İlhan Turan
Nermin Karabacak
Rize University
ilhanturan19@hotmail
nkarab@dostmail.com
Rize-Turkey

THE LANDSLIDE EXAMPLE OF MULTIMEDIA APPLICATIONS IN GEOGRAPHY COURSES IN EDUCATION FACULTY

ABSTRACT

The aim of this study is to form a sample model of landslides and floods, which have direct or indirect effects on human life, in geography courses by using teaching techniques with computer support. In order to present landslides and floods with the help of a computer, an education CD was first prepared. In this CD, there are definitions, information, simulations of landslide types and floods with the help of a computer support. In order to present landslides and floods with the help of a computer, an education CD was first prepared. In this CD, there are definitions, information, simulations of landslide types, tables and figures about the subject, films and photographs from the landslides and floods happening in Çayeli and Güneysu, Rize on July 23, 2002 and Gündoğdu, Rize, on August 26, 2010. The context and design was made by using "flash program". While it was being prepared, geography teachers, the related directories and managements, and the people witnessing the event were interviewed face to face. Later, it was shown to students in Rize University, Class Teacher Candidates and they were asked what they thought about it by questionnaire and their thoughts were also written down. As a result, it was observed that geography lesson with multimedia was more attractive and better, also it was obvious that this kind of teaching contributed good learning.

Keywords: Multimedia Applications, Geography Education, Effective Learning, Student, Landslides and Floods

EĞİTİM FAKÜLTESİ COĞRAFYA DERSLERİNDE ÇOKLU ORTAM UYGULAMALARINDAN HEYELAN ÖRNEĞİ

ÖZET

Bu çalışmanın amacı, insan hayatına doğrudan yada dolaylı olarak etkileri bulunan heyelanların ve sellerin coğrafya dersinde, bilgisayar destekli öğretim teknikleri kullanılarak örnek bir model oluşturmaktır. Heyelanların ve sellerin bilgisayarla sunulması için önce bir eğitim CD'si yazılımı yapılmıştır. Yazılımın içerik ve tasarımında, heyelanla ilgili tanım ve bilgiler, yer kayması türlerinin simülasyonları, konuyla ilgili şekiller, 23.07. 2002 yılında, Rize'nin ilçeleri olan Çayeli ve Güneysu'da ve 26 Ağustos 2010 da Gündoğdu, Rize' de meydana gelen heyelanların ve sellerin fotoğraf ve video görüntüleri bulunmaktadır. İçerik ve tasarım bilgisayar ortamında Flash programı kullanılarak hazırlanmıştır. Yazılım hazırlanırken, coğrafya öğretmenleri, Rize ve Çayeli Sivil Savunma Müdürlüğü, yerel yöneticiler, diğer ilgili kuruluşlar ve bu olayı birebir yaşayan kişilerle görüşmeler yapılmıştır. Daha sonra hazırlanan CD, Rize Eğitim Fakültesi Sınıf Öğretmenliği öğrencilerine bir ders ortamında sunulmuş ve öğrencilerin anketle ve yazılı olarak görüşleri alınmıştır. Sonuç olarak, çoklu ortamlı coğrafya dersinin, öğrencilerin ilgisini çektiği görülmüş ve onların coğrafya öğretiminde, konuları kalıcı ve düzgün bir şekilde kavramalarına katkı sağladığı anlaşılmıştır.

Anahtar Kelimeler: Çoklu Ortam Uygulamaları, Etkili Öğrenim, Coğrafya Eğitimi, Öğrenci, Heyelan

1. INRODUCTION (GİRİŞ)

Geography is directly interested in life condition of people. It makes people information about various events occurring in the world. In this context, the role and importance of geography education for human life have been known since the ancient times and therefore, the studies and researches have been made to teach this science to people in a more efficient way since then.

Nowadays, these studies have reached a more advanced level with the support of educational technologies. In this way, in the education world where technological developments have been more increasingly important, the computer and other education technologies which are productions of these technological developments have also begun to be used more frequently in geography education.

Computer in geography education is used for two basic aims. The first one of them is to use this technology as subject and means of a geographical study in such areas as drawing and making maps, remote sensing and geographic information systems. The second one is that computers are used as a course means in geography [1].

