

## THE VIRTUAL REALITY SYSTEM FOR ECOLOGY EDUCATION: OPINIONS OF GRADUATE STUDENT

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**Key words and phrases:** active learning; ecology education; educational institutions; information and communication technology; virtual reality.

**Abstract:** The developments that have occurred in information and communication technology in the recent years have accelerated changes in both the learning environment and the structures of educational institutions. The number of educational institutions which are working on projects to make their programmes more flexible by including applications based on active learning into their programmes is growing everyday. As a result of these developments, today's learning environments have become more constructivist and have reached a richer content level than always.

The main aim of this study is to investigate EMU's graduate students' opinions of the virtual reality system for Ecology Education. This study is designed as a qualitative research. Focus group interviews and open-ended questions are conducted as data were collection method. Qualitative data analyzed on the basis of descriptive analyses method. Recommendations are developed on the basis of findings.

### Introduction

Rapidly developing technology leads to a change in our lives. Such changes also effect the education and learning environment for certain. Every day a new technologic product is started to be tested within educational

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environments. Films, computers and computer games which include the virtual reality or applications we face every day, have also started to take place in educational environments.

Virtual reality can be defined as “A computer-controlled environment in which users experience multisensory immersion and interact with certain phenomena as they would in the physical world” (Smaldino, Russell, Renich, and Molenda, 2005). According to Cavas, Cavas and Can (2004), providing students’ interaction with various objects, making them concentrate, accommodating narrative flexibility therein, making students gain virtual experiences and caring about emotions are the characteristics of virtual reality being used in education.

As Mikropoulos, Chalkidis, Katsikis, and Kossivaki (1997) states, in the empirical study carried out by Taylor (1994), it is revealed that virtual reality is a useful tool for education. When we review the literature regarding use of virtual reality in environmental education, we have recognized that there are few studies carried out in this area. Referring to our review of such studies, it is interesting that performed studies mainly focused on development stages of systems or focused on topics in which technological aspects are handled. For the purpose of successful use of such systems in educational environments, the most significant requirement is to take opinions of persons (students) who shall use them. Their views should be taken at first to test efficiency of those systems in terms of pedagogy/educational sciences. Students should be considered as the most important part of learning environment and their requirements for learning environment should be taken into consideration.

### **Purpose**

The main aim of this study is to investigate EMU’s graduate students’ opinions of the virtual reality system for Ecology Education. To achieve this general objective, responses to the following questions are targeted:

- a) What are opinions of students on usage of virtual reality systems in Ecology education?
- b) What are the opinions of students regarding efficiency of virtual reality systems in Ecology education?

### **Methodology**

The study is designed as a qualitative study. In this study “phenomenology” method is used. In this method the target is to reveal individual perspectives and to interpret them (Yildirim and Simsek, 2005).

### **Study Group**

This study is carried out with students enrolled in “IT and Instruction” graduate course during Spring semester, 2012–2013 at East Mediterranean University, at School of Computing and Technology. Total number of participants was 38 students constituted of 36 males and 2 females.

## Data Collection and Analyses

Data were collected by means of questionnaire in the format “open ended questions” and focus group interviews after students filled out the questionnaire. Semi-structured interview style was used during the target group interviews. Interviews were recorded by a tape recorder. All collected data were entered into computer environment. The entered data were analyzed through descriptive analysis. During analysis phase, the opinions of students were frequently quoted directly from the students’ statements.

### Findings

The findings at the end of the study are given below parallel with the research questions of the study.

