Educational Dimensions of Environmental School Initiatives

Peter Posch

University of Klagenfurt,
Klagenfurt, Austria

Abstract

In the first part of the paper some features of the international OECD/CERI Project "Environment and School Initiatives" are described. The central idea of the project is to support teachers in educational activities that connect the promotion of dynamic qualities (such as initiative and self-confidence) with the promotion of environmental awareness. In the second part the project's philosophy and its educational implications are discussed: The main idea is that the increase in human-produced complexity has created a qualitatively new situation, in which local initiatives, long-term value-orientations and the wide-spread ability to reflect on one's own actions become a matter of survival. For the educational system this means a redefinition of its tasks to include reflective action on their environment by students and teachers and an appreciation of the value complexity of environmental problems.

In this paper I shall first describe significant features of the international OECD/CERI Project "Environment and School Initiatives" and shall then discuss some of its implications for the understanding of teaching and learning in schools.

Salient Features of the Project

How it began

"Environment and School Initiatives", was launched in the Centre for Educational Research and Innovation (CERI), OECD, in 1986 by a proposal of the Austrian Authorities. The members of the Governing Board of CERI decided to include "Environment and School Initiatives" as part of the Innovation Exchange Program. It was decided that the work would be carried out during a two year period, ending in an international conference hosted by Austria to discuss the results

The conceptual framework contained the following guiding principles (CERI 1986). The project was to connect two relatively new educational aims which are not normally related to each other: the promotion of environmental awareness and the promotion of "dynamic qualities", such as initiative,

independence, commitment, the readiness to accept responsibility, etc. The former of the two is often regarded as telling of a conservationist spirit and of hostility towards economic and technological development. The latter is interpreted as stimulating change and a positive attitude towards economic and technological development. The project was based on the assumption that environmental awareness and dynamic qualities can be regarded as closely interdependent, that the sustainment and construction of an acceptable environment is in need of initiative and creative human potential and that – on the other hand – the environment offers the breeding-ground for dynamic qualities.

Does such a connection provide the basis for an increased understanding and for innovation of the teaching-learning process at school? This was the question raised by the project. It was understood that the experiences of teachers and pupils were of decisive importance in this respect.

Each of the eleven participating (European) countries was asked to nominate a national co-ordinator and schools or teachers who would be willing to contribute to the project. The following criteria for selecting schools were defined:

- the school initiatives should have four dimensions, if at varying degrees of intensity:
  * personal involvement of students and emotional commitment;
  * interdisciplinary learning and research;
  * reflective action to improve environmental conditions;
  * involvement of students, at least partially, in decision-making on problem-finding, on procedures and on monitoring their work;
- the concept of 'environment' should be a broad one, not limiting school initiatives to the natural environment, but also including the built, social, economic, cultural, technological environment.
- the activities of the schools should transgress the boundaries between school and community and there should be links to outside institutions.
- different kinds of schools should be represented, including for example, primary, secondary, and vocational schools.

The participating teachers were asked to accomplish two things:

- in their environmental initiatives they should try to find their own context-specific interpretation of the two general aims of the project (i.e. environmental awareness and dynamic qualities) and realise them in relation to each other.
- they should systematically reflect on their activities in order to improve them and in order to contribute to their own and other people's knowledge of environmental education. In other words: they should involve themselves in action research.

The first of these two requests was immediately taken up by most of the participating teachers and it seemed that it released additional energies and ideas. The request to do action research, however, was far more difficult to understand and to accept, partly because it was not possible to provide the necessary support and training in the time available, and partly because the idea that teachers could generate knowledge of their work seemed too new.

Although all participating teachers produced descriptive reports on their activities, only a few went a step further and selected issues to be studied in more detail. In Austria, for example, a training program was set up to familiarise teachers with ideas and methodology of action research. In a first three-day seminar, experiences were provided in gathering and systematically analysing information on aspects of instructional situations. As a preparation for the second and third seminars the teachers were asked to keep a research diary on their experiences, to identify issues which they considered important (for example, specific effects of environmental project work on specific students) and to gather information on the issue selected (for example, by recording interviews with students). The seminars provided opportunities to discuss observations, to get feedback from other teachers and to find solutions to problems. As a result, all of the teachers wrote a case study on an aspect of their work.