Computer assisted learning (CAL) is described as the using of computer with the aim of strengthening behaviors gained before and also teaching students a topic or concept with courses programmed in the computer [2]. CAI is usable way to make instruction more interesting and to make the learnt knowledge permanent [3]. Computer assisted education is an education method which uses the computers as an environment in which learning occurs, makes strong the education period and student's motivation, can be useful for students due to their learning speeds [4]. In addition to this, the development of a multimedia initiative to complement GIS learning can adopt a number of technical approaches. It can include various levels of user interactivity and simulation [5]. According to Girwidz, Bogner and others (2006)[6],Ainsworth (1999)described three main functions of multiple representation: (a) They may complement each other, (b) representations may constrain each other, or (c) They may foster a deeper understanding of a topic. On the other hand, SEG Research emphasized in four main line with multimedia [7]. These are:

- Effective multimedia recognizes that working memory has a limited capacity to process information.
- Effective multimedia presentations take advantage of both the auditory and visual channels in working memory to deliver content. Using multiple channels increases the overall amount of information the brain can process.
- Effective multimedia understands that text may be particularly challenging to process, with involvement from both the visual and auditory channels required.
- Effective multimedia presentations recognize that long-term memory organizes information into meaningful chunks called schema. Presenting information in a way that makes use of existing organizing structures (schema) or that helps students organize the information can greatly assist the learner in incorporating information into Long Term memory.

The contributions of computer supported teaching to education are explained below according to Doğanay (2002) [8] and Alyaz (2003) [9].

- Individual and interactive active teaching may be realized with a Computer.
- Computer supported education changes traditional educational and teaching methods and makes them efficient.
- It makes education and teaching interesting and enjoyable

- It provides teachers with using more materials during teaching.
- Learning with a computer doesn't have to be limited to a certain space, so teaching gains flexibility in term of time and place.
- Computers provide us with data storage and also enable us to use if necessary.
- A Computer has an ability to present text, table, drawing, picture, animation, film and sounds in a single atmosphere and in a desired combination without an important time loss.
- Interactive and multimedia techniques increase motivation and facilitate learning and holding what is learned in mind. The computer makes learning easy by concretizing abstract concepts.
- Circulation and transformation of knowledge with computer can be made in a short time and easily.

Multimedia is a technique of forming a new teaching means by using together various documents such as text, photography, figure, sound, music, moving picture, three dimensional picture and film. Multimedia presents are generally composed of data recorded in compact disk (CD) [10]. Multimedia applications have an effective position in solving problems which Students meet during teaching, in directing student interest towards the lesson, and in increasing success of students. Multimedia has an ability to change the way we understand, think, learn, and work [11]. Olson (1997) [12] stated multimedia is a potentially positive means of exploring and learning, and there are plenty of products at this stage to demonstrate its usefulness as well as how it differs from and complements conventional media. The incorporation of a multimedia project into this constructivist learning environment enabled students to use multimedia technology to apply their creativity and to enable them to solve their design problems. Students became the designers of their multimedia applications and were able to experience critical-thinking, presentation and communication skills, and be creative in their thinking, with the teacher becoming the facilitator and guide in the class [13].

In an education process, the qualities of elements, symbol and monitor projections and their use in a effective manner make learning easy. In this way, visual thinking, visual learning and visual communications are more successful. In this circumstance, it is always necessary to be aware of scientific approach in teaching materials design [14]. On the other hand, the topics which are abstract and difficult for students to understand can be taught effectively and lastingly by concretizing. In geography education, a lot of difficulties are faced especially in teaching physical geography topics. The most important of these difficulties is the fact that the students cannot place a concrete arrangement of abstract concepts and events in their mind. The education technology plays an important role in designing and forming an effective and lasting teaching –learning atmosphere and its process to cope with these difficulties [15]. Many researches about the effects of teaching with computer on the students' success have been done. It was shown in the 133 researches done between the years of 1990 and 1994 that studying with a computer motivated students and developed teacher-student interactive and self-confidence of students [7].

In a certain part of this research, simulations were used. Simulation is described as that students meet concrete models as many as possible by animating fact, event and existence, and in this way it enables them to experience lives closely to the real one by forming behaviors obtained [16 and 17]. Computer simulations are enormously

effective in offering students sample but entertaining teaching as a whole. In using simulation in geography courses, the following criterions should be taken into consideration to increase motivations of students [1].

- Simulation should be effective in displaying a queries attitude about World to develop searching learning.
- Extreme complex models should be avoided because they alleviate student's motivation power.
- Formed simulations should develop alternative thoughts on students.

