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Introduction

The role of education in conservation and in addressing the rapidly increasing environmental problems, while improving the environment, is well-known today. According to the Turkish constitution: Everyone has the right to live in a healthy and balanced environment. Protection of environmental health, prevention of environmental pollutions and development of the environment are the State's and every citizen's duty. (Constitution, Article 56.)

Education for the environment is not only a task of formal educational institutions, but also of civic organizations, mass media and local municipalities, which play a large role in increasing public awareness. Environmental problems recognize no artificial boundaries based on geography or ideology.^{1,2} For this reason, every nation must be assigned an international task

for increasing public consciousness through mass media and education.

In this paper, education for the environment in the Turkish national education system will be summarized and discussed, as well as how the principles and ideas of biopolitics would be incorporated into the educational system at each stage.

A Short Overview of Today's Education; Definition and Contents

Generally, people are affected by education through the lifestyle resulting from the values of modern civilization. We should educate people to be able to add something to every field of art and science, building private values as well as global ones. The basic principle for the realization of these aims is that people must think rationally and positively. Teachers should not only teach but also educate people. To apply these two concepts, teachers must use the potentials of schools and their proficiency to realize the aims of national education.³

The word education comes from the Latin word *educere* which means feeding. *Educere* is to direct something, to breed, to grow up. Education is an association that has its own structure and rules of operation. Education prepares young people for real life. The word education deals with a time period, but exceeds a frame of time in school and prevails at every age and stage of life.

Basic Characteristics of Today's Education in Turkey

Today's education is static instead of being dynamic. Its methods are not permitted to create a dialogue between students or between teachers and students. The educational system today, is based on memorization rather than research and discovery. The aim of education is to educate a person with a cultural knowledge that is not intellectually developed. A general approach to today's education reveals that it is not entirely, but only partially comprehensive. As a result, today's educational level is archaic and rough.⁴

In Turkey, the disciplines dealing with the environment are generally architectural planning, some branches of engineering (construction, chemistry, physics etc.), sociology, economics, biology and geography. During the recent years, due to the foundation of the Department of Environmental Engineering, a new professional branch named environmental engineering has

emerged. In the faculty of medicines, there are such branches as Environmental Health, Public Health and Medicine.

Contents of Education for the Environment

There is no systematic approach to environmental education. Environmental education needs a generally accepted definition, since there are different definitions and interpretations. A systemic approach to education on environmental needs must contain the following:

- environmental education must be comprehensive;
- it must include the inter-relations of parts and elements of natural life and global structure;

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and

- the problems and causes of pollution must be approached from the point of view of the
aforementioned relations. ⁴

Environmental Education

Environmental Education is a new way of learning about human relations with the environment. The object of environmental education is focused on the relationship and impact of humanity on the environment. It is the type of education stressing an integrated way of structuring human nature and natural and physical resources. This kind of education must be interdisciplinary, lying social, cultural, economic and scientific studies. It has to provide an understanding of the basis of life, while living in a man-made urban environment, and the development of public life. This education aims to create self-confident, responsible and environmentally conscious people.

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It promotes new, intelligent ways to conserve and develop the quality of life. Environmental education is not a kind of new conservatism. It is a futurism.

Historical Backgrounds of Environmental Education

There is no identified historical origin of environmental education. We can assume the first teachers of the the environment to have been the ancient Greek philosophers. During the long history of humanity, in every age there has been some interest and interpretations of "the environment." The relationship of humankind to the environment is closely integrated with science, technology and the level of development.

Understanding the environment depends on different geographical characteristics and social differentiations. Basic explanations for the environmental aspects like the sun, soil, water in primary communal communities, was left to a concept of 'God' in the Middle Ages. There is an interesting point that there were philosophical struggles between 'physical and metaphysical' concepts thousands of years ago, and these subjects were maintained in science and religion throughout history.

Parallel to the development of science, the evaluation of the environment tends to change in a more rational way. Philosophic and theological thoughts and religion have lost their importance since then. This trend may have cost Galileo his life, but changes in thinking and philosophy have established today's contemporary community. In the Middle Ages, the failure of environmental approaches was due to the inability to see the environment as a whole and not as separate parts.

Biopolitics and Education: Some Views and Proposals of Education for The Environment and Biopolitics

It is difficult to separate education and research from one another. Developing countries cannot devote enough attention to research and education on environmental problems. Factors such as the inadequacy of general education, as well as the low and unequal distribution of national income per capita must be taken into consideration.⁶

The more developed countries entered a new way of thinking much earlier. They had a period of renaissance and reform that helped them not only in solving environmental problems but also in finding solutions to crises of every aspect. Education about environmental problems must be applied everywhere. Various educational foundations are doing this piece by piece, without giving it a name. Doing this in a more regular way and having the needed awareness is necessary to prevent waste of time, energy and material.⁶

Nursery School Education for the Environment

Modern education is for every stage of human life from birth to death. Pre-school education for those under the age of⁶ is provided in many countries. Teaching love and awareness of nature must start at a very early age. The concept of bios, life, the relations between humanity and the environment must start being taught at this young age. The qualities and programs of this kind of education can be determined with the contributions of psychoanalysts, psychologists, biologists and sociologists. Today, there is no formal education for the environment in nursery schools in Turkey. If teachers have a developed environmental awareness, they can promote consciousness to students through lessons about natural events and seasons.

