USING VERNACULAR FOR ENVIRONMENTAL EDUCATION IN A GRADUATE PROGRAM OF ARCHITECTURE

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Abstract: Raising the environmental awareness of architectural students becomes increasingly important given today's global environmental challenges. As a prominent player in urban development, an architect needs to be concerned with the alternative ways for achieving environmental sustainability. Subsequently, environmental issues constitute an important part of the curriculum in architectural education. The scope of this study covers an elective course in an architectural graduate program of Turkey with the main aim of making fresh architects aware of their vital role in environmental objectives. In this course, the students are asked to visit and examine the vernacular architecture at a rural Turkey settlement. In this assignment, the students use a series of architectural as well as social science research methods. They present their findings visually and offer their proposals as a conclusion. Their proposals involve ways, not only, to achieve sustainability for this rural settlement but, also, to adapt the traditional design methods and materials examined within the course into contemporary design techniques. Given the acquisitions of the graduate students, this paper concludes with a recommendation for improving architectural course content by integrating applied learning.

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Introduction

Professor Viktor Papanek, an international design expert recognized by United Nations Educational, Scientific and Cultural Organization (UNESCO) and design teacher of several renowned design schools of the world, defined ecologically responsible and socially responsive design as revolutionary and radical (Papanek,1985). His ideas included consuming less, using things longer, and recycling materials (Papanek, 1985). When considered in the context of architectural design, it is about ecologically responsible and socially responsive architectural design offering a sustainable lifestyle and future. It is clear that buildings of the future need to provide suitable environmental conditions for dwellers. At the same time, building design should create a lighter impact on the wider environment. Being conscious of such vital importance of architectural education, the authors have emphasized the need for ecologically responsible architectural design in their undergraduate and graduate courses. One of the related graduate courses held at Uludag University, Architectural Program of Institute of Science and Technology, will be presented in the context of this study.

Literature Review

Environmental Education in Architectural Programs

As ecological awareness has grown globally in recent years, the role of architectural education in Turkey has gained increasing importance, with the construction industry recognized as one of the most answerable sectors in the fight against the current climate crisis. According to the International Energy Outlook of 2016 (IEO, 2016), 20.1% of the total energy delivered worldwide is consumed by the building sector. This truth places the need to introduce sustainable architectural design to new generations of architects at the apex of their agenda for many years. The descriptives qualifying desirable architecture, namely, 'sustainable,' 'ecological,' 'green,' and 'environmental,' appear more often in related media. The architectural programs now prefer to enhance their curriculums with theoretical and practical courses that include sustainable design. Furthermore, this preference has become a 'must have' for accreditation and qualification boards in many countries.

Altomonte (2009) indicates that there is a great need to discuss environmental issues such as climatic design, choice of materials, construction techniques, resource efficiency, and similar options throughout the architectural teaching because current curriculums of the programs are insufficient in integrating sustainability issues methodically.

In fact, the roots of architecture, or otherwise, the traditional ways of building, should be the main guide for sustainable architecture.

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Analyzing examples of vernacular architecture is a particularly fruitful approach for developing a guidance tool.

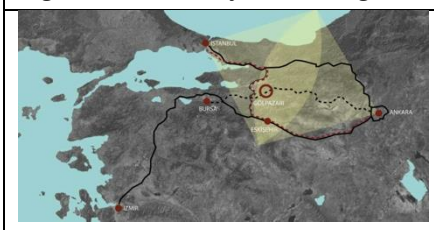
Vernacular Architecture as a Tool for Environmental Awareness

Defining 'vernacular architecture' and clarifying its importance for improving environmental consciousness needs priority consideration. Oliver (1997) defined vernacular architecture as the most widely used term to denote indigenous, tribal, folk, peasant, and traditional construction. He points out the distinctions that can be made between formal architect-designed and vernacular architecture, and between these and what can be termed as popular architecture. He is a renowned researcher who works for recognition and understanding of the meaning and importance of vernacular architectural traditions, worldwide. Oliver (2006, p. 267) argues that vernacular architecture will be necessary for the future to "ensure sustainability in both cultural and economic terms beyond the short term." Another eminent researcher, Rapoport (1969), defined and described the vernacular design as a part of a typology that comprises primitive, vernacular, and high-style settings, with modern architecture a special case of the latter. In one of his studies, he described vernacular design as both a process and a product with the resulting environment having certain characteristics. Concentrating on the process, he argued that the main point is not that it is created directly by the users without architects but rather that the vernacular design is achieved through applying shared rules. Asquith and Vellinga (2006) indicated that contemporary studies about vernacular architecture mainly focus on the applicability of lessons learned from traditional building styles for that applied in the twenty-first century. The emphasis is mostly on vernacular traditions having much to contribute to contemporary practice through offering economic and culturally sustainable solutions for global housing problems. The common aim is to foster an architectural perspective that integrates vernacular and modern knowledge, to create "a truly sustainable future built environment" (Asquith & Vellinga, 2006, p). Recognizing the importance of vernacular architecture and in sharing the ideas of Yannas (2005), who considered sound theoretical background to be supported by empirical knowledge and evidence-based learning, the authors realized the value of vernacular in both undergraduate and graduate courses.

