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How Does Education Affect Environmental Knowledge: A Survey in Urban and Regional Planning Education

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This paper aims at measuring of environmental knowledge of students who select environmental science course in Urban and Regional Planning Department at Bozok University. This article includes a survey research, with this survey, we can get information about knowledge of environment of students and where they learn them. First briefly, it provides to measure environmental knowledge of students and then it aids to constitute of content of environmental science course. In this manner, we can contribute to improve knowledge of students. At the same time, we can measure our performance.

Keywords: urban planning, EE (environmental education), knowledge level, educational research, course selection (students), students' assessment

Introduction

Forms of education are always changing and students always question the character of the educational experiences they are offered (Peattie, 1969). The main approach of this article based on this sentence above. The aim of the article is about the environmental knowledge of students according to their education background. What do they know about environmental knowledge and planning and where they obtain these information? Thus, we can investigate how we teach environmental science in Department of Urban and Regional Planning at Bozok University.

Urban Planning Discipline

It is strange that no other discipline, it seems, spends so much time on and effort to justify its existence, assess its achievements and failures and explore its future than planning does (Kunzmann, 1999). Particularly, the multi-lateral structure of the urban planning profession and its inter-disciplinary position and the direct effects of the planning applications on human beings as well as the urban areas, urban surroundings and regions have brought deeper searching in the planning profession. Hurlimann (2009) defined the urban and regional planners as urban and regional planners developing and implementing plans and policies for the controlled use of urban and rural land, and advising on economic, environmental and social needs of land areas' in his study, according to the definition of Australian Bureau of Statistics (2006) (Hurlimann, 2009). The urban and regional planning profession includes the decision-making process about the social, economic, environmental and physical structures of these regions, while it is arranging the urban and rural areas, as it can be understood from the definition. This multi-lateral structure affects the built environment of the rural and urban areas and the

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planning is also in interaction with the society in which it plans. The work of urban planners and architects affects virtually everyone within our society (Lewis, 2009). The urban planning profession, which determines the society, built environment and environmental quality, brings the idea and drawing skill together. The vocational nature of town planning requires that graduates have the breadth of understanding as well as the practical skills needed to practice effectively (Bailey & Walker, 2001). It is impossible to achieve success in the urban planning profession, unless the practical skill is integrated with knowledge. While the skill is integrated with the innate capacity, the knowledge is obtained with education afterwards. Knowledge is regarded as essential for successful action. This is not only the case for basic skills, such as reading and writing, but also for highly sophisticated professional performance, such as brain surgery (Frick, Kaiser, & Wilson, 2004).

EE (Environmental Education) in Urban and Regional Planning

Education is a key factor in developing knowledge and awareness about issues that affect the future of nation and, subsequently, the world. ESD (education for sustainable development) as proposed by the US has come to mean education to enable sustainable development (Esa, 2010). Several scholars pointed out that EE should begin in primary schools, before prejudices upon misconceptions being shaped (Michail, Stamou, & Stamou, 2006; Francis, Boyes, Qualter, & Stanisstreet, 1993; Summers, Kruger, Childs, & Mant, 2000). In this sense, education is the most important part of environmental knowledge, however, not only primary schools, but also university education. Professors, lecturers and instructors do not forget that planners mainly use their professional knowledge, which they obtained from formal education (Fenster & Yacobi, 2005). The environmental knowledge that forms the sub-structure of the environmental planning knowledge is defined with three elements: the indigenous education, education before university and university education. Figure 1 shows the elements of the education that form the environmental knowledge.

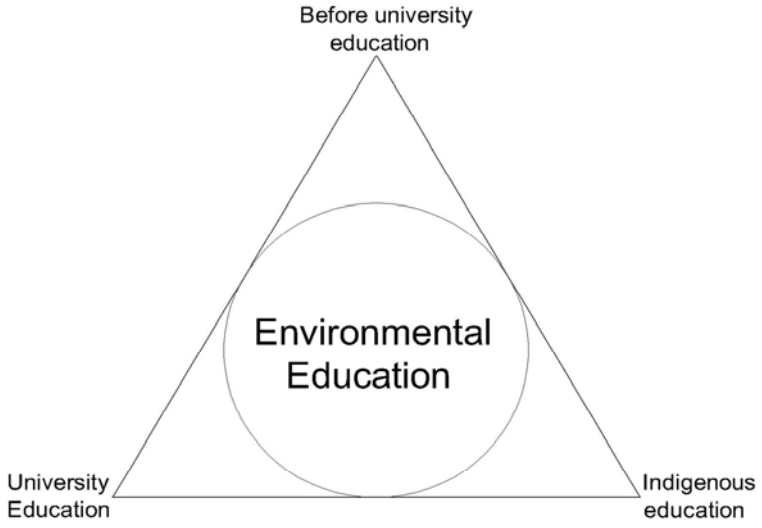

Figure 1. Elements of EE (Source: The authors).

