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PROGRAMLAMA DİLLERİ DERSİ İÇİN HAZIRLANAN KARMA ÖĞRENME ORTAMINA İLİŞKİN ÖĞRENCİ GÖRÜŞLERİ

ÖZET

Bu çalışmanın amacı, programlama dilleri dersi için yapılandırmacı yaklaşıma göre tasarlanmış karma öğrenme ortamına ilişkin öğrenci görüşlerini analiz ederek, bu dersin gelecekteki uygulamaları için öğrenme ortamını yeniden düzenlemektir. Bu bağlamda çalışmada, öğrencilerin öğrenme ortamına ilişkin beklentileri, dersi bu şekilde almaktan memnuniyet düzeyleri ve dersin ilerideki uygulamaları için önerileri araştırılmıştır. Çalışmaya Uludağ Üniversitesi Eğitim Fakültesi Bilgisayar ve Öğretim Teknolojileri Eğitimi Bölümü'nde öğrenim görmekte olan toplam 21 öğrenci katılmıştır. Araştırmada katılımcıların dersi bu ortamda almaktan memnun olduğu sonucuna ulaşılmıştır. Katılımcılar programlama dilleri dersinin zor dersler arasında yer aldığını belirtmiş, tasarlanan karma öğrenme ortamının, arkadaşları ile iletişim ve birlikte çalışma olanaklarını arttırdığını ve bu nedenle öğrenmelerine katkı sağladığını vurgulamışlardır.

Anahtar Kelimeler: Programlama Dilleri, Karma Öğrenme, Yapılandırmacı Yaklaşım, Öğrenci Görüşleri, Moodle

STUDENTS' VIEWS ON BLENDED LEARNING ENVIRONMENT DESIGNED FOR PROGRAMMING LANGUAGES COURSE

ABSTRACT

This study investigated students' perceptions about the blended learning environment designed based on social constructivist approach for programming languages course in order to reorganize and improve the learning activities for that course for the future. In this context, students' expectations about the learning environment, their satisfaction about the course and finally their suggestions for the future practices for that course were explored. Participants of this study were 21 students taking programming languages course in the Department of Computer Education and Instructional Technologies of Uludag University Education Faculty. Results showed that students were satisfied taking that course with these settings. They stated that programming language course is difficult to learn but learning environment supported them to work together and therefore it provided good collaboration opportunities.

Keywords: Programming Languages, Blended Learning, Constructivism, Students' Views, Moodle

1. INTRODUCTION (GİRİŞ)

Developments in web based learning systems have radically changed the learning environments in last decade and this mostly revealed to the need for new instructional design approaches in order to organize learning activities. Today it is possible to achieve a powerful learning environment by using online learning tools such as learning management systems (LMS) and configuring the environmental settings based on the learning theories chosen.

Social constructivism is one of the theories that many educational researchers study on today. Social constructivism is based on the assumption that learners construct their own knowledge by actively participating in the learning process, interacting socially with their peers. Learners are in the center of learning process instead of instructors. Learning is affected by learners' prior experiences in this model (Duffy & Jonassen, 1992). Numerous studies have been done by researchers about designing the instruction for today's technology enhanced learning environments and investigating learners' success and satisfaction on the environmental settings. One of these studies is performed by Cavus and Ibrahim (2007). They have conducted an experimental study with 3 groups to identify the effect of collaborative learning environments on success of students for computer programming course in a web based LMS. First group included 18 students who were instructed using advanced collaborative tool in LMS. Second group included 18 students instructed using standard collaborative tool in LMS and the last group included 18 students instructed using traditional methods of learning in programming language course. Researchers pointed out that advanced collaborative tools could be used for the successful teaching of programming languages in web based learning environments. Another study was conducted by Dewiyanti, Brand-Gruwel, Jochems and Broers (2007). They have studied on students' satisfaction with collaborative learning in asynchronous distance learning environment. They have found that students appreciated the opportunities to work together in this environment. Sun, Tsai, Finger, Chen, and Yeh (2008) also developed a model about student satisfaction for e-learning environments. Their results revealed that learner's computer anxiety, instructor's attitude towards online learning environment, flexibility of course design, quality, ease of use and diversity in assessment are the critical factors of student satisfaction. In literature, there are other studies that conclude similar results (Bellefeuille, 2006; Dalsgaard & Godsk, 2007; Rovai, 2004; Sthapornnanon, Sakulbumrungsil, Theeraroungchaisri, & Watcharadamrongkun, 2009)

