statue, but looked at from quite different positions. In my opinion it is the same with theory and practice. We look at the same reality, but from opposite view points, and what we see is indeed quite different. But it is the same reality. It may be, therefore, quite illuminating to change one's ground and to look from practice to theory and from theory to practice".

Why is it so difficult to innovate? Since Fullan and Pomfret's article in 1977, which became a milestone in the study of innovation, the innovation process has been seen as the sum of at least three very different processes. And in 1986, some 10 years ago, Karen Seashore Louis (1986) drew attention to a fourth process which has become an increasingly integral part of innovation since it was first identified: reconsideration.

$$\begin{array}{c} \text{INNOVATION} \\ = \\ \text{ADOPTION} \\ + \\ \text{IMPLEMENTATION} \\ + \\ \text{INSTITUTIONALIZATION} \\ (+) \\ \text{(RECONSIDERATION)} \end{array}$$

Adoption is the process by which the innovation is accepted. Many people have already reached this stage with EE. Most teachers will admit that EE is important and will agree to devote attention to it in the classroom. Often, however, they will also point out impediments. They might tell you that they are doing something about it, but not enough. They would like to do more, but....

The responses from teachers in this phase of the innovation process when asked to specify the date on which he or she will start with EE, tend to be very similar. I imagine that you, the audience, will be able to predict the answer. I'll give you a couple of moments to consult your neighbour about it. The response is, more often than not:

"Oh, well, look, that's impossible to say. I am not that far. I need time to prepare"

Many teachers, if not the majority, managed to stay in this stage for years, always promising themselves to do better next year... So, one thing is clear: adoption is not implementation.

Implementation is the actual act of giving a series of lessons or carrying out a small programme on EE. It can also consist of the actual and frequent insertion of elements of EE in the regular lessons. A typical answer from a teacher who has reached the implementation stage when asked to designate a starting date for EE would be: "Well, actually I started yesterday" or "Well, I plan to start on the 12th of November". EE can be implemented in one particular subject or in several subjects. The process is characterized by the concrete activities related to EE in and outside the classroom. A teacher in this stage will show observable EE behaviour.

Adoption and implementation are followed by a third process, one that is crucial to the success of an innovation: the process of institutionalization. It is the most neglected process of the three, despite the fact that it may well be the most important. Without adoption, there can be no implementation; without implementation there can be no institutionalization. But without institutionalization there can be no innovation whatsoever.

The process of institutionalization was identified in schools which were known, or even famous, for successful implementation of an innovation. However, the findings of follow-up visits several months or even a year after withdrawal of the special funds and the facilitating people were disturbing: there was not much of an innovation left. In fact, the external facilitators who had supported those schools for years stated that they "stood with tears in their eyes" as they witnessed the innovation go with the wind.....

If not anchored securely in the programmes, the culture and the organization of the school, any implementation will last about as long as it takes for the last facilitator to leave the school and the last teacher to be given other duties or other subjects to teach. As the other two processes, institutionalization is not a self-regulating process, but one which should be actively and thoroughly planned.

The three innovation processes have their own dynamics and are influenced by a great many factors. I will present lists of these factors here, but should point out the lists are not exhaustive. The list of factors influencing adoption consists of at least 9 factors.

FACTORS INFLUENCING ADOPTION

1. Existence and quality of the innovation
2. Access to information
3. Advocacy from (central or) administrators
4. The history of innovative attempts
5. Teacher pressure/support/opposition
6. Pressure from change agents and consultants
7. Community pressure/support/opposition
8. Availability of special funds
9. New central legislation or policy
10. Problems solving incentives
11. Opportunist considerations

Before I go on to discuss the three sets of factors which have been identified for the three processes, I would like to note that I will not be able to elaborate on all of these factors in the time allowed for this presentation. I will only be dealing with some of the factors from each list, those which proved to be major factors of influence in the project my colleagues and I ran in the Netherlands from 1987 to 1990. For more information on the other factors, however, I would refer you to the original texts from which they were taken, Fullan's "The meaning of educational change" (1982) and Fullan's "The new meaning of educational change" (1991) and, for the Dutch readers here, my book "The implementation of an educational innovation" (1991).

From the "adoption" factor list I will be discussing with "access to information" and "new central legislation". Access to information is crucial in the adoption phase. Teachers want to know what the innovation is all about. However, teachers tend to feel overwhelmed by the volumes of written information on Environmental Education put out by many non-governmental organisations all promoting their issue as the most pressing problem in the world (which may be very justified, but...). More often than not, this information in its attempt to enlighten the general public, makes strong emotional arguments without offering much objective data. It is, for this reason, less adequate for teachers who are supposed to teach their students to become critical citizens. As a result, teachers do not set about acquiring information from other sources. This is a paradoxical situation because the documentation centres of all EE organizations contain mass quantities of all kinds of materials. However, teachers tend to wait for materials to be sent to them. A survey by the University of Groningen some ten years ago revealed that Environmental Educational material went through a hurdle-race; 60 % of teachers had some idea that certain materials were available, 40 % ordered material but never used it, 20 % used it to some extent, and only 2 % used the material as it was meant to be used.

