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## Changes Of Students' Environmental Perceptions After The Environmental Science And Biology Courses: VMU Case

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### Abstract

Higher education is one of the actors in the whole education system providing platform for access of people from different branches of science, different views and perceptions and creating possibilities for more environmentally friendly and sustainable lifestyles and professional decisions. The aim of the study was to determine and assess the change in students' ecological attitudes and behaviour after two elective courses of Environmental Science and Biology at Vytautas Magnus University (VMU), Lithuania. Based on ecological paradigm and behaviour-related issues, survey results reveal a relatively high environmental consciousness of students and this could explain why they have chosen these particular courses. However, both negative and positive changes took place after the courses. More detailed curriculum analysis and a survey of students' attitudes selecting other courses should be carried out in order to include environmental and sustainability issues in other courses at the University.

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*Keywords:* Environmental attitudes, higher education, Lithuania

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### 1. Introduction

Education and information provision are considered to be one of the most important tools for seeking sustainable development. The aim of environmental education is to succeed in making individuals and communities understand the complex nature of the natural and the built environments resulting from the interaction of their biological, physical, social, economic, and cultural aspects. Moreover, such education is essential in order to acquire knowledge, values, attitudes, and practical skills to participate in a responsible and effective way in anticipating and solving environmental problems (UNESCO-UNEP, 1978). Under the direction of Agenda 21, the work of the

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UNESCO Educating for Sustainable Development (2005-2014), and the movement to “green universities”, the focus of environmental education has broadened to encompass a wider agenda of education for sustainable development (Thomas, 2009).

Special courses or topics on environmental issues are of importance in a curriculum, especially when trying to reach students which are not committed to the environment (Zsóka et al., 2013). As found by Amin et al (2012), after the course of “Environment and health” students’ awareness of environmental and health issues has increased. However, students’ knowledge of environmental issues does not always turns into corresponding behaviour (Hiller Connell, Kozer 2012). The real causality between environmental knowledge and behaviour is rather difficult to measure. Behaviour might be determined by many other factors, including age (Zsóka et al., 2013), gender, culture, infrastructure, motivation, number of environment related subjects attended (Vicente-Molina et al., 2013), pro-environmental activities and publications (Erdogan et al., 2012), social pressure (Niaura, 2013) etc.

The aim of the study was to assess changes in students’ ecological attitudes and behaviour before and after the two elective courses of Environmental Science and Biology at Vytautas Magnus University (VMU), Lithuania. During the first 2 years of studies at the University, each student has to select at least one subject from Biomedical and Physical Sciences subgroup, which provides possibilities for students from faculties of Humanities, Social and Political Sciences, Arts and Informatics to get a broader view on natural sciences. The choice of subjects includes *Biology, Environmental Science, Astronomy, and Logic for Analytical Reasoning, etc.*

## 2. Data collection and analysis

Based on revised ecological paradigm (Dunlap et al., 2000) and behaviour-related issues, a questionnaire was completed by students prior to and upon the courses completion which took place during two semesters in 2011–2012. Every semester approximately 150 students attended each course. In total, 806 responses from the students of Environmental Sciences and Biology courses were received. 336 replies before the course and 289 after completion of the course were included into analysis. The number of respondents included into analysis was limited due to incomplete responses. A sample of respondents after the completion of the course covers only those who attended at least some lectures (according to survey results) (Table 1). To evaluate the significance of difference in attitudes and behaviour before the course and after its completion, Wilcoxon Signed Rank was applied. Some other factors such as gender and income as well as faculty, study program were also taken into consideration. To check the influence of possible factors,  $\chi^2$  test was used.

Table 1. Profile of the respondents

Variable	Before semester	After semester
Gender		
<i>Female</i>	241 (71.7%)	210 (72.7%)
<i>Male</i>	95 (28.3%)	79 (27.3%)
Income per family member		
<i>Up to 399 LTL</i>	89 (26.5%)	99 (34.3%)
<i>400 -799 LTL</i>	123 (36.6%)	87 (30.1%)
<i>800 – 1299 LTL</i>	88 (26.2%)	69 (23.9%)
<i>1300 and more LTL</i>	36 (10.7%)	34 (11.8%)
Attendance of Science World course		
<i>Yes</i>	150 (44.6%)	235 (81.3%)
<i>No</i>	186 (55.4%)	54 (18.7%)
Attendance of lectures particular course		Not included
<i>up to 25%</i>		101 (34.9%)
<i>26-50%</i>		104 (36%)
<i>51-75%</i>		84 (29.1%)
<i>more than 75%</i>		
Subject		

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