In the light of the information given above, the purpose of this study is to investigate students' perceptions about a designed blended learning environment based on social constructivist approach for programming languages course. It was thought that obtained data will help to reorganize and improve the learning activities for similar courses in the future. In order to achieve this purpose, the research questions of this study were stated as follows:

- What are the perceptions of students about blended learning environment designed for programming languages course?
  - What are the expectations of students about web based learning environments before taking the course?
  - Are they satisfied with the blended learning environment designed for programming languages course?
  - Do they have any suggestions in order to improve the learning environment designed for programming languages course?

2. RESEARCH SIGNIFICANCE (ÇALIŞMANIN ÖNEMİ)

Learners are in the center of instruction activities in constructivist approach. Evaluation is one of the most important steps of instructional design cycle. This study investigated students' perceptions, satisfactions and suggestions about the learning environment designed for programming languages course based on constructivist approach. This study explored students' feedback about the course environment and therefore it is significant for future practices of mentioned course.

3. METHODS (YÖNTEM)
3.1. Participants (Katılımcılar)

The study was conducted during the summer school of 2010-2011 academic year. Participants were 21 students in the Department of Computer Education and Instructional Technologies of Uludag University Education Faculty.

3.2. Instruments (Veri Toplama Araçları)

The Constructivist On-Line Learning Environment Survey (COLLES) developed by Taylor and Maor (2000) was one of the instruments used in this study. This survey contains a five-point Likert-type response scale: Almost Never (1), Seldom (2), Sometimes (3), Often (4), Almost Always (5) and measures students' perceptions about online classroom environments. COLLES consists of 24 questions grouped into 6 aspects: relevance, reflection, interactivity, tutor support, peer support and interpretation. Relevance questions assess how this online learning is relevant to students' professional practices. Reflection questions investigate if online learning stimulates students' critical reflective thinking. Interactivity questions are related to the extent of students' online educative dialogue. Tutor Support questions evaluate how tutors enable students to participate in online learning. Peer Support questions assess if peers provide sensitive and encouraging support to each other. Interpretation questions ask if students and tutors made good sense of each other during their communication. At the beginning of the study preferred form of COLLES was used in order to determine students' expectations about online learning environment. At the end of the study actual form of COLLES were given to students in order to achieve perceptions of them about the online learning environment designed for the course.

Another instrument used in this study was Course Evaluation Questionnaire developed by the researchers. This questionnaire was developed to support COLLES. Since COLLES comprises an economical 24 statements (Taylor & Maor, 2000) it is recommended using COLLES data in conjunction with qualitative data. In order to accomplish this purpose, Course Evaluation Questionnaire consisted of 5 open ended questions and it was given to students at the end of the course in order to find out their suggestions and perceptions about the course. Two researchers separately examined students' responses. They calculate the frequencies of the issues stated by students in open ended questions. After this examination they come together and decided the evaluation criteria for students' responses about open ended questions.

3.3. Course Settings (Öğrenme Ortamı)

Programming languages course in this study was in the summer school of 2010-2011 academic year and participants of that course had taken the same course in fall semester of the same academic year. The course environment was designed considering this situation. This course is 4 credits and 5 hours (3 hours theoretical, 2 hours

applied). A blended learning environment was selected as learning medium. The students were instructed face to face in computer laboratory in theoretical part of the course. Additionally these students used a web based learning environment for applied hours of the course and they had also opportunities for using this web based learning environment whenever they wanted after the course hours. Course materials (Reading materials, PowerPoint presentations, sample projects etc.) were located on the web using Moodle one of the well-known LMS. A list of software projects were given to students at the beginning of the course and every student was asked to choose one of these projects to develop. They got their course grades according to these software projects. Although they develop their projects individually, they were encouraged to work together while solving the problems that they encountered in project development process. In order to provide student-student and student-teacher interaction and collaboration, forums, chat and e-mail were used in that web based learning environment.