On the other hand, new central legislation has had a strong promoting effect on EE. New programmes have been approved recently for all levels of secondary school. Furthermore, NGO's have made very effective use of this time to lobby in the boards that created these programmes. They succeeded in having several important aims incorporated into programmes, and the effects of this campaign on teachers are already noticeable.

FACTORS INFLUENCING IMPLEMENTATION

A. Characteristics of the change

1. Need and relevance of the change
2. Clarity
3. Complexity
4. Quality and practicality (materials)

B. Characteristics at the school level

5. The adoption process
6. Administrators involvement and support (role of principal)
7. Staff development
8. Teacher's sense of ownership
9. Time perspective
10. Evaluation systems
11. Influence of board and community
12. Teacher mutual support
13. Teacher characteristics and orientations

Of the implementation factors of influence I will be discussing "Teacher participation" and "Time-perspective". Teacher participation in the decision-making on EE and in the development of teaching materials seems essential. There is not much decision making as NGO's are outside the schools and prepare and develop materials from behind desks. Teachers consider most of these materials to be fairly inadequate. Those who do use them begin by changing the materials and continue to ask for more practical materials. Doyle and Ponder have coined a term for this phenomenon, the "practicality ethic". Time-perspective refers to the duration of EE programmes. Developers of EE-materials tend to make these programmes too long, convinced as they are of the importance of the issue at stake. However, lengthy projects are a big hindrance to implementation, because teachers who are unsure about the effectiveness of an innovative programme likely will venture to take on one or two lessons, but not ten or more. Another aspect of the time factor is that teachers would like to know when they have implemented "enough EE". The EE organizations, however, never seem to be satisfied with any duration of time and continue to bear on teachers.

FACTORS AFFECTING INSTITUTIONALIZATION

1. Withdrawal of special funds
2. Withdrawal of support
3. Loss of sympathy from administrators and colleagues
4. Availability of rewards
5. Turnover of staff
6. Competition of new innovations
7. Neglect of active planning for continuation
8. The reconsideration process

Of the "institutionalization" factors I will be dealing with "Incentives and rewards", "Staff turn-over" and "Concurring innovations". I would like now to quote an appropriate comment Fullan once made: "The fact that those who advocate and develop changes (that is you and me) get more rewards than costs, and those who are expected to implement them (those are the teachers) experience many more costs than rewards, explains why things remain the same."

Teachers are not given much incentive. Evidently, this tendency is not culturally related, at least that is not the case in the Netherlands. Of course, by "incentive" I do not mean primarily material, although they should not be excluded. All too often, their efforts simply go with very little, if any, acknowledgement or praise on the part of colleagues and the school administration. On a conference last week, my Belgian colleagues told me that in their country teachers implementing EE often feel isolated, because they are considered "green freaks". We must bear in mind that the messages of EE may implicitly criticize the behaviour of colleagues. Even the most enthusiastic of teachers find themselves wondering at times "why am I doing this?".

Staff turn-over is a very serious threat to institutionalization. The transfer of one or two teachers who were implementing EE successfully to another school could mean a complete break-down of the project. The same thing could, however, happen in the same school, if those teachers were given other duties or subjects to teach. They may not have the immediate opportunity to implement EE into their new subjects. Even a change in the school's administration could influence the institutionalization of EE severely. In one Dutch school, where EE materials had been developed within the framework of an international project heavily funded by the EC, there was only one teacher who kept the project alive. However, when a new principal took over, who was not so sympathetic to the whole undertaking as his predecessor, the project collapsed. Within a few months the teacher was summoned to "return to normal practice, because all this running around of students in and outside the school was annoying". No EC could prevent that. Another conspicuous threat to institutionalization are concurring innovations. They may be approved by the school's administration, leaving the teacher little room to continue implementing EE. The teachers themselves may also make the break. It is especially when EE is introduced in schools as project-work that institutionalization becomes difficult. As you know, project-work is strongly recommended by EE organizations "because EE exceeds the boundaries of traditional disciplines". Of course this is true of environmental problems, but it is a serious error to apply this insight indiscriminately to an educational setting. That shows lack of knowledge about the practices of schools. More often than not, teachers do not favour project work as a means of improving EE. They favour project work for very different educational objectives [such as teaching pupils social skills, the ability to think critically, a sense of independence etc.]. EE may be the accidental content of a project, easily changed the next year for any other subject.