The national co-ordinators' tasks were to provide logistical support for the teachers, to organise opportunities for communication and training, to do research and to write a report on the state of environmental education in their countries in general and of the "Environment and School Initiatives Project" in particular. In most cases the national co-ordinators were prominent people in environmental education administration or research in their countries. However, in only a few cases did the co-ordinators have additional support structures at their disposal. This proved to be a handicap especially with regard to the research dimension of the enterprise. In spite of this difficulty each of them was able to set up a network of communication (primarily via seminars and school visits) with the participating teachers and to produce a national report. In a few cases additional studies were done, for example, in Austria, where the national co-ordinator interviewed the heads of the project schools on their perception of environmental school initiatives (Pfaffenwimmer, in preparation).

The international co-ordination was to be carried out by the CERI Secretariat. Its tasks were to organise the communication among the national co-ordinators to discuss the methods of work, to design a common framework for the national reports and to prepare the final conference.

This project was concluded with a one week international conference and public project exhibition in Linz (Austria) in September 1988. The Conference was attended by 350 participants from twelve Member countries: 150 participants were students from the ages of nine to nineteen years. They were accompanied by 120 teachers and took an active part in the program. When not attending the conference they visited Austrian schools where they were able to exchange

learning experiences concerning environmental education with fellow students from Austria. Hospitality was afforded to students from Austrian families throughout the week. The Conference was also attended by administrators from Ministries of Education and Environment, as well as experts and researchers in environmental education.

John Elliott in his invited lecture called the conference a "unique event in the history of international projects concerning curriculum change". The reports and presentations from teachers and students and the samples of their work which they showed at the project exhibition provided the conference with an enormous wealth of experiences with school initiatives. They ranged from an environmental pillory set up in front of an elementary school (Thomasroith, Austria) on which pupils put everything they found on the road thus showing to adults the effects of their thoughtlessness (they found less and less thrown away things on the road) to the re-orientation of a whole school (Island of Öckerö, Sweden) that reserved one third of weekly instructional time to project work (glasshouse culture, fish breeding, weekly radio programs by students etc.) by which students acquired competencies they could immediately use to enter (and in some cases even to create) jobs on the island.

Further analysis was carried out in group sessions on major issues; for example, quality standards regarding environmental school initiatives, modes of assessment, or the changing roles of teachers. The conference was concluded with high motivation on the part of the participants to continue their work.

The Present State of Affairs

The positive impression of this conference culminated in the decision of the CERI Governing Board to continue the "Environment and School Initiatives Project" as a full-scale project with 21 countries participating. The original aims were still accepted as valid: to stimulate school initiatives that combined the quests for environmental sensitivity and dynamic qualities and to increase the visibility of these initiatives.

However, three additional perspectives have been developed and agreed upon by the country co-ordinators:

− the comparative analysis of environmental education policies in participating countries in order to facilitate cross-country learning;
− the design and evaluation of innovative strategies and organisational structures to support the growth of environmental school initiatives;
− the promotion of research in Environmental Education. A special task will be to support countries (by training seminars, experts, materials) to gain experience with action research in order to test its potential in inducing a process of professional reflection on environmental school initiatives.

Presently the expanded project is being organised: schools are selected, especially in the new countries, national infra-structures are established. An international training seminar for national support persons has been organised in Frascati, Italy. Small conferences have dealt with problems of curriculum design in environmental education (in the Netherlands) and with environmental economics (in Austria).

The basic approach of this complex project is to provide participating countries with an international framework to strengthen environmental education on several levels: locally, regionally and nationally. The special touch of the project is the fact that its principal characters are teachers and students who are actually involved in environmental initiatives, acting, reflecting, and communicating on their work.

The Project's Philosophy and its Educational Implications
The School in Context
The present development of industrialised societies can be characterised by a number of features which imply fundamental changes in the human perception of reality:

- the consequences and side-effects of human activities are becoming increasingly unforeseeable (Conti in OECD/CERI, in preparation);
- effects of human interventions are becoming a potential menace on a global scale;
- decisions to be taken are becoming more and more controversial and defined by dilemmas.

