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Concepts and trends in environmental education for sustainable development

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Concepts and Trends in Environmental Education for Sustainable Development

Introduction

Promoting environmental awareness, behaviour, and eventually action through education, and raising public awareness and training are the goals of environmental education (EE). This field of growing complexity and interdisciplinarity, grows in importance as the discussion of environmental issues increasingly involves whole societies.

Historical background

It is not easy to trace the origins of environmental education (EE). However, it is certain that the nature conservation movement, from the beginning of its activities during the second half of last century, both in the US and in Great Britain, had an agenda of disseminating its ideas through public education. Specialized publications were set up to achieve this objective. This model has been used not only by the nature conservation movement in many countries, but also by associated groups, such as the environmental movement and consumer groups.

Other factors that have contributed to the dévelopment of EE are national and international events, existing educational traditions, and the rise of concern for the state of the environment, to name a few (MESAGES, 1996). Table 1 lists a series of recent international key events in the area of EE. One of the elements the table highlights is the internationally leading role of UNEP and UNESCO and more particularly, UNESCO's EE-programme. They motivated the organisation of the Tbilisi conference in 1977, which still is a main point of reference, and continue to promote EE worldwide.

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	Event	Venue	Feature
1970	IUCN International Workshop on EE	Carson City, Nevada (USA)	first definition on EE
1972	Intergovernmental Conference on the Human Environment	Stockholm, Sweden	recommendation on EE, decission to create the UN Environment Programme
1975	Workshop on EE	Belgrade, former Yugoslavia	Belgrade Charter on EE Launching of UNEP/UNESCO International EE Programme (IIEP)
1977	Intergovernmental Conference on EE	Tbilisi, former USSR	Review of developments on EE and Declarations and Recommendations on EE
1987	Intergovernmental Conference on EE	Moscow, former USSR	Review of progress since Tbilisi and priorities for EE in the 1990s
1992	UN Conference on Environment and Development	Rio de Janeiro, Brazil	Chapter 36 on EE - EE as a transsectoral element in Agenda 21

Table 1. Selected international key events on environmental education during the period 1970-1992 Definitions, goals and methods (Palmer and Neal, 1994)

There is no unique, universally agreed upon definition of EE. Box 1 lists an exemplary collection of definitions of EE. Although the list is limited, reading through them leads to the discovery of the critical elements guiding the discussion on EE. They entail:

— EE is directed towards *behavioural* changes (IUCN definition) or at creating *participatory* citizens (EU definition)
— EE is directed towards *local* issues (the original aim of the nature conservation movement) but also aims to address global issues (Chapter 36, Agenda 21)
— EE is focused towards understanding nature and its processes (eco-centric), but also aims at understanding human-environment relationships (entailing an important anthropocentric component)

Another element the definitions make clear, is that EE is a broad field and due to its relative vagueness, it is sometimes interchanged, and sometimes (partially) overlaps related fields. Figure 1 shows a set of fields of education related to environmental education. It is important to note in this discussion that all these fields now tend to merge towards „Education for Sustainability". This points to an education that should encourage an understanding of basic ecological principles, the unsustainable nature of pure economic growth, and the connections between the many parts of a global environment. Thus, environmental education for sustainable development will be much more far-reaching and holistic than simply education for careful management of resources (MESAGES, 1996).

Although there is quite some variability in the definitions of environmental education, there is relatively more consensus on its goals than hierarchy of these goals. EE should aim consecutively at the following:

1. First EE should *increase knowledge*: people should understand how their environments work.
2. Second, increased knowledge should lead towards more *awareness* of human environmental behaviour: this is a matter of promoting values and obtaining commitment which people need for protecting and improving their environment.
3. Third, after knowledge and awareness, *skills* should be developped for the investigation and evaluation of the environment. A critical mind is of fundamental importance.
4. Fourth, after the three previous steps, *action* and active participation of individuals, groups and the society as a whole, conclude the target list.