One good look at these lists would show you that innovation is not a simple process of convincing teachers and producing materials for them. It is a far more complex process, the intricacy of which can only be underestimated, which is, in fact, usually the case.

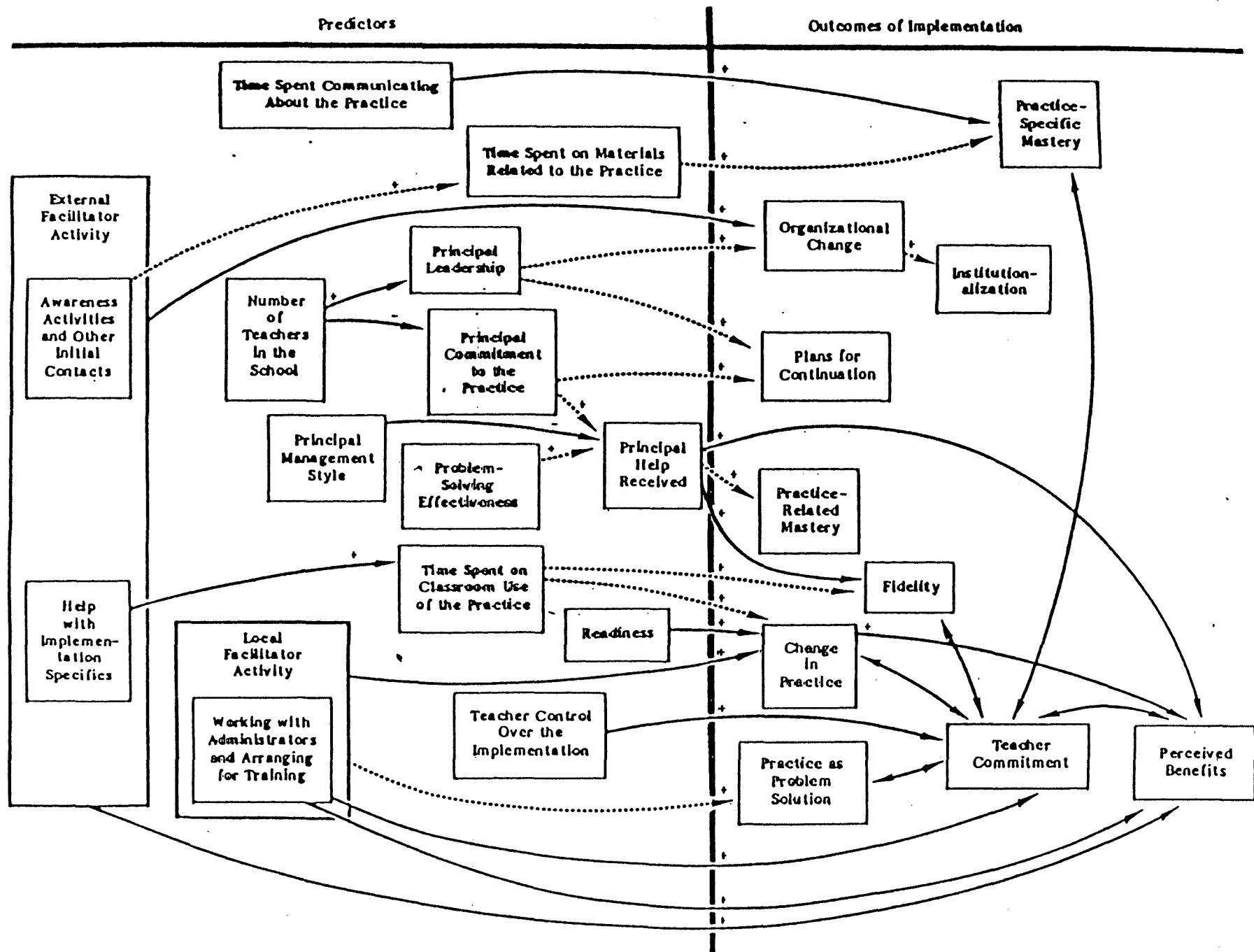
DESSI-RESULTS

Why are these processes so difficult? It is because we are not only dealing with processes but we are dealing with people, and people tend to have reservations about everything new.

When confronted with an innovation people's response, consciously or not, is one of fear, concern and resistance. It was discovered in the US, among teachers training for the first time and those up-dating their skills, that people run through a rather fixed pattern of concerns when they have to change their practices substantially. This pattern, discovered by Fuller, and explored in depth by Hall, Loucks and Rutherford became known as the Concerns Based Adoption Model. The poor results of so many dissemination efforts of EE over the last twenty years are due to the gross underestimation of these concerns.

Again, I will have to be brief in my discussion of the model, but there is a great deal of literature available on it.