#### **a. Opinions of students on usage of virtual reality system in Ecology education.**

It is determined that generally most of the students have the opinion that it is important to use such systems in education environment and they have affirmative opinion on the matter. Some student’s opinions are as follows:

*...presenting ecology lecture together with virtual reality application will assist students to directly live real environmental problems...*

*...it will be better to live [post] issues relevant to ecology in virtual environment and [it] will create a lasting understanding...*

*...learning environment will be more motivating for the students through virtual reality applications. Thanks to such systems the interest of students about ecology will improve...*

*...virtual reality applications must definitely be used in education environment since students enjoy it and they are provided with the opportunity to do it themselves...*

As to be understood from the aforementioned statements, it is revealed that students believe that such applications (virtual reality) must definitely be used in learning environment and they think learning environment becomes more meaningful, motivating and enjoyable. In addition to the above given statements, affirmative opinions of students on virtual reality application are as follows:

*...I think such applications will also affect development of student’s imagination... Students may create a new global opinion regarding environment...*

*...A learning environment which can be considered as flexible, may be created by means of such software. We will be able to determine our learning time and type...*

From the statements of the students it is understood that they think virtual reality shall assist development of student’s imagination and they will be able to organize the time they shall spend for learning freely. These findings support the benefits of virtual reality determined by Cavas et al. (2004). Besides the affirmative opinions of the students, also a few negative opinions of the students were found. These are as follows:

*...I think classes relevant to ecology and environment should be applied by direct living in nature. Such systems confine [attach] the student’s to computers...*

*...I believe an environment education through socially monitoring the environment would be more successful...*

*...such systems may not be possibly a part of a student's daily life. However, I think current system cannot be used in this way. Therefore, this can be only a application to be used in the lessons...*

Referring to the statements of the students, students largely believe that such applications shall not completely reflect real life and they think this style is in contradiction with the idea that environment education should be given in a natural environment. Furthermore, students believe that such applications confine (lock up) the students in front of computer and rout out them from many social activities. However, the main reason why students have such negative impressions may be rooted in the fact that they have not used such applications before. Some people may have the opinion that some challenges can be faced during activities particularly through computers. One of the most important reasons for this may be their lack of previous experience. Another issue mentioned during interviews is:

*...you need to spend a certain time so that you can perfectly use the tools included in virtual reality applications... Although you are fully skilled to use the whole system (current system), the time loss faced within the system may make learning difficult. That means time loss can only be minimized when such systems are used perfectly...*

*....Definitely you need to be a very good computer user or technology user so that to perfectly use virtual reality applications. Otherwise, problems encountered each time will affect the speed of your working which will cause loss of your motivation...*

Further to such statements of students, it is understood that they believe users should have a good command of computer and technology in order to use such systems. In any case, all individuals of the society should be good technology users when we consider the requirements of the “information age” we live in. Such application will also improve the technology using skills of the students. Furthermore, the probability of time loss they consider may be because they do not know the system (current system) very well. It is believed that such opinions will be eliminated when the students recognize and use the system.

#### **b. Opinions of students regarding efficiency of virtual reality systems in Ecology education.**

It is also determined that the opinions of students are generally affirmative regarding efficiency of virtual reality systems in ecology education. Within this respect their opinions are as follows:

*...virtual reality system provides students a richer and more interactive learning experience. Ecologic issues can be understood more clearly through usage of such applications...*

*...students will be able to have a close relevance with the issue and may spend time more efficiently through usage of this system...*

*...the sensibility of students is developed through experiencing various situations. Furthermore, a high quality learning environment is provided which enables increase of environmental awareness of the students...*

*...such systems increase the interest of the students on the subjects. By this means, students start to give more importance both to the lesson and the topic...*

*...having such applications in the lessons causes conducting more effective lessons. Therefore, such application will affect efficient performance of a lesson...*

*...such applications may have an increasing influence on environmental information of the students... Virtual reality applications provide contribution of student's emotions in the learning process...*

*...I believe students may spent more time on ecologic issues through using virtual reality applications and can increase their interest and provide an opportunity to learn more...*

As to be understood from the above statements of the students, students think that virtual reality systems / applications may be effective in many aspects in ecology education. It is seen that students particularly highlight the high quality learning environment, contribution of emotions in learning process and providing students to spend quality time. Besides these affirmative comments, there are following opinions that can be considered as negative.