For Arranz (1987) these tendencies are results of the increasing complexity of humankind's "artificial limbs" by which information is made accessible (for example, microscope), is processed (for example, computer), stored (for example, video disc), and used (for example, CAM). He draws the picture of an artificial octopus with tentacles that multiply and grow longer and longer. They develop a "life" of their own, and their intricacies and interactions with "natural" processes are less and less understood and manageable by their creator. For Arranz this tendency of humankind to distance itself from its environment by technical rationality pre-programs its rise and fall. The "octopus", Arranz assumes, will eventually collapse under the sheer weight of its tentacles. Through loops of positive feedback humankind would reach the point of no return after which these limbs could no longer be controlled and would destroy themselves and the conditions for human existence. I do not share this pessimistic view. I believe, that other scenarios are possible and that they are already beginning to take shape:

- in view of increasing complexity, the economic, political, and social power structures find it more and more difficult to centrally define local problems and to pre-determine solutions to them. This development enforces a change in the relationships between them and the individual citizens. Thus a demand for individual initiatives and responsible local decision-making is being created. As a result, competencies which in the past were limited to political, economic, and cultural elites are now being demanded from the majority. I have called this a process of 'democratising' (perhaps one should rather say 'generalising') dynamic qualities (Posch, 1990).
- peoples' perception of their position in relation to the environment is changing. The idea that an individual is at the same time outside and inside the environment (for the latter relationship perhaps a new word such as "conviroment" would have to be coined) is gaining ground. This change in perspective is a result of increased and uncontrolled complexity. The growth of technological interventions, for example, seems to be linked with a decrease in the variety of living species, which may lead to a decrease in self-organisation and to a general destabilisation of existing ecological systems. As a result, there is a search for new and globally applicable orientations for economic, public, and private life: one of them is "sustainable development" as proclaimed in the Brundtland Report of the United Nations.
- the concept of rationality and the approaches to the generation of knowledge are changing. Technical rationality has been the dominant form of rationality in the past centuries since the Renaissance and it has resulted in an enormous wealth of information and of possibilities of human intervention. However, it has dissociated the production of knowledge from the context in which it is used and in which its consequences can be evaluated. This has been well described by Schön (1983). Knowledge has emancipated itself from its dependence on reflected human aims and in turn defines them as what is possible ("we have the know-how to do X, and therefore we do it"). The technological question: "How do I get X?" has produced the life and the death potential of the complexity mentioned above. As the death potential increases, another question, a question of reflective rationality becomes prominent: "Do I like what I get?" This question refers not only to the intended results of human activity but also considers its unintended side effects. Reflective rationality may have the potential to regain control over the tentacles of human endeavours.

Emergence of New Educational Tasks

This societal background has also affected the educational system and calls for a reinterpretation of the functions of teaching and learning.

At an international OECD/CERI conference in Paris (1990) on science, technology and mathematics education, the Dutch delegate mentioned that in the Netherlands schools have been declared "instruments of national environmental

policy". In Austria, a ministerial decree on environmental education states that educational activities should include "the immediate participation of students to solve concrete environmental problems" (Bundesministerium für Unterricht, Kunst und Sport, 1985).

Such regulations indicate a fundamental extension of the aims of schooling. In both of these instances it is assumed that schools can contribute to the development of society not only via a transfer of established knowledge to the young to be used in the future but that they can play an active role "here and now". Also in the past schools have had an immediate societal function but it was primarily custodial and limited to keeping young people away from streets and jobs.

The direct involvement of schools in reflected action on the environment has found various forms of expression:

In a school in Tirol, Austria, 13 to 14 year old students studied the energy balance in four small villages. They prepared a questionnaire, went from house to house in pairs, asked for collaboration, and offered assistance in data collection; they processed the data at school and produced a comparative analysis of the energy balance for each house and for each village. The people who asked for it, were provided with proposals to save energy on the basis of their individual data (Mair, pers.comm.).

In an elementary school, students made a survey in shops regarding the use of plastic bags and inquired into the willingness of managers to offer burlap or cloth bags at a moderate price. A second survey was done a few weeks later and the shops that had positively responded to the request received a letter of thanks by the children (Haas, 1990).

In a secondary school in Carinthia, Austria, students and a group of teachers made an attempt to change their immediate school environment: the classrooms and the school yard. The idea was to make the school a place one would like to live in ("Schule zum Wohlfühlen", Schindler, pers.comm.).