Synthesis C: Predictors of Outcomes of Implementation



Synthesis C: Predictors of outcomes of implementation

THE CONCERNS BASED ADOPTION MODEL

Stages of concern

1. **Awareness.** On this level, teachers have just become aware that there is an innovation or a new policy.
We can assume that as far as EE is concerned, all teachers are now at this level.
2. **Personal.** On this level, teachers' questions and concerns concentrate on their personal aptitude, well-being and possible success. Some of the questions typical of this stage are: "Will I be able to implement this new practice?", "What will it cost me?", "Will my students be cooperative?" The questions focus on the teacher. Fuller originally identified this phase as the Self-centred phase for teacher trainees.
3. **Informational.** Although self-centred questions remain very important the teacher develops an interest in the innovation itself. He or she wants to know "what it is all about", "what it requires" (refers to self and next stage of concern), "why it is better than current practices", "what are the rewards" (refers to self and students).
4. **Mastery.** The teacher may now be in the implementation phase, concentrating on the tasks of teaching the innovation. We can gain a better understanding of this phase by taking a closer look at the three sub-phases:
mechanical use, routine and sophistication. First the teacher carries out certain practices almost precisely, and perhaps rather clumsily. As he gains self-confidence, his performance improves and he adapts his personal skills. In the third sub-stage his performance, enriched by his experience so far and by a deeper understanding of the innovation, may even exceed the expectations of the developers of the innovation. The term for this stage, concentrating on "how to perform well" was originally coined as the "Task-centred" phase.
5. **Consequences for students.** As the teacher has gained confidence he is able to consider either working in cooperation with other teachers, or the real benefits of the innovation for the students, or perhaps both.
That's why I reversed the sequence of this and the following stage. They originate at approximately the same time. Only now the teacher is concerned primarily about his students and how they will benefit from the new practice. Throughout the earlier stages, his concerns about students were more centred on himself "would they like him to teach in this new way?"
6. **Cooperation.** The teacher is now ready for cooperation with other teachers to improve the innovation. Cooperation also brings with it acknowledgement and rewards from others. In this phase, teachers enjoy talking about the innovation to demonstrate their mastery of it. The term for this phase is the "Student-centred" phase.
7. **Revision.** In the last phase, teachers develop more and more doubts about the effectiveness of the innovation and either start looking around for a newer innovation or begin to adapt the innovation substantially to meet their ever-increasing needs.

The questionnaires developed to measure the extent of the concerns on different levels have proven to be very satisfactory. They consist of about sixty questions about the various stages of concern. The answer to each question is given a score. The scores for the answers on questions dealing with the same stage of concern are totalled, and the totals are used to compose profiles. Take the following example: You might like to study it yourself and perhaps consult your neighbour's opinion for a moment. What kind of teacher is represented here graphically, an expert teacher on this particular innovation or a novice?

FIGURE I: CONCERNS PROFILE OF A TYPICAL NOVICE TO AN INNOVATION: HIGH SCORES ON INFORMATIONAL AND PERSONAL CATEGORIES

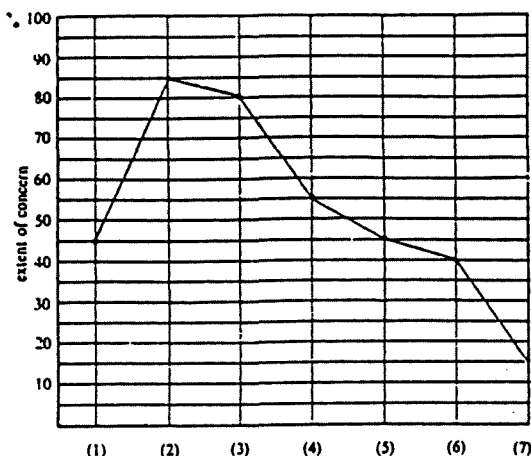
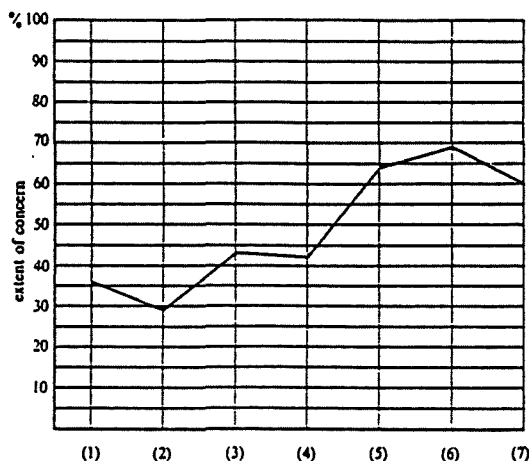


FIGURE II: CONCERNS PROFILE OF A TYPICAL EXPERIENCED USER OF AN INNOVATION; SCORES ARE HIGH ON CONSEQUENCES, COLLABORATION AND REFOCUSING CATEGORIES



Developing a strategy.