The elements determined above are integrated in the urban and regional planning education. This knowledge combines with the skill and forms the EE knowledge. EE is a key element of many graduate programs in urban and regional planning. The ACSP (Association of Collegiate Schools of Planning) describes environmental planning as one of five primary substantive areas of planning practice (White & Mayo, 2005; ACSP, 2000). EE brings about two consequences: The first one is teacher educated themselves, and the other

one is transferring their knowledge to students, which means that there are interactions present between instructor, professor or teacher and students. EE in schools is seen as an important strategy for environmental sustainability and environmental protection (Taylor, Doff, Jenkins, & Kennelly, 2007).

Case Study

The undergraduate education of the urban and regional planning is given in the scope of four-year (eight terms) undergraduate education in Turkey. Department of Urban and Regional Planning of Bozok University began education in 2003 and it is a department which gives education at undergraduate level. Recently, there are approximately 150 undergraduate students at Department of Urban and Regional Planning of Bozok University.

Environmental science is the subject which forms the fundamentals of environmental planning in the urban and regional planning education. The environmental science is the compulsory subject given in the sixth term in Department of Urban and Regional Planning at Bozok University. In the scope of this study, it is tried to evaluate how the students, who selected the environmental science lesson this year, carry out the survey study and obtain the information about the environmental science. Thus, the effects of the education in environmental science and environmental planning fields in the urban and regional planning education will be researched.

Method

This article aims to evaluate how the students, who select the environmental science lecture, have comprehensive knowledge of the literature about the environmental knowledge and environmental science. The study aims to evaluate the knowledge of the students, who take the lecture, about the environmental science at three separate levels by applying the test method. The study consists of three sections and each section consists of four questions. This study was applied in the first lesson of the term, and thus, it was tried to evaluate the knowledge level of the students about the environmental science and how and from which resources the students obtained these information, until they have taken this lecture.

The first level includes the evaluation of the basic ecological terms. In this section, the students were asked about the basic terms and how they learned these basic terms. In this way, it was tried to evaluate whether the students learned the basic ecological terms with education or as a result of their own researches and at which level they use the visual research methods, such as Internet and television in their studies. The first page of the questionnaire includes basic definitions of environmental science, which are ecology, bio-diversity, habitat and ecosystem.

The second level includes the research of the knowledge level of the students about the technical terms of environment used in the urban and regional planning profession and how they learned these terms. In this way, the tendency of the students to the planning literature will be researched and the concepts to be emphasized in the lesson will be determined. On the other hand, the researches carried out by the students, who completed the first two classes, about the definitions about the environmental planning used in the urban planning literature will be determined. The second page of the questionnaire covers definitions that they are used in technical literature of profession of city and regional planning, which are sustainable development, carrying capacity, environmental impact assessment and management of environment.

The third level of the survey includes the evaluation of the knowledge level of the students about the international agreements which affected and still affect the urban planning literature. The international agreements have a significant place not only in the urban planning agenda, but also in the determination of the

land use policies and strategies. Marshall (2007) contended that many planning organizations change their definition regularly to reflect social, economic, political and ideological influences at points of time (Hurlimann, 2009). From this point of view, it can be said that the urban planning education and urban planning application are affected by the social, economic, politic and ideological thoughts of today. It will not be wrong that the international agreements are one of the most important factors which affect the dynamic structure of the urban planning education. This is due to the fact that, the international agreements are the reflection of the actual economic, social, political and ideological thoughts. The rationale of planning is universal, as they are the reasons why planning in some forms or other is necessary to guide spatial development processes. This is also true for theories on which planning is based and the methods by which the necessary information is gained and processed, as well as for the ways and means planners in the end go from knowledge to action (Kunzmann, 1999). In the framework of this context, it was tried to evaluate the knowledge level of the students about the meetings and agreements which directly affect the global planning doctrine in the third level of the survey. In addition to this, the international environment policies are included in the syllabus. Also, it will be determined that at which level, the students follow up the actual international agreements. Ramsar, Natura 2000, ESDP (European Spatial Development Perspective) and EU (European Union) habitat directive form the questions of the third section. Figure 2 explains the method applied in the survey. The core of the hexagon forms the environmental knowledge of students and 12 questions locate in the core of hexagon. The other hexagons which locate around the core hexagon are the options of answers. With these answers, we can learn where students learned these questions.