Multimedia should be used for the reason of that they facilitate learning, increase interest and motive of students, provide teachers with facility, and contribute teaching-learning processes [18]. Success and quality in learning will rise with using this technique in geography education.

Two basic elements in the design approach should be underlined. First, the curricular perspective was in the forefront; the computer software was developed as a tool for realizing the formulated curriculum aims. Second, the primary focus in the elaboration of the materials was on the tasks and user problems of the teachers - and not on the possibilities of the software [19]. No one denies the importance of motivation for learning, however exactly how to quantify such a concept in relation to the use of multimedia is a complex challenge [20].

Basically, the term "landslide" could be defined as the down slope movement of the earth material under the control of the gravitational forces. This simply defined earth surface process, however, causes considerable direct and indirect economic losses and deathly casualties in the world every year. [21]. The province of Rize is one of most crucial landslide regions in Turkey and many areas in Rize are susceptible to intense rainfall. Seasonal high-intensity rainfall plays a key role in provoking landslide movements. Seasonal and torrential rainfall is the most important meteorological factor that can activate or accelerate the movement of sliding mass. As the populations increased, there is, steady increase in the economic and social impact of land sliding [22]. 27 people in Güneysu and Çayeli on July 23, 2002 and 12 people dead in Gündoğdu, Rize,on August 26,2010 in floods and a landslide caused by heavy rain in province of Rize.

2. RESEARCH SIGNIFIANCE (ÇALIŞMANIN ÖNEMI)
The purpose of this study is to form a sample model of landslides and floods, which have direct or indirect effects on human life, in geography courses by using teaching techniques with multi-media. The this study will contribute to teaching geography in facilitation of learning by using multimedia applications in geography education.

2.1. Problem Sentence (Problem Cümlesi)
Is there a relation between using multimedia applicant in geography education and student motivation?

2.2. Sub Problems (Alt Problemler)
- What are the effects of using multimedia in attracting students' interest to geography topics in geography course?
- What are the effects of multimedia applications in providing students with consciousness against natural disasters and activating students' intuitional abilities?

3. METHOD (YÖNTEM)
3.1. Research Group (Çalışma Grubu)
Research Group consists of 108 students who are studying at Department of Class in Education Faculty, Rize University.

3.2. Data Gathering and Data Means
      (Veri Toplama ve Veri Araçları)
      Two different phases were realized in this research.   In the first phase, a compact disk as a software sample was formed   for computer assisted geography teaching. Landslides and floods which play an effective role in natural catastrophes in Rize and its surrounding were taken as a topic in this software.   The causes of choosing the landslide topic for this software in multimedia are below:

- Landslide is described as that natural rock, ground, artificial inlay and scraps of these, and materials from sand move with the effect of gravity and changes their position downwards along any slope. Landslides are a mass motion which occurs frequently and widespread, and which may cause a great change in topography. For example, a body of landslide can sometimes plug a stream bed and cause a formation of a big lake [23]. When effects on topography of landslides are taken into consideration, in terms of an active teaching, landslides constitute one of topics which may be applied in a computer assisted media.

- The region where landslides have been observed mostly in Turkey is the Eastern Black Sea Region [24]. Landslides in this region have turned into a national problem of Turkey because they have continuously caused the loss of both goods and person. Presentation of a current event with technological supports in a classroom is very important in term of providing permanence in geography teaching.

- Landslides are a geographical fact which the students in the sampling group experienced themselves. Therefore, enlightening students with the detailed information about landslides covering an important place in natural catastrophes will be very useful in regard of making them be cautious in their future lives.

- The data concerning the landslides was acquired from the near environment as visual and auditory. Besides, opinions and supports from local governments, media and people in the region were obtained. On the one hand, this circumstance enables the study to be better for us. On the other hand, it carries a value for the research group in term of being applied from known to unknown and from near to farther principles.