Another school has documented illegal waste deposits and by going public succeeded in stimulating the responsible institutions to clear them. (Schweitzer, 1990).

At still another school a teacher with a local nature conservation group has organised a regional campaign to finance the acquisition of farmland to provide "meadows for butterflies and hedges for birds" and green

classrooms for schools, and thereby to reduce the negative effects of land consolidation (Zimmerhackl, 1990).

Similar examples could be given from many other schools in most countries (for an analysis of an Australian project, see Robottom, 1990). It seems that, relatively unnoticed by the public, a movement has developed during the past ten to twenty years initiating an integration of action-oriented activities into the aims of schooling.

The educational dimension in these examples implies reflected and responsible action on the students' environment. The intended result is an improvement of an environmental situation. For lack of another word, and hesitantly, let me call this new dimension of schools the "dynamic dimension".

This "dynamic function" can have several forms of expression:

– activities to inform other people (for example, on their energy balance or on possibilities to save energy). In many cases, research activities are a necessary prerequisite for this purpose: evidence is gathered and analysed (on energy use, on the supply of bags, etc.). The intended result is the production of local knowledge to be communicated to the people concerned.
– activities to convince other people of certain changes or to exert pressure (for example, in personal contacts, by petitions, public hearings, letters, by involving the local press, etc.).
– personal action on elements of an environmental situation (by painting and refurnishing a classroom, by buying land for green classrooms etc.).

Coping with Conflicting Tasks

The dynamic dimension implies new situations of teaching and learning: low-structured, uncertain, and unforeseeable situations, in which the problems have yet to be defined; situations of potential conflict with vested interests, situations in which responsibility has to be accepted. This contrasts markedly with core elements of the present "static" culture of teaching and learning in school:

– The knowledge to be imparted by teaching is largely pre-defined and highly structured. It is considered stable, and essentially beyond dispute. Its "utility value" can be high but its "significance value" is often low on account of its static character, precluding the learner from personal contributions (Tenbruck, 1975).
– The teacher and approved textbooks are the dominant sources of knowledge. The pupils are considered as relatively isolated recipients of this knowledge and under this perspective, communication and cooperation among them seems relatively dysfunctional.
– The values to be passed on with this knowledge correspond to its pre-structured character: conformity, discipline, and sense of order.

86

These features are still at the centre of the institutional self-concept of the school and provide a strong base of tacit understandings and mutual expectations. They were well adapted to the predominantly static societies of the past.

The new dynamic dimension does not appear to be compatible with the established normalities of the school and with the structures stabilising them (such as regulations governing the distribution of time and space, the systems of assessment, the practices of administrative intervention etc.). Furthermore, it has not replaced the traditional societal demands on schools: the transmission of the basics and of established disciplinary knowledge. It has only added another dimension to the conflicting demands on schools.

There are indications that the growing discrepancy between external demands and the prevalent culture of teaching and learning is also felt within schools: for example, the spreading burn-out syndrome in the teaching profession (Becker & Gonschorek, 1989), and the growing dissatisfaction of students with school. According to a German comparative study the percentage of 14-year old students saying that they "like to go to school" dropped from 75 percent in 1962 to 43 percent in 1983 (Allerbeck & Hoag 1986, p.78).

Presently the phenomenon of the slow intrusion of the dynamic function into schools can be observed. The process by which this function may modify the predominant culture of teaching and learning may well follow the model described by Pietschmann (1980). He distinguished five phases in which an institutional culture copes with new demands:

– in the first phase, a contradiction between established aims and/or procedures and new demands is created. The background of this contradiction has been described above.
– in the second phase parties are formed who identify themselves with one of the contradicting viewpoints and practices. Teachers and students who involve themselves in environmental projects materialise the contradiction within the institution. The developing conflict can be suppressed if one side is able to exert the necessary power but it cannot be solved by conviction because one position is as legitimate as the other and – in a sense – both depend on each other. This phase is probably the most commonly observed at present and full of diverse strategies.

On the side of the representatives of the dominant culture one can observe:

* the tendency to push activities of this kind towards the margin of school activities and into the leisure time of pupils and teachers,
* the tendency to insinuate that teachers involved in projects are driven by their own self-interests (for example, to get public attention, to be "better" etc.),

* the tendency to devaluate project work by using established performance criteria.

