
The geography curriculum and sustainable development: a didactic research process

Dr Emilia Sarno

Emilia Sarno, University of Molise, via De Sanctis

Abstract

This paper presents an applied piece of research produced in collaboration with teachers and students from Molise, a region of Italy. Both the research process and the geography curriculum (centred on sustainable development) are documented. The teachers have concentrated on the issue from a theoretical point of view, and have perfected some didactic approaches based on field lessons and reflections on the experience. The experiment (pilot) has demonstrated the validity of the research. The teachers have established the guide-lines of a geography curriculum for sustainable development which can extend from primary to secondary school. It is hoped that Planet readers in the UK and elsewhere will find it interesting to learn about how education for sustainable development is being taken forward in schools in part of Italy.

The Research Process

This research has two aims: to spread teaching approaches relevant to sustainable development in Italian schools and to supply teachers with new and innovative methods to consolidate in a positive way the relationship between students and the environment.

This applied research, produced in collaboration with teachers and students from Molise, a Region of Italy, is based upon field research with the intention of observing teaching methods through repeated statistical surveys which have permitted an increased understanding of the issues involved. The debate on sustainable development has spread and is a subject widely cited in Italian school curricula at every level. Italian teachers, however, have difficulty in dealing with the issue and in translating it into practical teaching. Meetings have been held with teachers at every school level to shape ideas on the complex subject of sustainable development, its epistemological basis, and the fundamental role of geography as a major point of reference. The next stage has been to evaluate which methodologies will allow the establishment of an educational approach to sustainable development and to apply a direct form of experimentation so as to test the value of the research through the results obtained.

The Theoretical Presuppositions

The teachers have clarified the concept of Sustainable Development, which, according to specific literature, includes a respect for the integrity of the ecosystem, a rational utilization of resources, and social equity to the advantage of a better relationship between man and nature (Vallega, 2005). In the Italian context, the recent book, *Energia e Ambiente*, edited by Paolo degli Espinosa of Italian Institute for Sustainable Development in 2006, has been very important.

The basic theme of Sustainable Development is the relationship between man and his environment, taking into account the transformations which have already taken place and the possible changes in the future, changes which should respect both human needs and the resources of the environment (Sarno, 2005).

The anthropization of the environment is the fundamental concept to be applied in order to understand the diverse behaviour of human groups (Armiero-Barca, 2004). The social and technical revolutions, from the neolithic, highlight changes and modifications up until the most recent period characterized by perturbed environments (Delort-Walter, 2001).

In the second phase the teachers were concerned with identifying the principal subject to be used as a reference point so as to have a precise object in the learning process. This subject is geography because it is knowledge structured by human groups as a reaction to their continuous interrelationship with 'geographical space', starting from a group's own territory and its moving out into unknown environments. Geography has, then, the following educational ambit: it indicates the relationship between society and environment and teaches how to explore and represent this experience. Geography, however, can and must work together with other subjects that deal with the environment, favouring interdisciplinary interaction with, for example, history and the natural sciences (Pawson- Dovers, 2003).

The following topics need to be studied in greater depth: climate changes, alterations to the

ecosystems, the utilization of water resources, and desertification. Pollution of the atmosphere creates an imbalance which has effects on the entire biosphere. Water is a precious resource which is being polluted and which is scarce in some areas of the earth. Deforestation accelerates the loss of biodiversity and causes hydrological imbalance.

The last point to be dealt with by teachers was to choose the didactic methods with which to deal with the subject with their students and, above all, to create didactic projects which were practical and which allowed the development of students' abilities through direct experience.

Education for Sustainable Development must be participative, based upon research and discovery (Sarno, 2006b); particular attention must be given to observation and interpretation. Two phases can be outlined when elaborating a geography curriculum of study: one for Primary education and another for Secondary education. At the primary stage of education, exploration, direct experience and first-hand observation are fundamental; whilst at the secondary level, reflection upon the sources of knowledge, documentary research and attention to planning are primary concerns (De Vecchis-Staluppi, 2004).

The Experimental Stage

After having perfected these guide-lines, the teachers began the experimental phase of the research: they programmed the didactic plans which were composed of field work, periods of study, and the development of projects. They aided the students in appreciating the importance of a first-hand discovery of environmental problems and issues, and they stimulated them towards a personal reflection and the development of project-work. In this way they become directly involved with sustainable development.

For each school level a plan was established in the school's region which included a study of a specific issue (waste products, water pollution, uncontrolled forest clearing), data collection and information, and analysis of the forms of sustainable management of resources or materials.

The first set of data collected was from elementary school pupils. It was observed that the children not only had little knowledge of the subject, but also little familiarity with their environment. It thus becomes even more necessary to favour an improved familiarity with the environment and to make the pupils pay greater attention to the environmental affects of human activity. The pupils' drawings highlighted a growing awareness of the

issues faced. They also engaged in trying to find possible solutions for each individual issue.

This experiment clearly demonstrated its utility. It was also advantageous in promoting a greater knowledge of geography as direct personal experience was an incentive to study and allowed for the development of the necessary skills.