Environmental education is the process of recognising values and clarifying concepts, in order to develop skills necessary to understand and appreciate the inter-relatedness among man, his culture, and his biological surroundings. Environmental education also entails in decision-making and self-formulation of a code of behaviour about issues concerning environmental quality. IUCN (1970)

The objective of environmental education is to increase the awareness of the problems in this field, as well as possible solutions, and to lay the foundations for a fully informed and active participation of the individual in the protection of the environment and the prudent use of natural resources. EU (1990)

Education, including formal education, public awareness and training should be recognised as a process by which human beings and societies can reach their fullest potential. Education is critical for promoting sustainable development and improving the capacity of the people to address environment and development issues. While basic education provides the underpinning for any environmental and development education, the latter needs to be incorporated as an essential part of learning. Both formal and non-formal education are indispensable to changing people's attitudes so that they have the capacity to assess and address their sustainable development concerns. It is also critical for achieving environmental and ethical awareness, values and attitudes, skills and behaviour consistent with sustainable development and for effective public participation in decision-making. To be effective, environment and development education should deal with the dynamics of both the physical/biological and socio-economic environment and human (which may include spiritual) development, should be integrated in all disciplines, and should employ formal and non-formal methods and effective means of communication. Agenda 21 (1992)

Box 1. Selected definitions of environmental education

The action component in this list stems from the NGO approach towards EE, and although it is clearly present in some official points of view (see e.g. EU definition in Box 1), world-wide consensus was not reached on this element in preparing Rio's Agenda 21.

These goals are intimately linked with methods. Obtaining „knowledge-awareness-skills-action" necessitates not only a pure intellectual approach. Learning about the environment is a matter of „head, heart and hands". It entails cognitive, affective and kinetic ways of learning. In depth learning should be the goal of any EE process.
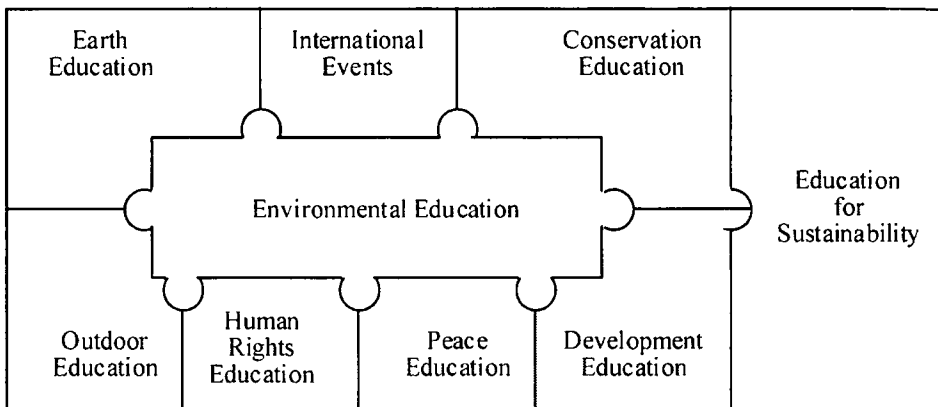
Figure 1. Influences on the content and direction of environmental education

Some of these learning techniques have to do with *environmental information* and *environmental communication*.

Environmental information is often described as the activity which provides information for reaching the goals of EE. It is highly instrumental in its approach and involves a broad scale of instruments ranging from the mass media over a wide array of printed materials (brochures, posters, books...), computer databases and networks, drawings, music, lyrics, role-play, games, on field activities to demonstrations and contests.
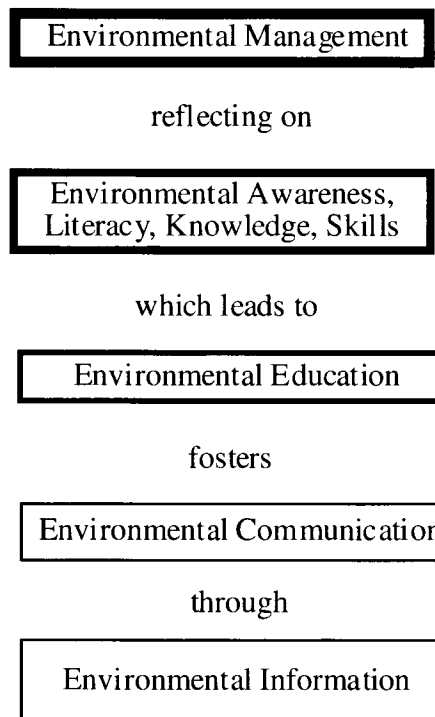
Environmental communication concerns how the environmental message can be brought over to the audience. Its effectiveness depends mainly upon five conditions:

1. The message should reach the target person or target group.
2. Knowledge of the target group and its social environment is necessary.
3. The advantages and disadvantages of environmental „(un)friendly" behaviour should be transparent.
4. The communicator of the message should be credible to the recipient: opposing target groups often try to minimise each other's

information, sometimes by decrediting the content of the information.

5. Feed-back is necessary to build in attitude changes on a long term basis: very often however evaluation and feed back of environmental communication lacks or is reduced to a suboptimal component. Corrections based on evaluations can substantially improve the expected outcome.

Environmental information, communication and education are interrelated. Figure 2 shows their hierarchy. The first step is information, the acts of providing data, comments, and guidance. This information needs to be communicated in a professional way. Both information and communication are important instruments for environmental education. The figure expands this further into the objectives of EE as environmental awareness, literacy and knowledge. This capacity on its turn might provide a sound basis for e.g. environmental management.

> Environmental Management

reflecting on

> Environmental Awareness,
> Literacy, Knowledge, Skills

which leads to

> Environmental Education

fosters

> Environmental Communication

through

> Environmental Information

Figure 2. Relationship between environmental education, communication, awareness and management (after W. Leal-Filho, 1999).

In view of these goals and methods, environmental education is clearly a long term (life-long) process, which necessitates continuity to be

effective. It uses a broad range of teaching and learning techniques and instruments to reach these targets.

Education for sustainable development

Agenda 21 (1992) provides a world-wide framework for sustainable development. Chapter 36 analyses the education as an instrument to reach sustainability. The general objective was to develop an environmental development literacy, to be established by the year 2000, as the learning requirement for an environmental competent citizenry.

As shown in figure 1, education for sustainable development broadens the environmental education paradigm. It liases environmental education with peace, human rights, development, and earth issues. In this way EE addresses not only aspects of nature conservation and environmental quality, but also societal and economic aspects (figure 3).
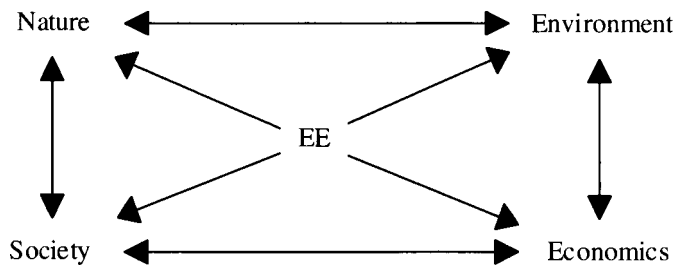

Figure 3. Areas covered by environmental education in a sustainability context

Issues dealt with in this sustainability context partially reflect this broader scope: population, fair trade or environmental security issues provide an example of this. On the other hand, the key issues in EE as desertification, biodiversity, pollution, waste, resource and energy use remain on the agenda. As this point the context provides specificity. Waste e.g. will be discussed on a background of changing production and consumption patterns. This scope will not only facilitate to understand qualitative and quantitative changes of the waste problem such as the increasing amount of plastic packaging, but also provide indications for management options.

Sustainable development as a scientific concept and a reference point for environmental policy is not univocally accepted anymore. Reasons for this are multiple:
1. Sustainable development has always been felt as a counterdiction in terms. One of the most obvious reasons is that utilization rates below

the natural restoration speed are hardly imaginable in a free market economy. Consequently for many resources depletion, and the deprivation of the next generations is unavoidable.

2. Sustainable development has less been used to move environmental concerns to the center of decision making, but rather to bring down the environmental necessities in favor of socio-economic reasons.

3. The introduction the sustainable development concept has not resulted in an over all improved environmental quality. In too many countries, for too much parameters environmental degradation continues.