On the side of the "innovators" one can observe:

* the development of a high motivation to show that they are successful (and a tendency of self-exploitation).
* the tendency to devaluate the whole established system of education.
* the tendency to over-emphasise the positive experiences with environmental projects and to overlook or repress the cost of dynamic forms of learning.

– in the third phase both sides understand that a victory is not possible and that some form of coexistence has to be found. Some may even think that it is good "to live apart together".
– in the fourth phase the contradiction is no longer dividing the two parties but is developing within each party, inducing it to modify its position: the "innovators" find ways to integrate traditional practices and the "core" finds innovative "spin offs" that can be taken over without losing face.
– in the fifth phase the contradiction develops within each party; the differences between the parties fade and a kind of synthesis is found. A new practice develops by which the contradiction is coped with, although it is not solved. A balance between static and dynamic elements of teaching and learning is found.

The whole process implies a reconceptualisation of the curriculum: it is not only a series of abstract entities materialised in texts and/or processes to convey them (although they will continue to play an important role) but also a course of action giving young people a sense of immediate responsibility. It encompasses "cognitive qualities like the power to synthesise parts into complex wholes, to discover patterns in complex data, to look at situations from different angles; reflective qualities like the power to self-monitor one's actions in relation to the quality of the environment; affective qualities like concern for the environment and qualities of action such as exercising initiative and accepting responsibility for the environmental consequences of a course of action" (Elliott, in preparation).

Implications for Educational Theory

If environmental education focuses on practical problems of living which are experienced by students as challenges to become active, the necessity arises for students and teachers to reflect about their personal agency in the environment and to holistically understand the value complexity of environmental problems. John Elliott (in preparation) elaborated this basic idea in his keynote address at the Linz Conference. In eight theses he showed that the improvement of personal agency

88

in this way requires the involvement of teachers and students in a systematic reflection on action in order to improve it – in other words, action research.

To develop such a culture of reflection on action in schools appears to be an indispensable complement to the integration of a dynamic function into teaching and learning. It seems necessary not only in order to control the risks involved by giving students the opportunity "to play an active role", but also to develop "practical wisdom" as a counterpart to "technical rationality". John Elliott defined practical wisdom as "a holistic appreciation of a complex practical activity which enables a person to understand or articulate the problems (s)he confronts in realising the aims or values of the activity or to propose appropriate solutions" (Elliott 1989, 83f). This 'practical wisdom' is developed through reflective action, via cycles of reflection and action.

The dynamic reconstruction of teaching and learning, and environmental initiatives in particular, provide a number of good reasons for reflective practice:

– a strong and dynamic teacher personality may stand in the way of the aim to stimulate initiative and self-determination among students. We know very little about this relationship and how it is coped with. The problem, however, is posed vividly in a case study, in which a teacher learned that an environmental project which he thought was a pupil initiative was in the pupils' view not "their" project but "his" (Schindler, 1990).

– although there is little evidence that students are instrumentalised by their teachers on behalf of their environmental interests, the mere avoidance of manipulation is not enough. There is a tension between the need to understand the value-complexity of environmental situations and the desire to come to clear and simple solutions and corresponding actions. It seems to be a very difficult task to find ways to responsibly define problems, that is, to understand contradictory value-orientations and to critically respect people who hold them, but at the same time to come to a conclusion regarding one's own role. In this context it seems crucial that not only the conflicting value-positions between different persons or groups are taken into consideration, but also contradictions within persons, for example, between attitudes towards environmental issues and actual behaviour within the individual student or teacher (Taviss, 1972). The reflection on these latter contradictions may be an indispensable prerequisite to understand the value complexity of issues and to cope with them.

John Elliott (in preparation) has proposed principles of procedure which appreciate the value complexity of environmental problems and provide a framework for coping with them. He proposes:

– that teachers facilitate a learning process that takes the form of discussions about the dilemmas students confront in deciding on a course of action and the

controversial issues alternative solutions to these dilemmas raise within the community and society;

— that teachers do not use their authority position to take sides in discussions of problems and issues and to influence the outcome. They should adopt as teachers a procedurally neutral stance (not to be confused with affective neutrality); that teachers protect (rather than promote) the expression and development of diverse views in discussions;

— that teachers accept responsibility for critical standards in the discussions, for example, by requiring arguments to be based on reasons and evidence to test their views, etc.

