

A CURRICULUM BASED ON THE PRINCIPLE OF SUSTAINABLE DEVELOPMENT

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ABSTRACT

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Today conflicts of interconnected economic, social and environmental dimensions are facing the individual. Sustainable development will be a vehicle to cope with these conflicts, consequently systems thinking and curricula should convey this for education systems. In order to balance out the different objectives of the conflicts and being able to cope with these challenges appropriately you are dependent on values. Values are necessary to gain competence in decision-making and competence in responsibility. The underlying didactic system of this curriculum in Geography refers to this principle of interconnectedness, viewing things horizontally, and offers structures that help to achieve intergenerational responsibility on a local and global scale. This curriculum has been welcomed by international institutions (European Commission, OECD, UNEP, World Resources Institute, MONBUSHO [Tokyo]) and a lot of European Ministries for Environment and Education.

Key Words: Geography, sustainable development, values, responsibility, systems thinking

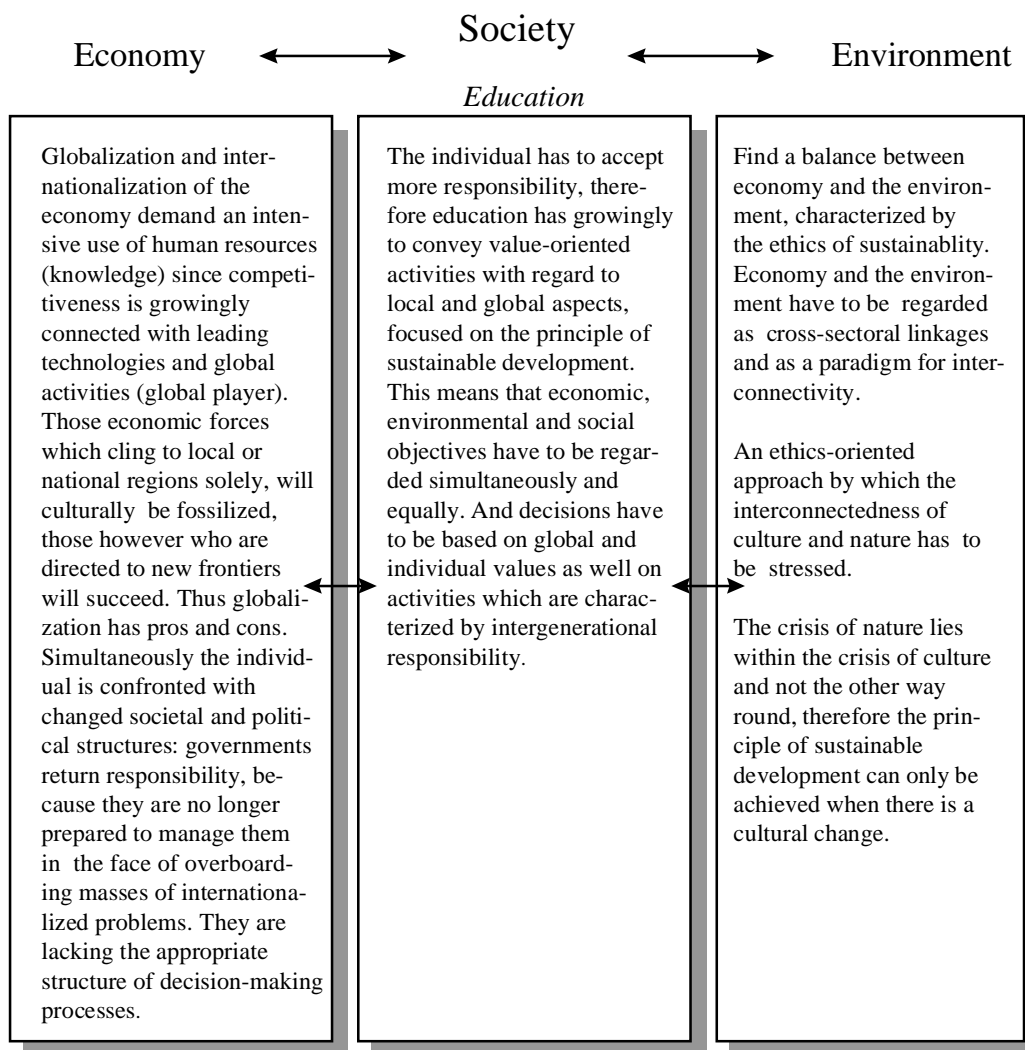
Introduction

Today conflicts of interconnected economic, social and environmental dimensions are facing the individual, because many national governments are still not prepared to cope with the issues of globalization. The consequences of globalization will also have implications on formal education. Many countries are busy with a broad rethinking of their formal education systems. Their systems are no longer considered adequate to meet the necessities of society and the workplace.¹ There is an urgent need of strategies that fit to combat the negative consequences of globalization. These different strategies have to be focused in a kind of Global Education or Global Learning.