This critical discussion does not negate that there is a broader framework for environmental education. However sustainable development is too much felt as a commercial and promotional term, which has lost most of its content. A discussion focusing on e.g. a „viable future" is preferred.

Poverty and environmental education

During recent years the attention of (part of) the international community moves from environment to poverty. Already at the Stockholm Conference (1972), M. Ghandi proclaimed poverty as the main driving actor behind environmental degradation in most developing countries.

At the local level bush-fires, hunting, fishing using pollutants or explosives, most forms of small and medium scale mining, offer clear manifestations of the relationship between poverty and environmental degradation. Those involved in these practices most often do so solely for survival. In the foremost majority of these cases people do not appreciate the harm caused to the environment. They even feel that protection of the environment or enforcing environmental laws means denying them of their basic sources of living.

This might illustrate the almost intimate relationship between poverty and environment. However poverty alleviation has also a much broader context of alphabetization, safeguarding basic necessities and development in its most complex aspects. Therefore, replacing environment by poverty alleviation on the international agenda entails the risk that awareness of and attention for environmental problems will fade out, while most of them are maybe managed but fundamentally unresolved.

Actors in EE

There are as many target groups in EE as there are actors in the environmental policy-making and debate. To some extent, these different groups are characterized by specific aims.

Authorities, as a rule, have to cover a very broad area of EE. These range from voluntary initiatives to provide general environmental information (e.g. a forest museum) or to inform and comment on a particular policy (e.g. a waste collection policy), to legally structured information procedures such as the free access to environmental information collected by the authorities or the involvement of citizens in environmental impact assessment procedures. In spite of the breadth of the environmental education message, authorities often lack the personnel trained in communicating this message. The content of the message is often poorly structured and misdirected.

The *consumer-citizen* mainly acts as a receiver of environmental information, which most often has a limited degree of specificity. The specificity increases when the consumer is a target in environmental policy. Information on the so called „green-" or „ecolabels" are quite specific. Citizens can substantially increase their active participation in environmental policy by speaking out such as in permit procedures and in hearings or serving on environmental (advisory) councils.

EE should however not only address consumers. The target is more ambitious: through a process of literacy and learning, EE should promote an environmentally *competent and aware citizenry*. This citizenry, which has inculturated environmental values, provides the necessary support for an appropriate long term environmental policy. Addressing however large groups, which need to be reached with general targets, are options which need more specific interpretation. This doesnot seem to be an easy task and might explain why very few EE projects are targeted to the population at large.

Business and industry is a long standing actor in environmental policy. It is one of the groups which is most experienced with EE, but uses it more as a management tool rather than in a „deep learning" sense. Communication has dual conotations for business and industry. The internal aspects aim to involve all groups operating indoors (management, staff, workers, supporting personnel) in realising the targets of the company's environmental policy. Externally, companies have to communicate with authorities on issues such as permits, environmental impact assessment, control procedures and lobbying on environmental policy. With people living in the neighbourhood of the plant and with NGOs they mostly handle conflicts, but seldomly they inform them on environmental performance. They communicate with the

press both on a regular basis and during crisis situations. As marketing of environmentally sound products will gain importance in the future, companies will communicate on this both with the general public and their suppliers of resources products. Although the number of environmental communication tasks increases, there are still only a few specific training programmes for environmental professionals.

The role of *scientific institutions* in research and training relating to EE is rather limited. A good indicator for this is the limited number of university departments on EE world-wide. As a consequence, important questions on EE haven't been thoroughly explored. Although universities and post high school training institutions offer many courses on environmental science, EE plays a limited to a non-existent role.

Environmental NGOs traditionally cover a wide scale of environmental education activities and are often in the forefront of discussions on the environmental quality in society. For various reasons (loss of interest in an issue, funding problems, lack of professionals), the EE initiatives of NGOs quite often show a sporadic character which reduces their efficiency.

Other organizations such as *worker unions, consumer organizations, women groups, youth associations,* etc... cover a growing variety of EE activities. The EE relevance of these initiatives is however limited, as they are mainly seen as side elements of the primary activities of these groups and do not constitute part of a well established EE strategy.