Primary School Education for the Environment

It would be possible for the primary school child (ages 6-12) to learn and to be conscious of biopolitical relations, with some regulations, through the content of the provided courses. The concepts of the natural environment, the bases of life, the interaction between human structure, nature and the environment, environmental pollution could also be incorporated into subjects on environmental problems caused by production and consumption.⁵ Waste material and recycling must be specially emphasized. It will make future education easier, stressing that human life is biological life on earth, and that people must act emotionally with this biological life, starting from the early years of childhood.

I. The Aims of Primary School Education⁵

- to introduce the bio-environment to students, to make them able to establish contact with living things around them and be aware of them;
- to teach the relationships between all living things in the ecosystem and the effects of the economic structure on these relationships; and,
- to establish moral judgments.

II. The Methods of Education⁵

While teaching biopolitics to primary school children, to make them sensitive towards nature and its rhythms, methods that stimulate sensory organs into action must be applied. The senses of sound, smell, touch, taste and sight can be used in different aspects of education:

- imparting expressions and explanations;
- personal research methods;
- works that will improve the abilities of deciding and judging must be used.

"Teachers should encourage the students to ask questions about morality, ethics, religion,

politics, or the economy at this level".⁵ The child gets a lot of stimuli from the environment he or she lives in. However, the school is mostly abstracted from the real world. The mass media, as well as the everyday experiences are means which educate in a certain way.

III. Primary School Education: Turkey

Some serious studies about education for the environment at the primary level have taken place during the last few years in Turkey. At this level, education for the environment based on the Agreement on Project for Environmental Education was signed between UNESCO and the Ministry of National Education, Directorate of Primary Education (29.03.1990/02.28/337.197). The Ministry of National Education has prepared a handbook for primary school teachers. Teachers can increase the awareness of children on issues such as life, bios, health and the environment with the aid of this handbook. The concepts of environmental education, ways of learning subjects, dealing with problems, and referring to activities in target plans would play a large role in the changing of expected behavior in children. These concepts are very important for the realization of environmental educational aims. In Turkey, today, at the primary level educational institutions, 'life knowledge courses' are taken in the first term and 'social knowledge courses' in the second terms which are called central courses.

Other courses are called performance courses and intelligence courses (e.g. Turkish, mathematics, music, ethics, moral courses, etc.). These are based on central courses. The secondary educational system is a continuation of primary education and, at this stage, the curricula of classes six, seven and eight deal with subjects related to the environment.

Environmental subjects in the central courses are structured in such a manner that, in dealing with the environment, courses on life, social and scientific knowledge were planned to cover environmental problems. According to the level of classes, subjects would be selected from the following:

- protection of soil, water, air;
- solutions to pollution;
- ways of giving guarantees for living without risks;
- conservation of natural resources.

With respect to environmental subjects in the performance and cleverness courses, students should be informed through brochures, newspapers, pictures, films, slides and seminars, according to their level of classes, about which species are endangered and which have been taken under protection.

Secondary School Education for the Environment:

Secondary school education is a time when personalities become shaped, which includes the significant years between childhood and adolescence. In this time, education must be given which will contribute to the children's general knowledge about biopolitics and improve their abilities to think, making it possible for them to improve their moral and social responsibilities towards nature and life itself and to be a helpful members of society. Education at this stage has an important place in society, protecting and continuing culture, promoting justice and virtue for a nicer life and training honest people to modernize their life and state. Biopolitical concepts must be added to such branches as literature, biology, physics, chemistry, mathematics, geology, and astronomy. Lessons on humanistic or social sciences (history, geography, music) must also increase the sensibility and interest of the student in ecological subjects.⁵

I. Aims of Secondary School Education⁵

- improving on the abilities to investigate and examine life (bios)¹ which are gained in primary school;
- exploring ways of defining, analyzing, seeing and thinking the effects on bios and the bio-environment; and,
- showing, from action and behavior, that economic production, consumption and other activities change according to a culture and judgments, and that, in the end, environmental problems are formed due to these actions.

II. Methods of Education⁵

Secondary education programs must be regularized in a way that will impart environmental concern and consciousness, by using the methods given below:

- field work: visiting factories that emit wastes, refineries, waste factories and canalization treatments; meeting and talking to authorities and various social surveys; learning the opinion of

the native and local people's thoughts and suggestions about environmental problems;

- supporting education with visual material such as television, video, slides; forming an archive in every secondary educational foundation, collecting sources on ecology (books, magazines etc.) systematically and using the necessary ones in courses;
- laboratory experiments: adaptation of the content of biology, chemistry and physics courses, which exist in the current educational system, to experiments and research subjects about life and biology, analyzing and teaching about pollution;
- regulated argument and speeches: in making the student participate in seminars, arguments, panels and conferences on the above subjects.