Based on the theories discussed so far, my colleagues and I carried out a pilot project from 1987 through 1990, during which time we developed a strategy to overcome all the hindrances to implementing Environmental Education. We called this strategy, "Planned Assisted Introduction of EE" (PAI; in Dutch PBI) (Schermer, 1991; Schermer et al. 1992a and b).

I will present the main principles of this strategy as the highlight of my presentation:

FIFTEEN PRINCIPLES WHICH FACILITATE IMPLEMENTATION OF EE

1. EE must be introduced into schools by credible and sensitive people, not just by means of brochures, lesson-sheets, projects and other written materials. The fact is that experience has taught us over the past twenty years that written materials alone are not an effective means of implementing EE or any other innovation. The agents introducing an innovation must be people. They have to be credible, which means that they have to know their subject, and at the same time, understand the idiosyncrasies of the school. They should show insight into and sympathize with the difficulties and concerns (!) teachers and schools have about implementing the innovation.
2. They should coordinate their efforts to fit in with the individual teacher's or department's current curriculum. There are always parts of a teacher's or school's curriculum which can be made to include EE or be adapted to it. In the past, promoters of EE had an 'incredible' (see point 1) tendency to ignore these 'bits' of EE in teacher's programmes, thus giving the teachers the feeling that they were 'inadequate'. Therefore, the teacher's programme should be screened thoroughly for real elements of EE or elements which lend themselves to it. Subsequently the curriculum should be readjusted to make these elements more explicit.

3. They should encourage the insertion of small units on EE (10 minutes to 1 period), instead of promoting projects. Incorporation of many short units on EE into a curriculum has proven to be more effective than one large series of lessons or a project. Short sections or activities on EE allow for a range of subjects, reminding students of the extent of and interconnection between environmental problems, problems which occur in many domains of society. Large series of lessons and projects tend to deal only with one theme which is elaborated in depth, but also time-consuming. After such a project or lesson series teachers may decide that their students "have enjoyed enough EE". Treatment of environmental problems in projects, therefore, may be too difficult and one-sided for students of a certain age and fail to teach them about the extent and variety of environmental problems. Secondly, projects can generally be scrapped from the program quite easily, especially when they are so time-consuming. It is much harder to remove a large number of short insertions in a program, because that decision would have to be made many times. Furthermore school officials are less tempted to do so since each insertion does not consume that much time. Nevertheless, external facilitators should be warned that teachers often ask for a project, presumably, although not consciously, for the reasons mentioned above. Admittedly, although projects can be effective, they do present disadvantages which have to be dealt with beforehand if a project is to be implemented in a school.
4. The expansion and adaptation of the program should be carried out by the teacher himself, and not by the promoting agent, because it should be the teachers own work. Teachers are much more inclined to scrap materials compiled by others from the programme in years following than those they develop themselves. Furthermore the teacher gains 'a sense of ownership' over the material if he adapts it himself. After all, he is the person who can adapt the materials to his own situation and skills better than anyone else.
5. Presumably in his dominant teaching strategy
As the teacher is the person who can adapt the materials most precisely to his own situation and skills, facilitators should refrain from pushing teachers too much to adopt new teaching methods. Yet in the past, a lot of people involved in EE have tended to be very nitpicking about teachers' activities, denouncing them immediately if these activities were not lofty enough or did not contain a sufficient dose of group work, discussions, anti-authoritarianism and other teaching methods which are every teacher's nightmare. They did not understand that their zeal did more to antagonise teachers than to open them to cooperation.

Our primary aim implement EE in the dominant teaching style of the teacher and only secondly or thirdly propose other teaching methods, but not before the teacher has gained confidence over the new subject matter. Introducing EE is one innovation, but introducing new teaching styles is another. The two should not be confused but paced.

6. Existing EE materials should be used.
It is not necessary to have teachers reinventing the wheel. As I pointed out earlier on, a teacher should, as it were, invent his own wheel, but his version can be derived from existing materials. The only thing problem with overabundant availability of EE materials is that they are not used. The facilitator should not instruct teachers to create new materials but rather, to use the existing ones. In doing so the teacher would save a lot of time. Furthermore, it would be very unwise not to put these resources to full advantage. Often EE materials are not as bad as teachers claim they are. They are simply unfamiliar to teachers and as such, the contents may seem unorthodox or perhaps even alarming, qualities which prompt many teachers to reject the material as 'poor quality'. In the process of adaptation the teacher will familiarize himself with the material. Very often, teachers actually discover that the materials are not as bad as they had thought and only require minimal adaptations.