- Sociological and psychological problems created by natural catastrophes in society and individual have been more effective than economic ones [25].
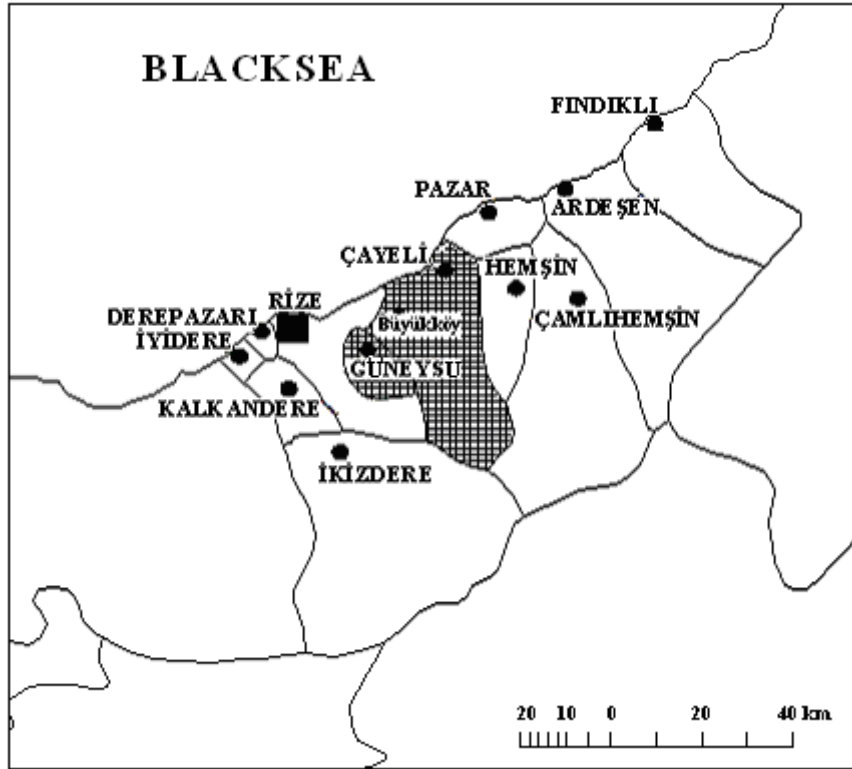
Map 1. Geographical locations of Rize
(Güneysu and Çayeli administratives encountered with a great landslide in 2003).
(Harita 1. Rize'nin coğrafi lokasyonu)
(Güneysu ve Çayeli İlçeleri 2003 te büyük bir felaketle karşı kaldı)

Definition of landslide, its varieties, its effects on environment, precautions to be taken, and protection from landslide take place in the content and design of software. The information, photos, map (1) and video views related to the landslide and floods occurring in Rize were used in the software. These were obtained from the local government, media, local photography studios, and photos and documents prepared by ourselves. Floods occurring as a result of heavy rain, collapsed grounds (especially tea gardens), demolished and damaged houses, and search- rescue activities took part in the prepared photography and video apparitions related to the landslide. Afterwards, the CD was formed from the data that was supported with simulations, maps, graphics and knowledge. A pilot application to a different student group was made to emerge and get rid of problems which may be any shortage in the design and software of CD. In the result of the application, the CD became ready to be used by taking into consideration students' and geography teachers' proposals.

In the second phase of the study, the CD software was presented to the students who study in Class Teaching Students Grade Two through projector in a geography course. The presentation continued 80 minute in three different class brances (80+80+80). In the end of the lesson, we took the students' written views through a prepared questionnaire about the CD software. The questionnaire consists of two sections. In the first section of the questionnaire, there are the questions of the software covering assessment with Likert scale.

3.3. Data Analyze (Veri Analizi)

This data was analyzed as frequency and percent. In the second section, three open-ended questions were asked to take students' evaluation and suggestion concerning software. Thus, the effects of multimedia assisted geography learning on students were evaluated in detailed.

4. FINDINGS AND INTERPRETATION (BULGULAR VE YORUM)

According to sub problems the findings were taken and interpreted in turns.

4.1. Views of the Students Regarding Sub Problem " What are the Effects of Using Multimedia in Attracting Students' Interest to Geography Topics in Geography Course (Coğrafya Derslerinde Öğrencilerin Coğrafya Konularına Ilgiyi Çekmede Çoklu Ortam Kullanımının Etkileri Nelerdir? Alt Problemine İlişkin Öğrenci Görüşleri)