To develop a reflective culture in schools involving action research by teachers and students as part of their teaching and learning activities is not a methodological problem (although methods can help see Altrichter & Posch, 1990). It is rather a problem of the professional self-confidence of teachers, a problem of becoming conscious of the high potential to generate and use knowledge in school in view of pressing environmental and societal needs.

References

Allerbeck, K. & Hoag, W. *Jugend ohne Zukunft?* 3rd ed., Piper, Munich, 1986.

Altrichter, H. & Posch, P. *Lehrer erforschen ihren Unterricht – Einführung in die Methoden der Aktionsforschung*, Klinkhardt, Had Heilbrunn, 1990.

Arranz, R.M. "Abgrund Mensch - Der Mensch im Fefüge der Natur unter dem Gesichtespunkt der Informatik", University of Salamanca, Salamanca, 1987, Mimeo.

Becker, G.E. "Gonschorek, G. Kultusminister schicken 55.000 Lehrer vorzeitig in Pension - Konsequenzen aus dem Heidelberger BURNOUT-Test (BOT)", *Pädagogik*, 6, 1989, pp.16-23.

Bundesministerium für Unterricht, Kunst und Sport. Umwelterziehung in den Schulen - Erlab 37 888/8-110 (14c)/85, Verordnungsblatt des BMUKS, *Stück* 5, 50, 1985.

CERI (Center for Educational Research and Innovation, OECD). *Environment and School Initiatives - Proposal by the Austrian Authorities*, OECD/CERI, Paris, 1986, Doc.Nr.CERI/CD (86)11.

Conti, L. 'Environment and School Initiatives - The Environmental Perspective", in OECD/CERI (eds.), *Environmental Education and Citizens of the Future*, OECD, Paris, in preparation.

Elliott, J. "Educational Theory and the Professional Learning of Teachers: An Overview", *Cambridge Journal of Education*, 19(1), 1989, pp.81-101.

Elliott, J. "Environmental Education in Europe - Innovation, Marginalization, or Assimilation", in OECD/CERI (eds.), *Environmental Education and Citizens of the Future*, OECD, Paris, in preparation.

Haas, K. "A Primary School's Initiatives", *Arge Umwelterziehung*, Vienna, ESIP-Series, No.5.

Kvarda, W. "Learning in Project Instruction", *Arge Umwelterziehung*, Vienna, ESIP-Series No.2.

Pfaffenwimmer, G. "Environmental Projects - Principals' Views", *Arge Umwelterziehung*, Vienna, in preparation.

Pietschmann, J. *Das Ende des naturwissenschaftlichen Zeitalters*, Zsolnay, Wien, 1980.

Posch, P. "Dynamic Qualities and Environmental Sensitivity in Education", *Arge Umwelterziehung*, Vienna, 1990, ESI-Series, No.9.

Robottom, I. "Environmental Education: Reconstructing the Curriculum for Environmental Responsibility", *New Education*, XII(2), 1990.

Schindler, G. "The Conflict", *Arge Umwelterziehung*, Vienna, ESIP-Series, No.6.

Schön, D. *The Reflective Practitioner - How Professionals Think in Action*, Temple Smith, London, 1983.

Schweitzer, K. "Emancipation Through Environmental Projects?" *Arge Umwelterziehung*, Vienna, 1990, ESIP-Series, No.4.

Taviss, I. "A Survey of Popular Attitudes Toward Technology", *Technology and Culture*, 13, 1972.

Tenbruck, F. "Der Fortschritt der Wissenschaft als Trivialisierungsprozeb", in N. Steer & R. König (eds.), *Wissenschaftssoziologie Kölner Zts. f. Soziologie und Sozialpsychologie*, Sonderheft 18, 1975, pp.19-47.

Zimmerhackl, K. "Wiesen für Schmetterlinge und Hecken für Vögel - Grundzusammenlegung als ökologischer Konflikt", *Arge Umwelterziehung*, Wien, 1990, USIP-Reihe, No.9.

Ah! How unique is this moment in time,
We now act collectively
With a single mind ~
o Silence ....
Then within Your stillness
We surely come to see
'All manner of thing shall be made well'.

Rcardss.