- 7. The facilitator's input**

It is the task of the facilitator to introduce into the school the materials that seem best suited to the local situation and the teacher, especially with regard to the teacher's abilities and skills. It is necessary, therefore, for the facilitator to begin with a careful inventory of the teacher's (real) needs, before he 'goes shopping' (DESSI-abstract) in the various clearing houses for EE materials. The facilitator can only accomplish this task if he has a vast overview of and a profound insight into the EE materials available, as well as other resources such as training and supporting institutions, opportunities and addresses for excursions, fieldwork etc. Such extensive knowledge can only be expected from a professional facilitator. There is nothing against taking the teacher 'for a drive through the countryside in EE land'. On the contrary, but when time is precious, the most efficient way to proceed is to divide the tasks of the teacher and facilitator equally: the teacher adapts the materials and the facilitator obtains them.
- 8. Adapted to local circumstances and well founded in facts and figures**

The only thing which may be really new to the material the teacher will use in his classes are local illustrations of global and national environmental problems. These illustrations are necessary to familiarize students with the rather abstract concepts of general environmental problems. E.g. how much UV reaches the earth in our city? How much acid is there in our rain? How polluted is the soil in our village? These illustrations should be firmly grounded in concrete facts and figures in the surroundings of the students. Again, it is the facilitator who is aware of these facts for the region of the school, or is capable of obtaining them quickly. He should provide the necessary data, descriptions, graphs etc. about the local situation and leave it up to the teacher to choose which ones to use.
- 9. The assistance is not free.**

Support for implementation of EE is expensive and should, therefore, not be free. Some of the causes of the poor results of supporting efforts in decades past were that they were much too voluntary and were not extended over a longer period of time (institutionalization). However, the bill for the support should not be paid in money but in results. As it is our aim to implement and institutionalize EE we accept a certain number of implemented EE lessons as 'payment' for our support. It is a fair application of the principle of "you scratch my back and I will scratch yours." We estimate that a contract for an increase of five periods (of fifty minutes) on EE in a year must be feasible.

Taken into account the advice to insert small units (advice 4 above) we could also calculate 10 periods of 25 minutes or 25 short treatises of 10 minutes and all kinds of combinations. It is essential, however, that the efforts of both teacher and facilitator take on the form of concrete results, not just good intentions (Freyberg). To make this 'violation' of the well-established teacher's freedom more acceptable and more 'organic', we lately scheduled an inter-school conference in the end of the first year of school support, in which all participating schools (teachers) report on the achievements they made in the last year. This is a very natural and rewarding incentive for them to have the opportunity 'to show something' of their creative adaptations of the materials they used.
- 10. Much attention has to be paid to institutionalization**

One of the causes of the bad results of supporting efforts in the past decades were that they were not extended over a longer period of time (institutionalization)
- 11. Incorporation throughout the entire school.**

Incorporation throughout the entire school would mean, first and foremost, that the new EE units have to be incorporated into specific subjects the curriculum in order to prevent them from becoming obsolete. Even in staff turnovers, one of the greatest threats to institutionalization, successors will be much more inclined to keep the curriculum as is, thus saving the material for future generations of pupils. But this is not enough.

The innovation should be brought to the attention of the school administration, at least on a tentative basis. Though because of past failures to do so we are approaching the eleventh hour, it is still not too late. The results of the innovation thus far within the present discipline should be reported. Recognition for the teacher should be obtained as a reward for his efforts. The impact of such rewards has been largely underestimated in the past. It would be like me thanking you now as a reader for being so perseverant as to read all of the material I have covered up to this page!

Furthermore, the foundations for EE should be extended and efforts made to apply environmental rules to life in the school itself. The use of plastic cups should be reconsidered, paper should be used on both sides and recollected for recycling. The use of energy, water and photocopying (!) should be scrutinized (which may lead to substantial savings for the school!), the amount of waste should be reduced and an overall attitude of 'cleaning up your own mess' instilled in the students, especially in the surrounding of the school.

A third element of incorporation in the whole of the school is to extend EE to other subjects. I will deal with this shortly.

12. Other sections (subjects) are invited to join.

We noted before that it is not wise to press teachers to adopt lofty teaching methods in early implementation phases, because then we are fostering two or more innovations at the same time, and the moment is inappropriate. But this situation changes in later implementation and institutionalization phases. Then, parallel with the cooperation phase illustrated in the Concerns Based Adoption Model (see before) a need for cooperation arises. Teachers will need this as a confirmation of and reward for their efforts. If they succeed in convincing their colleagues to join this not only serves to expand EE, which in itself is a reward for those people who care about the environment, but it has also positive consequences for the teachers in that they receive concrete recognition for their role as trendsetters. It is a confirmation that they were not wrong when they chose to invest their time in the implementation of EE in their programmes.