Table 1. The effects of using multimedia in attracting students'
interest to geography topics in geography course
Tablo 1. Coğrafya derslerinde öğrencilerin coğrafya konularına ilgiyi
çekmede çoklu ortam kullanımının etkileri

	very good		good		mediocre		weak		very weak	
	f	%	f	%	f	%	f	%	f	%
1. The attraction of the software in providing students' paying more attention to geography lesson.	50	46.3	41	38.0	16	14.8	1	0.9	--	--
2. Preparing materials used in the software (photography, simulations, video views, etc.), in accordance with the topic.	72	66.7	29	26.9	6	5.6	1	0.9	--	--
3.The software success in term of using time	43	39.8	48	44.4	16	14.8	1	0.9	--	--
4. The satisfactoriness to learn the knowledge concerning landslides and floods in the software content.	47	43.5	41	38.0	15	13.9	4	3.7	1	0.9
5. The satisfactoriness of the materials used (map, photography and film) in the software to understand the topic.	50	46.3	40	37.0	14	13.0	3	2.8	1	0.9
6. Effectiveness of the software to form permanent knowledge without memorizing.	51	47.2	44	40.7	12	11.1	1	0.9	--	--
7. The success of the software in reflecting an event encountered in real- life to class atmosphere.	70	64.8	33	30.6	3	2.8	2	1.9	--	--

The relationship between attracting students' interest to geography lessons and increasing in permanence of knowledge by using multimedia and simulations in geography course was studied and then the permanent effect of multimedia applications on learned knowledge was tried to be determined.

- The attraction of the software was evaluated in providing students' interest to geography lesson as 40.7%, 46.3% good , 10,2% mediocre, 0.9% weak and 0.9% very weak (Table 1). This finding is evidence that multimedia application in geography education can be used to provide students' interest to students'geography courses.
- Most of the students explained that materials used in the software were formed in accordance with the topic "landslide" (50.0% very good, 39.8% good, 9.3% mediocre, very weak 0.9% and 0.9% weak). Moreover, they explained that the knowledge concerning landslide and floods were enough for them to understand the topic (51.9% very good, 41.7% good 5.6% mediocre and 0.9% weak).
- The students evaluated the success of software in reflecting an event encountered in the real life to the class atmosphere as 64.8% very good, 30.6% good, 2.8% mediocre, 1.9% very weak. This evaluation showed that multimedia application in geography education can be used effectively to transfer events from real life to a classroom.

4.2. Views of the Students Regarding Sub Problem "What are the Effects of Multimedia Applications in Providing Students With Consciousness Against Natural Disasters and Activating Students' Intuitional Abilities?" ("Öğrencilerin Sezgisel Yeteneklerini Harekete Geçirmede ve Doğal Afetler Karşısında Bilinçliliği Sağlamada Çoklu Ortam Uygulamalarının Etkileri" Alt Problemlerine Ilişkin Öğrenci Görüşleri)

In this sub problems, the effect of multimedia applications in providing students with consciousness against natural disasters and activating students' intuitional abilities was researched and their results were given in Table 2.

Table 2. The effects of multimedia applications in providing students with consciousness against natural disasters and activating students' intuitional abilities
(Tablo 2. Öğrencilerin sezgisel yeteneklerini harekete geçirmede ve doğal afetler karşısında bilinçliliği sağlamada çoklu ortam uygulamalarının etkileri)

	I precisely agree		I fairly agree		I moderately agree		I poorly agree		I disagree	
	f	%	f	%	f	%	f	%	f	%
1.I believe that Multimedia applications will raise the level of students' understanding geographical events	44	40.7	50	46.3	11	10,2	2	1.9	1	0.9
2. The simulations used in the software have concretized the event wanted to be explained.	54	50.0	43	39.8	10	9.3	--	--	1	0.9

Tablo 2'nin devamı									
3. The geography teaching made by being used multimedia is more effective in comprehending of topics than traditional methods.	61	56.5	38	35.2	7	6.5	2	1.9	--	--
4. Multimedia CDs are rather necessary to increase people' consciousness against natural disasters.	46	51.9	45	41.7	6	5.6	1	0.9	--	--
5. Multimedia applications are very important in activating students' intuitional abilities.	38	35.2	53	49.1	15	13.9	1	0.9	1	0.9
6.the software is convenient for student- teacher	49	45.4	49	45.4	10	9.3	--	--	--	--
7. The software which is include partly GIS regarding Rize successful in term of being model.	40	37.0	57	52.8	6	5.6	5	4.6	--	--
8. The software is successful in learning geographical concepts.	45	41.7	53	50.0	5	4.6	4	3.7	--	--
9.The software is convenient for purpose of geographical learning	68	63.0	28.4	25.9	11	10.2	1	0.9	--	--