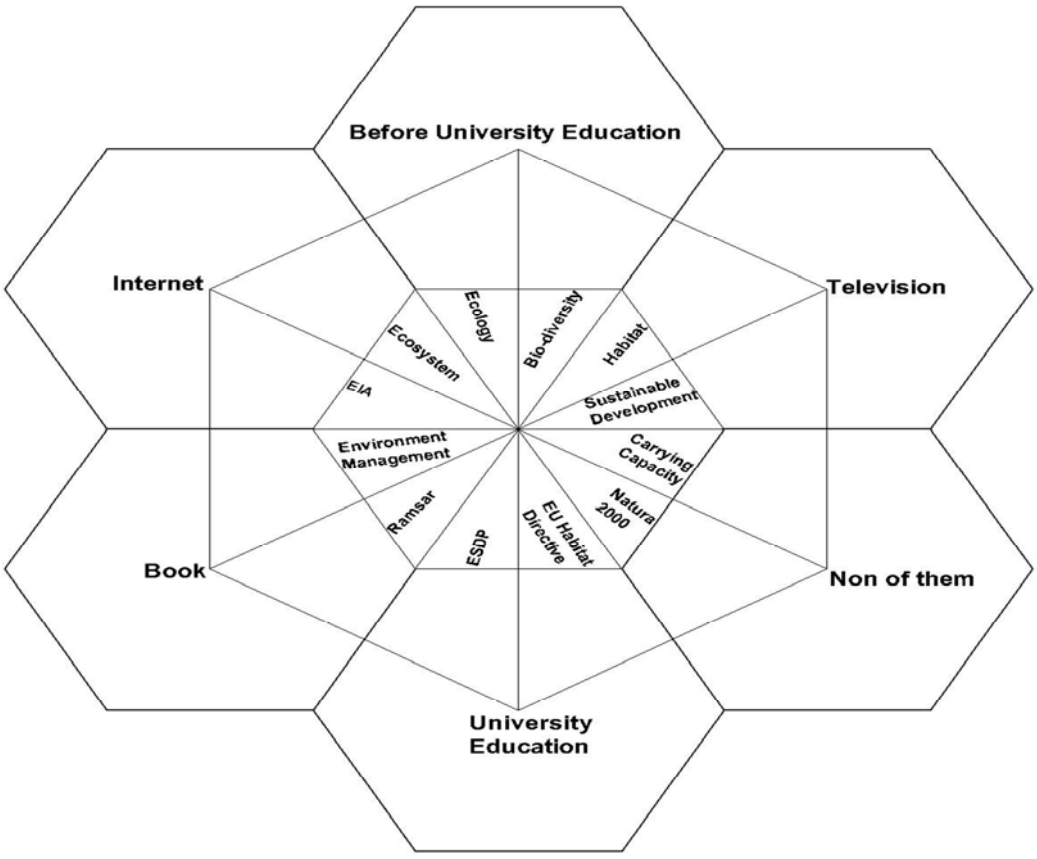

Figure 2. Method of survey. Source: The authors.

In the scope of the study, the survey was carried out based on the evaluation of the knowledge level of the students about the environmental science. The questions related to how the students learned the terms were asked in the scope of the survey. The titles used in the survey are included in the following options: (1) I have never heard; and (2) I heard.

The subdivisions of "I heard" is listed as follows:

(1) Before university education;

(2) University education;

(3) Television;

(4) Internet;

(5) Book;

(6) None of them (please specify).

The inclusion of an answer with the statement "I have never heard" was used in order to diminish the disadvantage of closed-form questions, namely, the selection of the right answer by chance (Michail, A. G. Stamou, & G. P. Stamou, 2006).

Results

Totally, 22 students selected the environmental science course during the fall semester of 2010-2011. Twenty-one of students participated to survey research about environmental knowledge. Table 1 shows the answers of students.

Table 1

Distribution of Answers of Students

	Never heard (*N*)	Heard (*N*)					
		Before university education	University education	Television	Internet	Book	Non of them
Ecology		17	4				
Bio-diversity	2	15	4				
Habitat	3	16	1			1	
Ecosystem		18	2			1	
Sustainable development	3	1	13	3	1		
Carrying capacity	3	6	9	1		2	
Environmental impact assessment	6	2	10	1	1	1	
Environment management	7		10	3	1		
Ramsar	21						
Natura 2000	21						
ESDP	18		1	2			
EU habitat directive	18	1		1	1		

Table 2 indicates the percentage values of answers. These percentages provide to compare the values of answers, according to the answers of students.