13. More difficult teaching strategies are proposed.

Now that the teacher has implemented firmly a number of EE elements in his own programme and has acquired the support of his colleagues, thus gaining confidence in this innovation (which by these facts becomes less and less 'an innovation'), the time comes near to increase the quality of EE. After all, although we were very critical towards premature application of comprehensive treatments of environmental subjects and 'difficult' teaching methods, we would never deny that EE is a comprehensive domain of study which should be treated in all the disciplines of the school. Neither would we deny that EE requires such various teaching activities as fieldwork, independent research, interviewing people, discussing etc.

To wait with the promotion of unusual teaching methods until the teacher has gained the cooperation of colleagues of different subjects also has another advantage. Now the teacher does not need to reinvent the wheel as he may learn various teaching styles from his colleagues who teach daily in the tradition of their disciplines. So the physics teacher may learn discussing issues from his social studies colleague, as they later may learn how to set up a study from their physics colleague.

Both may learn how to teach their students to write better reports from the Dutch teacher (or whatever the language of the country may be), who in turn, can learn discipline-centred descriptive techniques from the biology teacher or how to organize a field trip in order to write poetry about nature. Perhaps the mathematician may start a project with the arts teacher in order to make diagrams about the environment more comprehensible and more fun and therefore more effective.

14. **Giving the teacher a feeling that he is growing permanently**
Giving teachers opportunities to undertake new things within the realm of EE prevents them from looking for 'something new' (see CBAM above) outside this realm. In this respect, EE has to act like 'a jealous god'. No matter how worthwhile objectives taken from health education, peace education and development cooperation may be they should not be incorporated in the curriculum instead of EE but parallel to it. Therefore, new ideas should be brought up within EE and not outside. On the other hand, by keeping new ideas for this phase (which of course should be a planned and not an arbitrary strategy) the facilitator can avoid overloading the teacher with innovations in the fragile beginning stages of EE and provide sufficient incentives for the teacher to prolong his efforts on EE.
15. **A local or regional network is a substantial support to both teacher and facilitators.**
If a facilitator supports several schools he may try to link the schools together in a kind of network. Teachers can then support each other over the boundaries of the school. However, other institutions can also become involved on a regular basis in this kind of cooperative effort, institutions such as museums, public services (water purification, waste transport, the city sanitation department) teacher training colleges, other environmental institutes, zoo's and childrens' farms etc.. One really should seriously make an inventory of all the possible contributors to such a network.
Of course in large urban conglomerates the opportunities seem greater but on a regional scale it must be possible to realize as many links and cooperation.

The Planned Assisted Introduction which we favour is a paced strategy which takes into account all the factors and desired effects mentioned earlier. Extended over a two-year period, the facilitator's plan of action in applying the strategy should look as follows. What we cannot show in this limited space is that each phase and in fact each singular action (intervention) within the phases requires well-considered special (social) techniques which not everybody has mastered. Therefore, most people need training. This training is provided for the training course for facilitators the we have developed.

PLAN OF ACTION TO BE TAKEN BY FACILITATORS

0. **The facilitator's preparation**
In the first year of his supporting activities a facilitator should select easy schools. He is in a learning period and he should not make things more difficult than they already are. Yet, we very often encounter novices who seemed unsatisfied before they had selected the most difficult and unwilling backward school in the country, which almost seemed like masochism.
1. **Selecting and contacting a school**
Contacting schools and making an offer seems easy but should be carried out very carefully, because in the very first meetings all kinds of expectations may be aroused.
2. **The facilitator's preparation**
In the following consultations the first step to be taken is to analyze very carefully what is already done on EE by the teacher (supposing the facilitator is supporting a teacher and not a whole department), to indicate possible EE insertions and extensions in the running program of the teacher and to decide which insertions will be worked out. These activities should be carried out with the utmost care, because they will set the trend for the following phases. If this phase is carried out carelessly, teachers will easily fall back on the inadequate strategies they usually use.
As far as the scope of the insertions are concerned, we suggest as a rule of thumb that a facilitator request (friendly) that an additional five periods (of fifty minutes) be devoted each year to EE be incorporated into the curriculum in return for his supporting efforts. These sessions can be divided into 10 sections of 25 minutes or 25 sections of 10 minutes or a combination of these.

