Chapter 6
An Ecological Originated Design in Education Structures: A Case Study of an Education Campus in Adana, Turkey

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ABSTRACT

Diminishing natural resources have increased the prominence and implementation of approaches to sustainable planning, design, and application. Green schools minimize environmental impact by promoting environmentally friendly attitudes, reducing the need for infrastructure facilities, and using recycling as a strategy both during and after their construction. As with other green buildings, green schools reduce dependency on fossil fuels and thus limit the emission of carbon dioxide and other pollutants. Concerning global warming, green schools have the capacity to “turn back time,” creating learning circles that elicit solutions from their student bodies. In this chapter, the authors explore the economic, ecological, and social dimensions of green schools by means of a case study of an education campus in Adana, Turkey. The authors aim to elucidate how green schools may be effective in the conservation of future resources in architectural sustainability.

INTRODUCTION

Since the early 1970s, a great deal of focus has been placed on excess consumption of natural resources and the attendant environmental pollution problems. This phenomenon, which is termed ecological awareness, has spurred discussion and research regarding the economic, social, and technical precautions that must be taken when addressing environmental problems. In the fields of architecture and environmental engineering, awareness of sustainable architecture also has started to accelerate as a result of ecological awareness.
Laws and regulations regarding sustainable architecture have been enacted in many European countries and the United States. In this context, the number of architectural designs and application examples increase day by day. However, in Turkey, despite a rash of formidable problems, sufficient awareness about environmental problems could not be raised. No consensus could be made regarding design policies for sustainable architecture and criteria about the subject is not reflected in various building codes and regulations. Therefore, sustainable architecture examples are limited in Turkey.

The most effective initiative for increasing environmental awareness is education. Educating individuals starting from an early age will foster a sustainable point of view in their work and personal lives. Designing an education building so as to create minimum negative effect on the environment—we argue that this strategy is as important as the education system itself—will make a great contribution to protecting a world with limited resources. In the European Union and the United States, ecologically oriented sustainable education structures (or “green schools”) have started to proliferate in the past 10 years. However, there are almost no examples of green school structures in Turkey.

The aim of this study is to present reflections on sustainability and green planning principles in education structures. The suggested design of a green school, located in Adana, southern Turkey, constitutes the main sample described in this study.

**Methods**

In this study, sustainable education structures are examined. First, we examine conceptual approaches toward environmental problems and sustainable design, including scientific and technological considerations. Ecological or green school concepts are evaluated by literature reviews and examples from various countries. In the final portion of the study, we discuss design suggestions and criteria that won an award from the Ministry of National Education in Adana (a major industrial, agricultural, and commercial center in Turkey) in 2013.

**THE PROBLEMS OF ENVIRONMENT, ECOLOGICAL THOUGHT, AND SUSTAINABILITY**

The concept of the environment is defined as the sum of the physical, chemical, biological, and social world that either directly or indirectly affects all living beings in interaction with other living or non-living beings (Canter, 1977; Keles, Hamamci, 1993). Ecology, on the other hand, is the field of science that examines living beings in the natural environment, and their interactions with their biotic and abiotic environments.

The rapid increase in human population that started with the Industrial Revolution in the 19th century led to an imbalance in humanity’s relationship with nature. Today, developed and developing nations alike face environmental problems such as water and soil pollution. The damage caused to ecosystems by the rapid depletion of limited resources was only acknowledged in the final quarter of the 20th century. This problem (i.e., the sum of issues such as contamination of the atmosphere, sea and soil pollution, global warming, depletion of the ozone layer, carbon emissions, reduced biodiversity, and destruction of rainforests) has gone beyond the national level and turned into an issue that needs to be addressed and handled with a global approach.

In this context, the concept of sustainable development was initially brought into the agenda of public opinion in 1987 with the publication of the “Brundland Report.” Prepared by the World Commission on Environment and Development (WCED) and submitted to the General Assembly of the United Nations, the Brundland Report introduced the concept of “sustainability” or “sustainable development,” which was identi-
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