- The students believed that Multimedia applications would raise the level of students' understanding geographical events (precisely attendance 40.7%, fairly attendance 46.3%).
- As seen in Table 2, the students pointed out that the simulations used in the software concretized the expression of geographical events (precisely attendance 50.0%, fairly attendance 46.3%). In term of both making geographical events concretize and understanding them, this situation is conspicuous due to overlapping with views explained before.
- Multiplicity of attendance to view "The geography teaching made by being used multimedia is more effective in comprehending of topics than traditional methods" carries an important value in term of propounding necessity of

multimedia application in geography courses (precisely attendance 78,1%, fairly attendance 12,5%).

- it's understood from the students' views that multimedia CDs are rather necessary to increase people' consciousness against natural disasters. From here, it is clearly understood that teaching the events, faced in daily life, in a place with CAL in geography lessons makes students more sensitive.
- Negative views in questionnaires (poorly agree, disagree) are very less. Moreover, all of the students in their answers concerning open-ended questions (which part of the software do you think you like the least) have not written negative views.
- As regards the students' thoughts about the presentation, an open ended question was asked to them. 88,4% of the students explicated that geography lessons must be processed continuously with multimedia because these presentations' played an important role in stiffening knowledge.
- The Use of GIS in software attracted students' interest and They found it successful (I precisely agree 41.7%, I fairly agree 50.0%).
- Thoughts of a lot of many students (89%) clarified that multimedia CD prepared was relevant with the aims of geography lessons and that his software played an important role in encouraging students.
- According to answers of open ended questions some students (35 student) taking interest in using computers explained that this multimedia application caused to arise a wish to prepare this kind of a multimedia CD in themselves. The other students said that to prepare this kind CD was very difficult because of technique impossibilities.
- The question "which part of the software does you like most" was asked to all students as open ended question. Most of the students (77%) explained that it was video images concerning the landslide and flood. According to this expression, it is obvious that video images which consisted of moving pictures and sounds and which were used in multimedia are the materials that the students followed the most carefully while teaching the topic. One student said. "The realities always hurt us. These videos are providing to us learning how bitter and suffering life is."
- 81% of Students in their open ended answers explained that sections (videos and photos) from real life in CD had increased effective, cognitive and conscious learning regarding natural disasters.

5. DISCISSION AND RESULT (TARTIŞMA VE SONUÇ)

The purpose of this paper was to learn toward attidues of students regarding multimedia application in geography courses. Users' attitudes towards computer learning sources are even more significant nowadays. The increased need for continuous development of computer skills has prompted an intense pursuit of suitable knowledge sources. Students tend to assess each knowledge source hastily and relative to the other sources available for their specific learning needs. [26]. the technology-assisted project studies affected students' attitudes towards the utilization of technology in education positively. The data collected through the interviews enabled the determination of the positive ideas of students on the utilization of technology [27, 28 and 29].

It is obvious that the current trend in research all over the world is the use of computer facilities and resources to enhance students' learning [30 and 31]. For this reason, it's content and evaluation activities more functional [32]. Computer-based instruction has been challenging traditional teaching and learning processes [33]. This view was supported by students of this research.

Education faculty ensures that all teacher education students are aware of the expectations of their program in building the capacity to positively impact technology use in their schools. Class training, small group sessions, individual tutoring, and tutorial software are all provided to students to assist in their development in effective technology use [34].

The pedagogical strength of multimedia is that it uses the natural information processing abilities that we already possess as humans. Our eyes and ears, in conjunction with our brain, form a formidable system for transforming meaningless sense data into information. The old saying that "a picture is worth a thousand words" often understates the case especially with regard to moving images, as our eyes are highly adapted by evolution to detecting and interpreting movement [35]. As a consequence, cooperation with technology experts as advisors and role models should be the first step to be taken. Without technology-competent role-model instructors, it is difficult to integrate the technology into curriculum and graduate technology-competent teachers. Besides, careful investments on both hardware and software should be planned in the long range. Thus, as a second step, all classrooms should be equipped with the necessary infrastructure and all students should be provided with access to media laboratories whenever they want. For the quality and quantity of courses, instructors should revise their lesson plans or prepare technology rich lesson plans and try to integrate technology into curriculum [36] but, compared with other developed countries, from the point of the computer assisted education projects, applications and studies, Turkey is still at very early stages [37].