III. Content of Education⁵

- chemical bases of life: water, air and soil pollution, the effect of extreme production and consumption and species extinction;
- structure and functions of cells, in heredity and genetics;
- viruses and their roles in diseases, the effects of overpopulation on the environment, the economic cost of healthy environment;
- evolution, explanation with comparison of the biological evolution with the social and economic evolutions of people;
- biological structure of humans, vertebrates and invertebrate animals: reptiles, mammals, birds, fish, plants and their natural relationship;
- biotic and abiotic factors in an ecosystem: the use of resources, water, air and soil; examination of these from the point of view of economical usage and benefits; and
- basic principles of economy, examination of the relations between ecology and biopolitics.

IV. Secondary School Education: Turkey

The General Directorate of Secondary Education of the Turkish Ministry of National Education continues to study the implementation of environmental education at this level. They plan to develop environmental subjects in biology, geography and philosophy courses. The outline of an environmental curriculum will encourage specific action. Students must be able to identify their living natural resources, and be capable of consciously exploiting them for the most appropriate purposes within the framework of the new curriculum.

Education in Universities for the Environment

Putting theory and practice, scientific knowledge, thought and behavior together is possible only if necessary reforms are made within university education.⁷ These should aim at:

- preparing people to be members and founders of a new society;⁵
 - improving students overall in physical and mental abilities;
 - training people as producers;
 - improving creativity and imposing new societies' moral judgments and behavior principles;
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- equipping a person with the necessary technical knowledge that will be the most beneficial for nature and society; and,
 - improving political consciousness, preparing people to participate in the direction of society. ⁵

A better understanding of bio-ecology, through scientific research on ecology-to-human relationships is possible at the university level. Since university students are potential leaders and designers of society, education and consciousness building is very important at this level. Universities must include lectures related to life and biopolitics in their programs, also at the graduate level⁵:

- for science, mathematics and engineering students: `life and bio-design';⁵ In delineating the borders of economic production and consumption, the aim must be related to ecology and biopolitics, to input the necessary knowledge and induce the student to abandon the principle of "smallest cost and largest profit" and make the fittest design and appliance for the bio-environment;
- for trade, accounting and economic graduate students: `production and biological generation related to production'; the aims are: correcting the different production destinations, tools and techniques; laying down production borders that not only create consumption, but lead to a reduction in the amount of wastes to a minimum with no harm to the bio-ecology; teaching methods to protect and repair the environment; ⁵
- for law students, `usage of laws for science and technology as a controlling device' or `sociology of law'; ⁵
- a professional course on `bio-technology';⁵
- ecology courses and science courses related to ecology;
- in the field of humanity and social studies, `principles and behavior in the protection and management of bio-systems'; ⁵

The leading principles of university education are:

- research must be carried out to develop non-polluting technologies;
- sources must be used sensibly and equally;
- biological diversity must be maximized with sensible and intelligent strategies; and,
- population growth must be controlled for the best application of economic and bio-ecological plans.

In university education, field work in different disciplines, research and examinations are most important. Students in law, politics and moral sciences must learn to be sensitive towards the many dimensions of life.

University education for the environment in Turkey is beginning to establish itself. Today, there are 28 universities and 22 environmental research centers in Turkey. There are 11 environmental engineering departments which began 15 years ago. There are more than 2000 environmental engineers in Turkey.⁸ These departments are in the following universities:

- Istanbul Technical University (Istanbul)
- Middle East Technical University (Ankara)
- 9 Eylul University (Izmir)
- Yildiz University (Istanbul)
- Marmara University (Istanbul)
- Istanbul University (Istanbul)
- Ondokuz Mayis University (Samsun)
- Ataturk University (Erzurum)
- The Bosphorus University (Istanbul, only level in Msc)
- Firat University (Elazig)
- Cumhuriyet University (Sivas)

There are Masters Programs on the environment at these universities. The only Biopolitics course is in the Urban and Environmental Sciences Ph.D. Program as a two-semester seminar at Ankara University. In this Ph.D. program participate students of different professions such as urban planners, architects, biologists, lawyers and social scientists. Many other university departments deal with environmental sciences, conservation planning, and threshold analysis,

while other departments such as architecture, landscape design, chemistry, construction engineering, physics and medicine offer environmental courses.

The Teaching of Biopolitics and Environmental concepts and Relations in Post-University Education

In new education, the concept of continuous education is spreading. This education is addressed to adults and starts appearing with 'third term' education. In this way, education is continued during all stages of life.⁷ Among the potential education mass are:

- directors and determiners of industry foundations and companies;
- public directors;
- bio-ecology activists;
- people with a low level of education;

It is possible to reach these people and groups directly through mass media tools. Public interest and attention must be drawn to biopolitics.

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<http://www.biopolitics.gr/BIOPOLITICS/HTML/PUBS/VOL4/fe-tunce.htm>