The role of the *media* on EE is still more limited than what is desirable. Information on environmental issues in the mass media was scarce, anecdotic and often accident-related in many countries until the early seventies. Since then there has been a constant rise in the number of contributions, which now are attracting a rather high degree of attention. Few newspapers appear without daily contributions on the environment. In spite of this situation, the number of specialised environmental journalists is still limited. Therefore the establishment of special training programmes and the creation of additional opportunities is of fundamental importance.

Next to the mass media, EE in more specialized information sources *(books, data information systems, journals...) is of growing importance. New developments with world-wide computer networks as the World Wide Web are opening a broad range of new applications in the near future.*

Lessons from existing projects

Especially since UNCED (1992) different EE projects have been realized and experience in the area is increasing. This also allows a first evaluation and reflection on effectivity and efficiency.

Most projects address limited *targets*. This is acceptable from a managerial point of view, but lacks outlook on the broader goals of EE. Because of the limited scale of the projects and their creativity, EE often appears as a fragmented field which lacks streamlining. On the other hand this reflects the reality of the manifold initiatives at the grassroots level which provide a most sound and democratic societal basis for EE.

Limited targets also has to be linked with the hierarchy of objectives of EE. Most projects contribute to spreading information, but few are action targeted. An example of an action targeted project is described in box 2. „Green schools" aim at informing and learning students about their school environment as an organization with multiple environmental implications. The project offers them a methodological approach to analyze and to improve the actual situation. As an educational instrument „Green schools" not only aim to reduce environmental pressure from the school (less energy and water use, prevention of waste and pesticide consumption, ...) but also contribute to an attitude towards the environment in the forthcoming professional and private situations of the students.

Often *target groups* are poorly defined. This might seriously harm the effectivity of the project. When it comes to *content*, EE projects address as a rule clearly defined environmental issues. They handle a multicompartimental approach in which aspects of water, air and soil are integrated so that the environmental problems and their ecosystem context are clear. They have most often a solution-managerial targeted finality.

Much more seldomly projects cover the new issues stemming from a sustainability or related analysis. Projects on environmental security or on the complexity of desertification and „desertion", are still limited.

The *methods* which are used are simple and often reflect pragmatism. This adds to the chances of success one would like to trace back in EE. In particular it seems difficult to combine cognitive, affective and learning skills when addressing large groups.

EE projects are extremely strong in the wide range of *instruments* they use in their information and communication strategy. However, creativity and originality should not be the only yardstick to measure the attractivity of a project. Less information is available e.g. on the question „which combination of tools is the most efficient to reach the targets".

Finally, *evaluation and feed-back* should be an integral part of EE. We lose too much information from our experience of the past because projects are insufficiently evaluated in a prospective and constructive way. Corrections to projects during the process have the capacity to improve substantially the expected outcome.

Tailoring EE projects more according to the framework which emerges from the analysis of definitions, goals, methods and actors can upgrade both the effectivity and the efficiency of the actions on the field.

EE is, only to a limited extent, a matter of theory. Rather, it involves field work, practical action and contact with the everyday environment. Students, for example, can be made aware of environmental problems but often the relationship between their own life and their own environment is not always clear to them. The Green School Project in Flanders, attempts to approach environmental education in a practical way.

The project aims to stimulate positive feelings for the environment in secondary school pupils by applying an Environmental Care System in their own school. Environmental care systems were first used by industry in an attempt to reduce the impact of pollution. A school, just like any company or even a family, is a polluting unit. In an attempt to be as comprehensive as possible, the care system was designed to include 7 focus areas: energy, water, waste, supplies and equipment, transport, green spaces and catering.

The system is based upon 15 logical steps. In summary this involves: drafting an environmental policy, choosing one or more focus areas after a brief audit, setting up project groups and work groups, making an inventory of the environmental situation at the school, defining the policy, introducing new measures and recording the results. The last step is evaluation of the process. These steps are defined to provide sufficient guidelines whilst leaving enough flexibility for the individuality and creativity of each school.

Documentation and a computer programme are available for each focus area. The documents entail:
— a manual, which guides schools through the implementation of the main steps of the care system
— measures to improve the environmental situation in the school
— a well organised documentation, with background information outlining the environmental impacts of each focus area.