According to Aydın [38], organizing the lesson only with PowerPoint presentation based activities was insufficient and should be supported by other methods, techniques and audio-visual aids. For this reason, the use of multimedia geography modules may be perceived as a tool that could give ill-prepared teachers more confidence in their ability to present geographic concepts in the classroom [39]. The development of a multimedia initiative to complement GIS learning can adopt a number of technical approaches. It can include various levels of user interactivity and simulation [40 and 41]. The learning with Geographical Knowledge System attracted students' attention. But GIS is not able to use in enough level in geography course because of shortage hardware and programme insufficiency in Turkey. GIS which is an important part of geography is not properly perceived and beneficially used as in developed countries such as Turkey. In spite of teaching and learning of geography with GIS at university level has been increasing rapidly, secondary level of geography education with GIS is at the beginning level [42].

This research also brought to light that teacher candidates should be trained on the use of multi-media application so that they would be competent in using it in teaching. Higher educational institutions that train teachers and formal educational organizations should do more efficient counseling about how and where would-be teachers and teachers will use educational technologies (Özel, 2007). [43].

The focus of this study was to demonstrate and discuss the educational advantages of geography course based multimedia. It is put

forward with this study that a geography course supported with multimedia is extremely effective in students' concentration, teaching the lesson fluently, making knowledge permanent, and bringing events faced in real life into the class atmosphere.

6. PROPOSALS (ÖNERİLER)

At the end of this research, the following proposals can be brought for multimedia applications in geography education.

- Multimedia applications must be done more much in geography lessons.
- Using photography and video images as data by compiling them from near environment has played an encouraging role on students and formed a wish in their doing this kind of study in future. If the requested students are supported by teachers, this will provided the development of students' investigative spirit.
- The students pointed out that the CD prepared was effective in showing a consolidating manner so that they can behave against landslides, a natural disaster, more carefully and consciously. For this reason, when CDs for natural disasters are prepared by experts on this subject and teachers together and then they are presented to teaching services, an effective geography teaching can be realized.
- School managers and teachers in the must be encouraged to make the presentations and software with multimedia. Geography laboratories' must be found for multimedia applications in schools and faculties.

NOTICE (NOT)

The high school version of this article was presented as Turkish in the IETC - September 21-23 2005 Sakarya, TURKEY. Afterward according to proposal, the article was enlarged and a new study was made with students of Education Faculty in RIZE in 2010-2011 Academic Year.

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APPENDIX (EK)

Photo 1. landslide in Çayeli (2003). Foto: The Civil Defence
management of Rize
(Fotoğraf 1. Heyelan Çayeli (2003). Foto: Rize Sivil Savunma
Müdürlüğü)

Photo 2. The search and saving activities in Çayeli 1 (2003)
Photo:The Civil Defence management of Rize
(Fotoğraf 2. Çayelinde arama ve kurtarma faaliyetleri 1 (2003).
Fotoğraf: Rize Sivil Savunma Müdürlüğü)

Photo 3. The search and saving activities in Çayeli-2 (2003)
Photo: The Civil Defence management of Rize
(Fotoğraf 3. Çayelinde arama ve kurtarma faaliyetleri (2003).
Foto: Rize Sivil Savunma Müdürlüğü)

Photo 4. The tea garden which was destroyed by lanslide in Çayeli
(2003). Photo: The Civil Defence management of Rize
(Fotoğraf 4. Heyelanla tahrip edilmiş çay bahçesi-Çayeli (2003)
Fotoğraf: Rize Sivil Savunma Müdürlüğü)

Photo 5. The Landslide in Gündogdu-Rize (2010)
Photo: İlhan Turan
(Fotoğraf 5. Gündoğdu'da heyelan, Rize), (2010)

Photo 6. The View of the landslide Gündogdu in Rize Where A House and Tea garden were destroyed by Landslides (2010). Photo: İlhan Turan (Fotoğraf 6. Rize Gündoğdu'da bir evin ve çay bahçesinin yok olduğu heyelandan bir görünüş)

Photo 7. Inclined and Steep Slopes have Caused Landslides in Rize
(Gündoğdu-2010). Photo: İlhan Turan
(Fotoğraf 7. Eğimli ve dik yamaçlar Rize'de toprak kaymalarına neden
olmaktadır)