Traditionally education has been designed to pass on existing knowledge, skills and values. Today education is being redefined and redesigned in terms of how to prepare people for life: Education is being understood as a lifelong process that needs to be restructured to new requirements. One of the requirements for the future is that of sustainability, a concept that has broad implications for curricula at all levels of education. Environmental education however has been one of the first established disciplines to deal

with man and environment. The main stress was on the environment and its protection. After UNCED there was a new approach. This approach asked for the integration of economics, the environment, and a variety of social sciences, presented in a holistic, interdisciplinary format, which is now often referred to as Education for Sustainable Development (ESD). Education for Sustainable Development has to fulfill two objectives simultaneously, (1) accomplishing the inner reform of the formal education system and (2) to prepare students for the future by becoming aware and have concern about economic, social and ecological interdependence.

Studying and evaluating the current cluster of economy-society-environment and its interconnectivity will help to show what education should be: ²



Due to this multiperspective view, education has to be reoriented. This has been stated and confirmed by the Earth Summit+5 Conference in New York this June 1997. There was a unanimous consent on this *Special Session of the General Assembly (to Review and Appraise the Implementation of Agenda 21)* that education with its cross-sectoral linkages will play a decisive role in implementing the principle of sustainable development in all aspects of our local and global being. It is true that the action plans of the

major United Nations conferences held after Rio have always seen education as the cornerstone of sustainable development in all its dimensions, but on the other hand the Session has also stated that the political will needed to successfully reorient education toward sustainable development is still lacking. And the integration of sustainable development concerns into formal education systems is also hindered by a lack of the kind of planners, teachers and administrators who are trained in interdisciplinary approaches in environment and development issues.³

ESD and Globalization

What are the characteristics of ESD? Many conferences have tried to become clear of what is meant by sustainable development. These efforts have been bundled in papers for the fourth (1996) and fifth (1997) session of the Commission on Sustainable Development which was created to monitor and report on implementation of the Earth Summit agreements and to take stock of how well countries, international organizations and sectors of civil society have responded to the challenge of the Earth Summit.

The following paragraphs will refer to these CSD - educational papers. "Promoting Education, Public Awareness and Training" (Chapter 36 of Agenda 21) has been the focus of the international communication on implementing SD in educational systems. The UNESCO has been its task manager. Some outstanding reports will widening the basis for arguing, e.g. *Education for Sustainability, an Agenda for Action*⁴, a demonstration project of the President's Council on Sustainable Development in San Francisco in 1994 and Jacques Delors' report on *Education for the 21st Century*.⁵

The principles underlying education for sustainable development include understanding the relationships between disciplines as well as geographic and cultural relationships. Further principles are: systems thinking, lifelong learning, hands-on xperiental learning, community-based learning, technology and personal responsibility. All these principles will be crucial to solve problems, form values and make choices in a world of increasing diverse and growing population, an expanding economy, and changing global environment. This may also underline that education for sustainability is a process rather than a fixed goal and reveals why countries are so interested that their citizens make use of these abilities..

Why do we need ESD? A characteristic of this current process of globalization is its spatial extension of economic activities. This is a result of modern technologies and the enlargement of market potentialities by new producers and consumers in a scale of nearly 3.5 billion people. A gift given to the OECD-countries as an offspring of the Cold War when it had ended. Beside these advantages there are also some disadvantages, especially in the old industrialized countries which have clung too long to old structures. Now they are faced with intensified competition and a continual high rate of unemployment.

This process is not very new. There have been economic activities which had been coupled with spatial extension (Pax Romana, Pax Britannica, Pax America), this time however the pushes by technology and globalization are much quicker and more intensive. Generally spoken people feel threatened by this process. How do they react?

They feel more attracted by their local region instead of feeling globally. They search for their roots, reference points and a sense of belonging.⁶ This results in a re-strengthening of the region and may add to an increase of varied nationalism - reinforced again by the growing rate of unemployment. Both caused by staying locally. To reduce economic or social inequities you have predominantly to strive for global competitiveness, a goal that asks for SD.