As a result of the survey, it was observed that the ecology concept is learned 81%, bio-diversity concept is learned 71%, habitat concept is learned 76% and ecosystem concept is learned 85% before the university education. It was observed in second level of survey that the sustainable development concept is learned 62%, carrying capacity concept is learned 42%, environmental impact assessment concept is learned 47% and environment management concept is learned 48%, during the university education. In the last level of survey,

we have learned that students do not know Ramsar agreement, and 100% of students have never heard Natura 2000, 85% of students have never heard ESDP, and 85% of students have never heard EU habitat directive.

Table 2

Percentage Values of Answers of Students

	Never heard (%)	Heard (%)					
		Before university education	University education	Television	Internet	Book	Non of them
Ecology		81	19				
Bio-diversity	10	71	19				
Habitat	14	76	5			5	
Ecosystem		85	10			5	
Sustainable development	14	5	62	14	5		
Carrying capacity	14	29	42	5		10	
Environmental impact assessment	28	10	47	5	5	5	
Environment management	33		48	14	5		
Ramsar	100						
Natura 2000	100						
ESDP	85		5	10			
EU habitat directive	85	5		5	5		

The most important finding obtained from the survey is that the basic terms related to environmental science are given to the students before university education. It can be said from the answers given to the basic terms, such as ecology, bio-diversity, habitat, ecosystem forming the first level of the survey that the education before university has an important role in the learning level of the students. It can also be said that the definitions which are used in the urban and regional planning literature and combining the environmental planning and urban and regional planning profession are mostly learned during the university education. On the other hand, the homework given, researches carried out and use of visual, written and Internet-based materials in the researches are also important, as they are a part of the university education. It is challenging that the students do not have an idea about the international agreements and have never thought about these international agreement before in the last section. The students do not have information about these agreements and meetings which affect the environmental planning education, policy and scientific approaches to the environment and this will cause students to have a narrow point of view about the planning profession.

Discussion

While many institutions of higher education are involved in EE, the extent of their involvement has not been documented (McKeown-Ice, 2000). The knowledge level of the students about the environment planning in the urban planning education was not evaluated before and the survey was based on this fact. In the scope of the knowledge gained, the professor, lecturer or instructor of the subject will have a chance to evaluate their performances and performances of the lesson.

It was observed in the survey that the EE is mostly achieved by means of education. Having knowledge about the environment by means of education shows that the instructors, lecturers and professors are responsible to give theoretical and applied skill to the students about the environmental science given in the

department of urban and regional planning. It is important to test whether teaching methods and practices provide the required skills needed by future urban and regional planners (Meligrana & Andrew, 2003). While most of these efforts have been greeted with enthusiasm by students, they still generally dwell in an academic and institutional penumbra: It is difficult mechanically to fit them into already tight curricula and their contribution to the student's education is almost impossible to judge by conventional academic standards (Doebele, 1970). In this context, it is an obligation to evaluate the knowledge of the students about environmental science, according to the syllabus before giving the lessons in order to give the students information about the environmental science and evaluate the performance of the professor, lecturer and/or instructor. Otherwise, the conventional teaching methods cause to restrain knowledge of students in narrow frame. In this way, the responsible professor will correct the deficiencies of the students during the education term. Consequently, the extent to which teachers are environmentally educated themselves will undoubtedly affect the kind of environmental knowledge transmitted to their students (Michail, A. G. Stamou, & G. P. Stamou, 2006).

Conclusions

The effects of education on environmental knowledge were researched in this survey. It can be said in the article that the EE is a set of processes. The education about the environmental knowledge begins in primary education and continues in the university education and even postgraduate education. Another important result is that the students have education about the environment during the formal education and that the education, especially the education about environment, shows continuity. As a result of the survey, it was found that the education is the most important factor to create consciousness about the environment. The education is the key factor especially in the urban and regional planning departments in order to provide vocational skills and create consciousness of the students about environment and environmental planning. Another significant point in the survey is that the level of the interest to make research is very low in the university education. In the second section, the information about the environment is given to the students by the professors, lecturers or instructors in the scope of the urban and regional planning education. The technical terms about the environment used in the urban and regional planning department are learned at small amounts with the research method (visual and written).

It can be said from this survey that the professors, lecturers and instructors have an important role in the environmental planning education that is an important specialization subject in the urban and regional planning education in order to give the theoretical and applied information to the students especially in the scope of the urban and regional planning education. Every professor, instructor or lecturer should test their students the first lecture of semester in order to learn the knowledge level of students. In this manner, the lack of students can be realized, and professors, instructors or lecturers emphesize these subjects in order to enhance performance of lecture.

According our study only three students failed, the other students achieved the environmental science course. This means that students can be learned better when instructors know their knowledge level. At the same time, professors, lecturers and instructors can be measured their self-performance with final examination.

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