Next comes the careful and realistic planning for the adaptation of materials which should be carried out by the teacher. Here new pitfalls lay ready for the facilitator. Teachers are often very clever in getting the facilitator so far that he will make the additional materials. But for reasons clearly explained above he should refrain from doing so. The planning should in black and white, a contract between the teacher and facilitator. Together they can look for what the teachers needs in order to compile and develop the new materials. In this phase the facilitator unpacks from his 'brief-case', the concrete and abstract resources he has already collected as a kind of sample set. By studying and discussing these materials, it will become more and more clear what the teacher and the facilitator both have in mind. Therefore, this phase is very important to the eventual contents of the material. After this, the facilitator 'goes shopping' (a term derived from the DESSI-study) for the necessary but lacking materials. If the previous phase is carried out carefully he knows exactly what to look for, which is one good reason not to hurry through that phase, or work superficially. Here the know-how and knowledge of the facilitator become essential. If he has a vast knowledge of the materials available in the field he can probably provide the teacher with the best possible help. If he is well established in a network he can consult colleagues. 'Shopping' and/or acquiring the required knowledge is a time-consuming task, but it is the centre of the facilitator's expertise. It is exactly on this point that the teacher will evaluate the facilitator's input. In this way the facilitator supports the adaptation instead of doing it, and ensures an efficient division of tasks based on each party's strengths.

3. Conclusion of a contract

4. Actual support activities

5. Close of the first year: evaluation

6. Planning the second year

At the end of the first year the 'joint venture' is evaluated. The more clear and tangible the goals the easier this task becomes (number and subject of planned additional lessons) are set and the mutual tasks to achieve this are clearly described. Even if the goals were not met and/or task-fulfilment was wanting, a careful and essentially non-threatening evaluation will make clear what happened and why this happened, thus clearing the way for better achievement in the future, which in fact is the next year.

Thus the evaluation of the first year is also the planning of the second. In this second year, of course, goals have to be met.

7. Shifting attention to institutionalization, dissemination and other teaching strategies

8. New actual support activities

9. Close the support period, hand over EE to the responsibility of the school (as a whole)

10. Check the continuation of the innovation after one year

At this moment three projects are running according to this strategy in the Netherlands, from 1992 until 1994:

- in the province of Gelderland with eight facilitators who are responsible to assist 20 schools
- in the province of Noord-Holland with ten facilitators who are in charge of 27 schools
- in Middel and Lower Agricultural Education (which has its own organizational structure) throughout the whole country with two groups of 8 and 16 facilitators, who provide assistance in at least 72 locations.

We can expect a publication about the results of these projects by the end 1994.

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IVN VERENIGING VOOR NATUUR- EN MILIEUEDUCATIE

The I.V.N. (Institute for Environmental Education) is an organisation of volunteers and professional workers. It was founded in 1960 in order to spread the notion of environmental protection and to promote environmental awareness.

The Institute is a private society but works with considerable financial support from the Ministry for Agriculture, Nature Management and Fisheries. Also, all provincial and many local authorities financially support the I.V.N. activities.

I.V.N. volunteers.

In nearly 175 local branches ("Afdelingen") fifteen thousand volunteers are involved in the work of nature and the environment. Every year these local branches organise hundreds of excursions with specially trained guides. The branches organise walking tours, exhibitions and courses; they have information about the areas where flora and fauna are threatened with extinction; they organise nesting box projects; they provide environmental education in-and outside schools in cooperation with community centres and children's zoos. Most local branches consult with the local authorities about environmental issues, such as the separated collection of garbage, the use of herbicides in public gardens and town and country planning.

The I.V.N. has two national working groups: the working group of schoolbiologists ("Werkgroep van Schoolbiologen"- WVS) and the working group of campstaff-members ("Werkgroep van Kampbegeleiders"-WVK).

The WVS is concerned with the interests and work of professional schoolbiologists in particular. The WVS has over 220 members. Most members are working in local institutes for education on nature protection and environment.

The WVK is a group of volunteers. It has about 300 members. They organise nature preservation workcamps for young people in nature reserves all over the country. In these camps not only maintenance work needed in nature is done. The work in the nature reserve is used as a starting point for environmental education. A special program is prepared for the environmental education in the camps.

Professional organisation.

The national head-quarter is in Amsterdam. A professional staff gives support to the volunteers and to others who are interested in environmental education. They also represent the I.V.N. in a great variety of national committees, working groups, associations and institutions concerned with nature and the environment. Some advisers are also concerned with the implementation of projects assigned by mostly governmental organisations.

There are specialised advisers for the different aspects of the work:

- schools: supports the working group of schoolbiologists (WVS); advises governmental and non-governmental organisations on education on nature and environment in schools.
- out-of-school activities: advises a great variety of groups concerned with youth-work on education on nature and environment.
- nature-management: supports the working group of camp-staff members (WVK); represents the I.V.N. in organisations concerned with nature conservation.
- training: organises training-courses for the I.V.N. volunteers.
- organisation: advises on administrative aspects.
- publicity: is concerned with the publication of a wide range of books, brochures etc. and the I.V.N. magazine "Mens en Natuur" (Man and Nature).

In nearly all provinces the I.V.N. has a branch-office with professional advisers for education on nature and environment. They advise regional and local groups.

In total the I.V.N. has now over 80 employees (full-time and part-time).