That's why President Clinton regards education as a critical national issue for the future of his country (1997)⁷ and therefore education will be reformed to better address sustainability. Jacques Delors' 1996 UNESCO-Report⁸ reaches similar strategies concerning education for the twenty-first century. Having in mind the present state of public awareness, he reveals the inner conflicts by saying "Mastering Globalization, Keeping Roots".⁹ To accomplish this within education, namely to implement education for sustainable development, reformers should bring to life the foundations of education: **learning to live together, learning to know, learning to do, and learning to be.**

When global issues and the challenges of globalization have to be handled in intergenerational responsibility, **learning to live together** will be indispensable. According to Delors this means more than tolerating otherness, namely to live together in mutual respect. "If we wish, through education, to learn to live together, we must reflect on the way in which history, geography, languages, philosophy are taught." These ideas are accepted and supported especially in those countries where globalization is understood as an opportunity to reorient policy in general and development in particular with regard to the future.

There are many reasons why Germany's industrial location has still not overcome the challenges of globalization. Meanwhile politicians accept that there is a real pile-up of postponed reforms ('Reformstau') coupled with a lack of get-up-and-go attitude. However there is a slow change in thinking, solely initiated by the high rate of unemployment. Sustainable development is growingly seen as a path opening a scope for restructuring economy, for reaching more quality of life, and promising jobs.¹⁰ Thus sustainable development and specially education for SD have become the center of interrelated strategies for attaining a viable future.

Reorienting Education for ESD

A general rethinking of education will be based on several didactic requirements.¹¹

First Requirement: Interdisciplinary approaches

Environmental issues traverse studies of natural sciences, social studies, and the humanities. To understand the interdependence of humans and environment you have to become aware of the complexity and unity of the global system, a characteristic of holistic thinking. This will only work by revealing how the different dimensions are related interconnectedly. The benefit of this approach is an organizing theme that's ideal for encouraging integrative thinking.

Second Requirement: Systems thinking

The interwoven nature of environmental problems demands systems thinking which synthesizes and evaluates linkages. Systems thinking fosters problem solving, conflict resolution, consensus building, interpersonal experience and critical and creative thinking. Thus we will understand the global implications of environmental and economic decisions.

These requirements offer an exemplary vehicle for developing and exercising many of these skills which are increasingly sought by employers. This makes also comprehensible why an increasing number of politicians are so extremely interested in promoting education for sustainability and why economy and education are approaching each other. They know that politics have ceased determining market globalization and that the traditional-style economic policy will only be overcome by a structural change. Thus they feel wholly dependent on this new thinking.

Third Requirement: Multicultural and Global perspectives

Achieving sustainability is also dependent on an understanding of different cultures and multiperspective approaches to problem solving. Globalization will face you with diverse cultures and ask for intercultural communication. Consequently you must have knowledge and an understanding of the Earth. Many environmental challenges, such as climate change, migration, loss of biodiversity, are global in nature. Responses must be global.

There are some initiatives which have already been dealing with global sustainable development issues and global perspectives. The World Resources Institute (WRI)¹² education director Mary Paden: „There are three aspects to dealing with global issues: First is the global perspective - taking a worldwide, big-picture look at topics. Second, the big picture must be tied to local situations and cultures. Third, is the matter of perspectives. People from different parts of the world have different takes on these issues, and listening to them is highly enriching.“ This approach is also practiced by the GLOBE Program (Global Learning and Observations to Benefit the Environment)¹³ that joins students, educator, and scientist from around the world in studying the global environment by making use of new technologies and forms of communication (INTERNET)

What is concerning the reorientation of curricula (cross-cut curricula) there are some countries that have successfully started to implement education for sustainability or organized the framework, for example Australia. Australia's National Strategy for ESD (1994)¹⁴ has worked out that the most effective strategy for increasing awareness and application of ESD principles is to incorporate these principles into curriculum, assessment and teaching practices in the school, technical and further education and higher education sectors. These principles are particularly incorporated in the learning areas of science, technology and studies of society and the environment. A key idea is to ensure that this is

done multi-disciplinary and balanced.

Geography and Sustainable Development

G. P. Marsh, the American politician, diplomat, and scientist may be regarded a forerunner in acknowledging of what we have done to nature and in pointing at social consequences. In 1864 Marsh published: *Man and Nature Or, Physical Geography as Modified by Human Action*. He described the causes and consequences of damaging the environment by Man, demonstrated by case studies from different regions in Europe and the USA. He quotes the administrators of the Province of the Lower Alps (France) in 1792. "Our mountains present nothing but a surface of stony tufa; clearing is still going on, and little rivulets are becoming torrents. Many communes have lost their harvests, their flocks, and their houses by floods. The washing down of mountains is to be ascribed to the clearings and the practice of burning them over."¹⁵ Further details are given by Marsh. In 1842 the department possessed 99.000 hectares arable land. In 1852 it had lost 25.000 hectares, washed away or rendered worthless for cultivation. The population of the department of the Lower Alps had fallen off no less than 5000 souls in the five years between 1846 and 1851.¹⁶ This proves again that the history of mankind has been influenced unlike more by the environment than by historical events and that we still have the problem of finding a balance between 'to do ' and 'not to do'.