The focus areas were tested in eight Flemish schools (1993-94 and 1994-95). During the 1995-96 school year, the Green School Project was made available to all secondary schools interested in taking part. Over 40% of the schools responded and participated in the project.

Since the school year 1998-1999 the project has been broadened towards technical and vocational schools. Specific environmental care systems have been established for areas as slaughtery, bakery, car maintenance and repair, and personal care.

Box 2. The „Green School Project": an action targeted approach to environmental education
(Hens, 1997)

Conclusion

Environmental education appears as a very multidimensional field:
— its subject is linked to virtually all areas of the environmental discussion.
— it uses a wide range of methods, both instrumental and intellectual, the final aim being the establishment of an in depth learning process.
— its goals are ambitious: information and knowledge are relevant to the extent that it leads to awareness, which in its turn should change people's behaviour and stimulate them to action and to promote a more environmentally friendly attitude.
— it must reach all target groups involved in environmental policy with a wide array of instruments. Maybe, this is the most extensive area of the field: for each group involved more specific instruments become needed.

When the actual state of EE is compared with the above goals, there is clearly a considerable lack of study on the interrelated nature of human activities and the environment. But EE has more needs. *Specific research* e.g. on evaluation of EE projects is necessary. Many *core areas* remain insufficiently defined and described. The complex interface between formal and informal education is one of them. But also the EE-environmental and general policy interface remains almost untouched by scientific analysis. EE is equally in need of active *financial support*. Without this support existing valuable initiatives are at risk of disappearing, an insufficient number of new projects will take off and the most necessary civil support for environmental policy might reverse.
Promoting EE, with a specific accent on sustainable development, will be an important task for the years to come.

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Koncepcje i trendy w edukacji środowiskowej
dla zrównoważonego rozwoju

STRESZCZENIE

Celem niniejsze go artykułu jest analiza złożoności edukacji środowiskowej (EŚ) i jej różnych podstawowych aspektów. Artykuł analizuje najnowszą historię oraz cele i metody stosowane we współczesnej EŚ. EŚ jest kompleksowym i długoterminowym procesem, który należy kontynuować, aby był on efektywny. W tym celu potrzebna jest technika i mechanizmy o szerokim zakresie nauczania. Najbardziej ambitnym celem EŚ jest nie tylko informowanie i szkolenie ludzi, ale podnoszenie ich świadomości, zmiana ich zachowania i ewentualne promowanie odpowiedniego działania w sprawie środowiska.

Złożona specyfika tej tematyki staje się bardziej zrozumiała, jeśli analizujemy drogi, którymi różne cele w EŚ powinny być osiągane. Dla każdej grupy nacisku (władza, handel i przemysł, środowisko naukowe, środowiskowe organizacje pozarządowe, obywatel i klient, środki przekazu) istnieje szybko wzrastająca liczba możliwości i bardziej specyficzne narzędzia przybliżania się do celów EŚ.

Niniejszy artykuł ocenia podstawowe elementy EŚ (historia, cele i metody) i zwraca szczególną uwagę na traktowanie tego zagadnienia przez grupy o różnych dążeniach (celach) w zarządzaniu i polityce środowiskowej.

Analizowany jest wzajemny układ między edukacją środowiskową i wychowaniem dla zrównoważonego rozwoju. Opisana jest nieustająca dyskusja, która łączy te tematy z ubóstwem. Mimo, że istnieje bezpośredni związek między tymi problemami, rozważania te nie powinny osłabiać uwagi poświęcanej problemom środowiskowym jako takim.

Artykuł w części końcowej zawiera opis projektu EŚ, skierowanego do uczniów szkół średnich i dotyczącego problemu radzenia sobie ze środowiskiem w ich regionie.

Kompleksowa ocena EŚ ukazuje rosnący dystans między działalnością na tym polu a celami teoretycznymi. Ta konkluzja wzywa do istotnych finansowych inwestycji w dziedzinie EŚ, zarówno przez kraje uprzemysłowione jak i rozwijające się.