*...really good teams are required in order to prepare such applications. It is very hard to develop such an application...*

*...I believe using virtual reality within the class particularly when students are not fully ready, may affect their learning progress negatively. Such applications require sufficient preliminary knowledge of students...*

*...using virtual reality application within a course of environment which particularly depends on life will hinder the internalization of the topics. Such applications should be well designed. Generally not well designed applications affect motivation of students negatively...*

*...it is rather hard to carry out such applications within the class, students may face problems in case of any minor defect... any encountered problems will directly affect the lesson...*

When we review the responses given by the students both during interviews and in the open ended questions, it is observed that the potential problems mentioned by the students are the problems that can be a result of the virtual reality application structure. The potential problems highlighted by the students are requirement of having a good team for preparation of such applications, teachers and students who will process this application, are required to have preliminary knowledge and these should be presented with a perfect planning. Such problems can be encountered in many applications. It is very important for the students to assess such applications and consequences after they perform such applications. We believe potential problems foreseen by the students can be eliminated after the application.

## **Conclusion**

Using such applications in learning environment shall provide affirmative effects in both vocational and academic developments of students. Actually, increase in the number of virtual reality applications will have a very important impact on creation of our today's society.

Virtual reality may have an important role so that learning environments will be more efficient and productive. In this study, the virtual reality application is analyzed according to the opinions of students. Almost all of the students stated that they have affirmative opinions on usage of virtual reality applications in ecology education and effectiveness of this application. In line with these opinions of the students, assessing such applications in the learning environment will increase the number of their uses and effective usage of them by the students.

Virtual reality concept could not have been an application being sufficiently used in education environment yet. However, today when digital data can rapidly and easily expand, we believe virtual reality applications will be used more easily. Such applications should be evaluated in different student groups and lessons. Variations of them in empirical studies will contribute particularly to their development and practice in education.

### *References*

1. Cavas, B. Egitimde Sanal Gerceklik / B. Cavas, P.H. Cavas, B.T. Can // The Turkish Online Journal of Educational Technology – TOJET. – 2004. – Vol. 3, No 4. – P. 110–116.

2. Virtual Realities in Environmental education: the project LAKE / T. Mikropoulos [et al.] // Education and Information Technologies. – 1997. – Vol. 2, No. 2. – P. 131–142.

3. Instructional Technology and Media for Learning / S.E. Smaldino [at al.]. – Eighth Edition. – Upper Saddle River, NJ : Pearson Prentice Hall, 2005. – 432 p.

4. Taylor, L.G. The potential role of virtual reality in environmental education : Unpublished MSc. Thesis / L.G. Taylor. – Columbus, Ohio : Ohio State University, OH, 1994.

5. Yildirim, A. Sosyal Bilimlerde Nitel Araştırma Yöntemleri / A. Yildirim, H. Simsek. – Ankara : Seçkin Yayıncılık, 2005.

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### **Система виртуальной реальности в экологическом образовании: мнения выпускников**

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**Ключевые слова и фразы:** активное обучение; виртуальная реальность; информационно-коммуникационные технологии; учебные заведения; экологическое образование.

**Аннотация:** Развитие информационных и коммуникационных технологий привело к качественно новым изменениям в образовательной среде и структурах образовательных учреждений. Многие образовательные учреждения сегодня работают над тем, чтобы сделать свои учебные программы более гибкими путем внедрения приложений, основанных на активном обучении. В результате этих изменений современная образовательная среда стала конструктивнее и достигла более высокого уровня содержания, чем раньше.

Основной целью данного исследования является изучение мнения выпускников Восточно-Средиземноморского университета о системе виртуальной реальности в экологическом образовании. Работа представляет собой качественный анализ. Для опроса фокус-групп и анализа документов применяется метод сбора данных. Качественные данные исследуются методом описательного анализа. Мнения студентов о системе виртуальной реальности в экологическом образовании приведены в конце работы. На основе полученных сведений разработаны рекомендации.

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