Methods

This study uses proceedings from a graduate course held at Uludag University for the Architectural Program of the Institute of Science and Technology. A Graduate Course: Sustainability and Materials in ArchitectureThe course's main aim is to determine the sustainability of an architectural design and its implementation including the role of building materials in this sustainability. In achieving this aim, it is envisaged that fresh architects will have a greater awareness of their vital role in environmental objectives. The proposed learning outcomes are 1) an understanding of the relationship of sustainability and architectural design and 2) knowledge of the characteristics of building materials and the roles these play in architectural design. The concept of sustainability is considered in three main components: ecologic, economic, and socio-cultural. The students were invited to visit a vernacular village, Tongurlar, located in Bilecik City, in the northwest of Turkey (Figure 1), to analyze and identify the reasons for its unique architectural characteristics. Few families live in this village today since most have immigrated to urban centers because of lack of income sources in the village. Furthermore, poor economic conditions have resulted in unhealthy living environments, and the traditional buildings are now degraded to near inexistence. Agriculture and cattle breeding are the main sources of income for the villagers, but because of the insufficient policies of the government, it has become difficult to earn a living in the area. For revitalizing the village, there was little doubt that socio-cultural and physical sustainability of Tongurlar village should be achieved. Having this aim, the academicians with varying professions, such as architects, textile artists, sculptures, and painters, in different universities of Turkey, developed a research project supported by the universities' foundations. They organized summer workshops together with their students. The architecture students from varying universities attended these workshops and together restored the primary school building and one house in the village. Today, these buildings comprise the hub for workshops organized at varying times over the year.

Figure 1: Case Study Area, Tongurlar Village

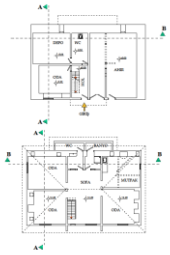
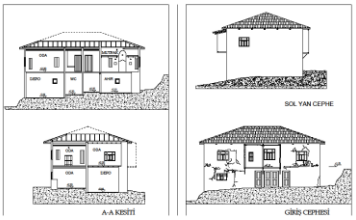


Source: Autor

Results and Discussion

In the scope of their research, graduate students of the Uludag University Architecture Program combined a series of architectural approaches with social science research methods. They presented their findings using visual applications and offered their proposals as conclusions. They prepared analysis charts for the vernacular houses in the village, including physical and material properties, and calculated the energy efficiency of the houses (Figure 2).

Figure 2: An example of a student working sheet showing properties of a village house

PHOTO	**PLAN**	**SECTION ELEVATION**
K05 		 **total outer walls: 214 m2 thickness of walls basement : 100 cm h: 220 cm 1st. floor: 17 cm h: 240 cm Total area: 247 m2**
GENERAL EVALUATION		
STRUCTURAL SYSTEM	Basement: masonry stone wall 1st. floor: timber structures, adobe blocks	
FLOORING	Basement Floor: Stone and landfill 1st.floor: timber floor	
ENVELOPE	-Earthen mortars	
WINDOW FRAME	-Joinery Timber -Timber Shutter -Stone/Timber jam -Timber Door	
ROOF	-Hipped timber roof -Roof covering materials mission tile -Wide eaves	
MATERIALS	- Timber - Adobe - Stone - Glass - Earthen mortars	

Source: Autor

At the end of the term, the graduate students developed a set of strategies for sustainability of all aspects of this vernacular site. These proposed strategies were as follows;

- Organize events similar to the summer workshops of the universities in the village to vitalize the everyday life of the villagers; arrange these to include festivals, bazaars, and themed education activities.
- Teach the villagers the value of their lifestyle and living environments for a sustainable future. This awareness could be developed through students spending more time with the villagers and experiencing their lifestyle, while explaining the adaptability of their everyday practices and ways of building for modern living.

- Investigate ways of using vernacular building materials and techniques in the maintenance of the traditional houses and consider both the local people and practitioners.

Conclusion

This experimental study, undertaken in a traditional village of south-western Anatolia, aimed to increase awareness in student architects of the basic vernacular ways of living and building that are the basis of sustainable architecture. The students recognized that to understand the basic principles of sustainability, a designer needs practical experience in the vernacular ways of living and the traditional modes of architecture. Furthermore, it was accepted that by analyzing the traditional building materials and techniques one can propose new sustainable materials and technology for composing contemporary spaces for modern living.

The outcomes of this practical study undertaken by the graduate students of the architectural master program indicate that this type of applied learning has many advantages in architectural education. The necessity for this type of learning specifies the importance of architecture being a multidimensional and applied discipline. These conclusions indicate the merit of applied learning, integrated with theoretical coursework, in providing a more innovative and up-to-date architectural education system.

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