The results of the research and the development of the geography curriculum for sustainable development

Following the experimental phase, the teachers thought it opportune to apply similar programmes in schools of every level and type, as well as to develop a valid curriculum for Sustainable Development in line with a knowledge of geography. They also indicated the topics to be dealt with and the teaching methods to be used in schools. I cooperated with the teachers in planning the curriculum for Sustainable Development as outlined below.

3.1 Primary School

Space is a category of knowledge which develops due to a continuous interaction with the environment, which is understood as both a place of sensory input and of orientation. In this sense, the exploration of the environment is of fundamental importance and requires a capacity of observation in order to understand the territorial structures. An internalization of this logic, through spatial-environmental activities, allows the development of cognitive mapping and facilitates graphic representation by creating a link between observation and description. Exploration of the environment predisposes primary school children to relate knowingly and aids the development of cognitive mapping. Children will also learn the importance of the environment and develop a sense of respect for the natural world.

3.2 Elementary School

Upon moving to elementary school, the interaction between society/environment has to be both experienced and reflected upon in an abstract manner, that is to say it becomes necessary to reason about the relationship which exists between the two. Teaching must be presented on a local scale via analyses of both specific situations and of the transformations brought about by human activity: use must be made of direct personal discovery. The elements present in the geographical spatial context reveal how every aspect of the territory is the result of socio-

economic and cultural processes. The gradual exploration of the territory system will make comprehensible the modifications made by man through time. Students will begin to think of how to use the resources available in an equitable manner. This stage must be linked to students creating their first personal idea on sustainable development and how to live sustainably.

3.3 Middle School

During the middle school years students should learn a deeper form of analysis of the society/environment relationship using the different spatial scales, by studying the European regions. Their interest should be directed to the industrial process in all its complexity and to the different forms of social and environmental impact it produces. This analysis should be linked to the study of the political process behind development so as to be able to determine how the industrial system developed, the differences between the rich nations and the poor (those outside the process of industrial development) and the different forms of pollution.

Learning must be accompanied by an understanding of policy; students should learn about how to make positive modifications to the environment, to improve deteriorated landscapes, and to propose responsible utilization of resources.

3.4 Secondary School

Two major themes need to be dealt with in secondary school: the interrelationship between society/environment at the global level and an adequate analysis of the philosophical dimension of this relationship. Knowledge at the global level is necessary in order to understand international protocols and the interdependence between local and global political decisions. Furthermore, an analysis of globalization as an economic process will help to develop an understanding of the value of unified planning in dealing with environmental problems.

The geography curriculum will then be completed by a philosophical reflection on the relationship between society/geographic space because this will allow the students to become more aware of the use made of resources and of the importance of the environmental context for society. In this way they will acquire an understanding of Sustainable Development in a way which is appropriate both for society and for the natural environment. The students should, in the final stages of the educational process, possess the tools necessary

for an analysis and interpretation of environmental problems from the scientific, economic and political points of view. Finally, students should be exercised in the elaboration of functional interventions, by an appropriate use in their work of the language of cartography and information science.

Conclusions

This research has allowed the development of a curriculum for sustainable development to be included as a part of geographical knowledge and the organization of a series of didactic stages suitable for each student age. This was made possible by reflecting upon the epistemological aspects of this topic. However, the epistemological aspect of the subject can have a strong educational value if the ethical dimension is kept clearly in mind. Issues such as: respect for the environment, respect for resources, correct human approaches, and attention to those processes that will have an impact on future generations. Without these values, knowledge of this subject would be dry and unproductive. Knowledge of the anthropization of the environment must not be separated from discussing and debating ecological ethics and sound values.

References

- Armiero, M., and S. BARCA** (2004) *Storia dell'ambiente*. Roma: Carocci Delort, R., and F. Walter (2001) *Histoire de l'environnement européen*. Presses Universitaires de France.
- Degli Espinosa, P.** (eds) (2006) *Energia e ambiente dopo Kyoto*. Italian Institute for Sustainable Development: Edizioni Ambiente
- De Vecchis, G., and G.A. Staluppi.** (2004) *Didattica della geografia*. Torino: UTET
- MC Neill, J.R** (2000) *Something new under the sun. A environmental history of the twentieth-century world*. Norton
- Pawson, E., and S. Dovers** (2003) *Environmental History and the Challenges Interdisciplinarity: An Antipodean Perspective in Environment and History*. 9(1). 53-75.
- Sarno, E.** (2006a) *On the environmental history in Molise: "an approach to the sources of the 1800's in Cultural heritage and sustainable forest management: the role of traditional knowledge*. Warszawa. 521-524.
- Sarno, E.** (2006b) *Modelli e indicatori della progettazione ambientale in Valutazione ed autovalutazione*. IRRE Molise. 83-88.
- Sarno, E.** (2005) *Vedute in prospettiva- I segni del tempo sull'ambiente in Sapere*. 4. 62-69
- Sarno, E.** (2002) *Ripensiamo la geografia*, Roma: Kappa
- Vallega, A.** (1995) *La regione, sistema territoriale sostenibile*. Milano: Mursia

Emilia Sarno, University of Molise,
via De Sanctis
sarno@unimol.it