Geography, reflecting the systemic nature of the world, is bridging Man and Nature and their interrelationships, it is as well interdisciplinary as transdisciplinary. It integrates economic, ecological and social questions, and supports ESD by adding the temporal and spatial dimension. This means that the interdisciplinary approach, systems thinking, and multicultural and global perspectives are very familiar for those who teach Geography.¹⁷

To re-evoke this 'new thinking' for restructuring curricula you have to clear up what students should do before evaluating alternative solutions. First they have to become aware of their interests as well as of those of the group, on a local and global scale. This will reveal conflicting issues and they are asked to make a choice between individual and societal as well as between national and global challenges. Second, to do this appropriately and with responsibility they (a) have to be in charge of a comprehensive knowledge and understanding of the Earth, (b) must be trained to look at issues with multiple perspectives while making use of spatial and temporal dimensions and (c) have to view economy and the environment simultaneously and equally so that they are enabled to balance out inequities. To accomplish this and get competence in decision-making they must rely on values. Curricula have to support this, after having been reoriented first.

This approach in Geography meets completely with that of the NAAEE¹⁸ and corresponds with their guidelines for implementing sustainable development in education, in addition to those already mentioned:

- ◆ a balanced presentation of viewpoints,
- ◆ reflecting of diversity (different cultures, races, genders, social groups)
- ◆ environmental issues should be explored by using a variety of scales, short to long time spaces, localized to global effects, local to international community levels

and curricula should promote intergenerational and global responsibility.

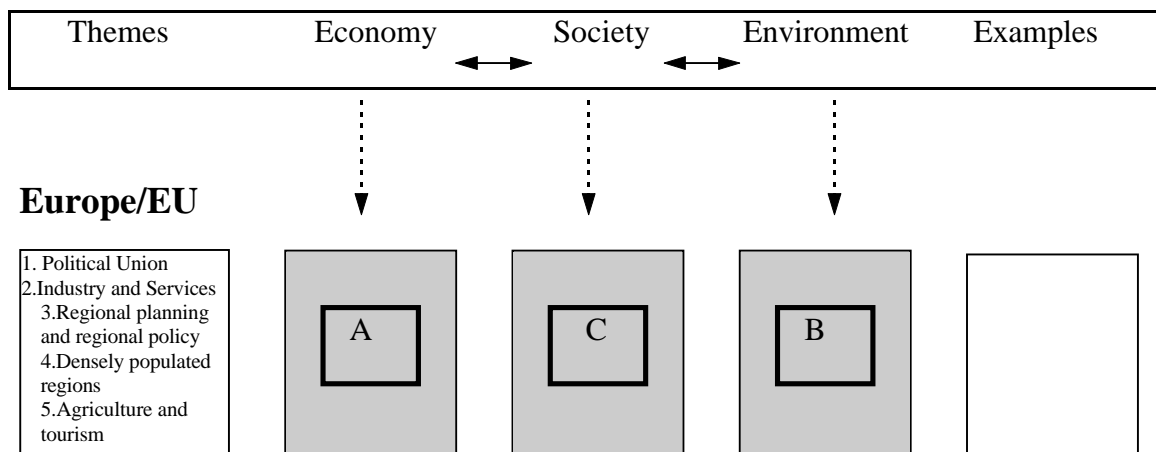
A Curriculum Based on the Principle of SD

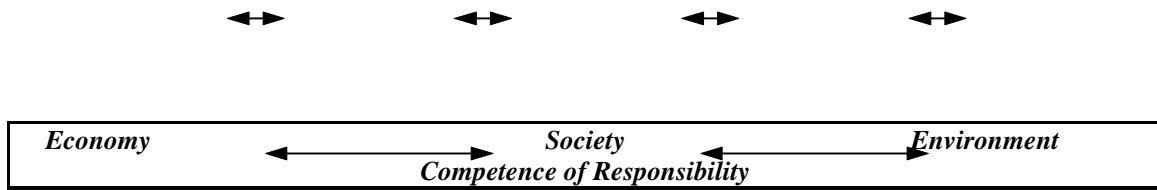
To restructure curricula for SD you have to use a didactic system that is oriented to the interconnectivity of social, environmental, and economic systems. ' Europe' , specifically the EU, as an objective of study may serve this purpose properly because it strives for an economic, monetary, social and environmental union. Moreover its citizens are increasingly forced to see the interdependence of these ' unions' . This means that you may cling to these dimensions right from the beginning. The other important fact is, concerning value orientation, that your decisions are based on a common cultural ground. This heightens the common basis for viewing and evaluating issues alike. Therefore these EU-objectives are of particular importance for decision-making processes and should be implemented in curricula as common objectives or guidelines:

- ◆ "to reinforce Europe's position, so as to enable it to fulfill its responsibility towards the other nations of the world",
- ◆ "to support efforts being made to preserve the ecological equilibrium in Europe and in the world",
- ◆ "to promote continuous economic and social progress and to reduce any imbalances at the same time."¹⁹

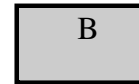
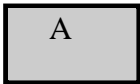
A curriculum based on the principle of sustainable development must rely on value-oriented objectives. All other elements of teaching have to be related to this. The following three steps show how this is to be done. The most important step and this has to be worked out before, is to design a decision-making structure where the conflicting issues are revealed. This may initiate a process where you are provoked to balance out the conflicting issues. The solutions or the objectives will either refer to international recommendations (e.g. EU, OECD, UNO) or to individual preferences. However the individual approach cultivates to recognize uncertainties, an increasing tendency we have to live with in a world that turns to be more and more complex. At the end of this process you have objectives worthwhile teaching, because they are learner-centered, coherent and throughout filled up with sustainable development.

The curriculum has been designed for the Federal Environmental Agency of Germany in 1994.²⁰ The international statements welcomed it and praised it for its new approach.





Industry and services:
Energy and knowledge



A structural change of the „old“ industries in the highly developed countries is necessary in order to achieve competitiveness on the world market. Developing high-tech industries, combined with the willingness to stand up to global competition, for instance, by means of investments in the research sector (knowledge/ know-how).

The first step:

←
describing economic activities by taking in consideration spatial and temporal dimensions

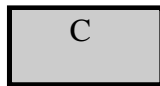


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The second step:
summing up the consequences of economic activities for the natural and the social environment. This makes aware the conflicting issues between economy and the environment

The third step:
considering the economic, and ecological dimensions and trying to balance them out with regards to sustainable development

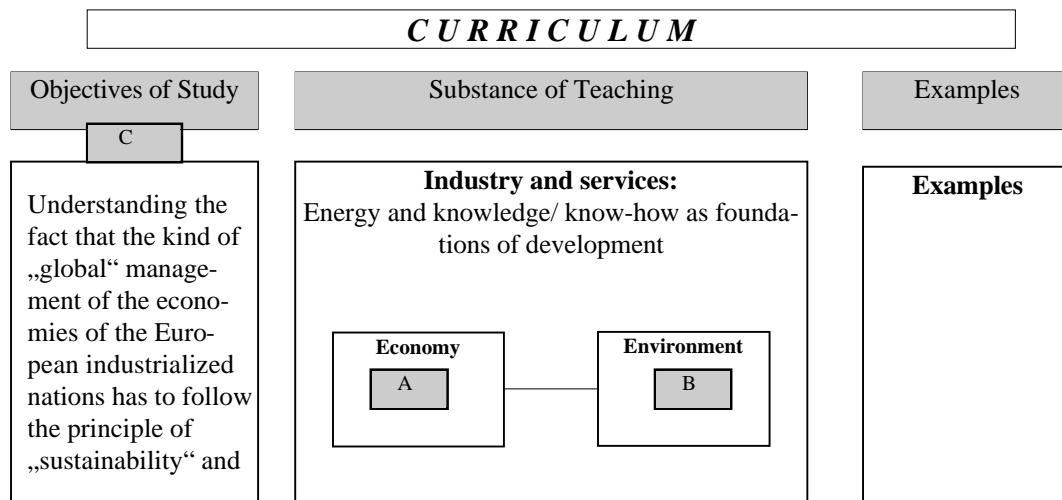
A burden on and damage to the local and global environment caused by „old“ industries: a waste of raw materials and of energy.



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Understanding the fact that the kind of „global“ management of the economies of the European industrialized nations has to follow the principle of „sustainability“ and that in order to preserve Europe’s competitiveness (the motor of integration) it is absolutely vital to realize that the quality of the environment and economic growth are interdependent and that energy-saving measures constitute a contribution towards developing the DCs

A burden on and damage to the local and global environment caused by „old“ industries: a waste of raw materials and of energy.



Notes

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