4. RESULTS (BULGULAR)

One of the instruments used in study to analyze learners perceptions about web based blended learning environment designed for computer programming course was COLLES. Students completed preferred form of COLLES at the beginning of the study and they completed actual form of COLLES at the end. Figure 1 indicates the mean scores of students in these forms.
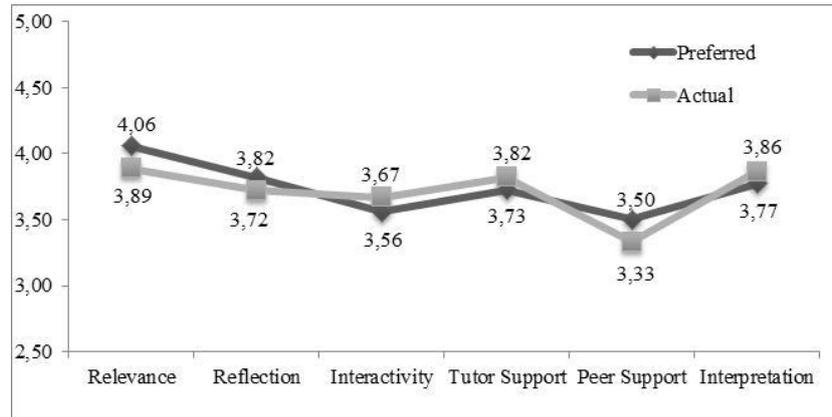

Figure 1. Students' mean scores on preferred and actual form of COLLES
(Şekil 1. Öğrencilerin COLLES istenen ve gerçek formu ortalama puanlari)

Preferred form of COLLES reflects students' perceptions about an online learning environment and actual form of COLLES reflects their perceptions about the real environment they interact. Students mean scores for preferred and actual form of COLLES can be seen in Figure 1. Figure 1 summarized that students had the highest expectation on the aspect of professional relevance (Mean: 3,89) and they had the lowest expectation on the aspect of peer support (Mean 3,33). Students' perceptions on the actual form of COLLES corresponded with the preferred form. They rated the highest on the aspect of professional relevance, lowest on the aspect of peer support. We can conclude students' responses that students were satisfied using the blended learning environment because students' mean scores on preferred and actual form of COLLES were nearly the same. In other words, students' responses showed that their expectations were corresponded with the actual learning environment.

In addition to COLLES, a Course Evaluation Questionnaire was given to students at the end of the course. There were 5 open ended questions in this questionnaire in order to determine students' perceptions and suggestions on programming languages course and the environment designed for this course.

One of these questions in that questionnaire was "Do you think that programming languages course is a difficult course compared with the other courses in the department? If so explain in your own words why it is difficult." Most of the students (15) answered the question of "Is programming languages course difficult?" as "Yes", a few students answered as "No". The other results of this question can be seen in Figure 2.
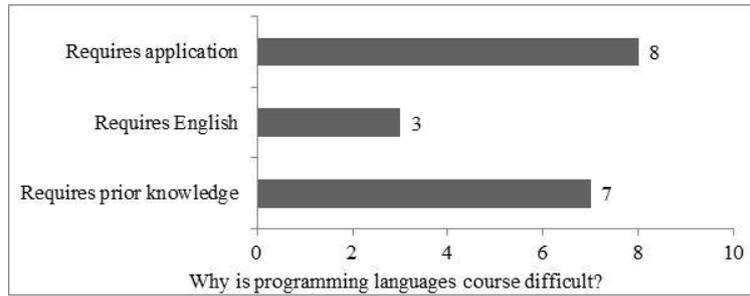

Figure 2. Students' views on difficulty level of programming languages course
(Şekil 2. Programlama dilleri dersinin zorluk derecesine ilişkin öğrenci görüşleri)

As seen in Figure 2, most of the students considered the programming language course as a difficult course. They stated that it is required to study this lesson making lots of applications on programming language integrated development environment (IDE). Also they stated that prior knowledge could ease the learning process. Some of the students emphasized the importance of English knowledge because the programming IDE and codes that they must develop are in English.

Second question in the questionnaire was "What were the most difficult stages while developing your projects in programming language course?" The results of this question can be seen in Figure 3.
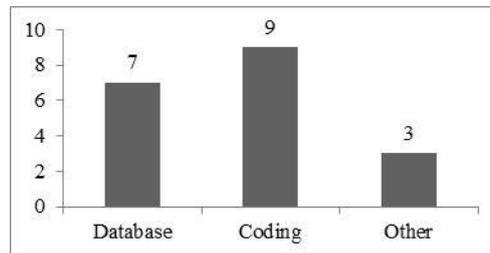

Figure 3. Students' views about difficulties in project development
(Şekil 3. Öğrencilerin proje geliştirmeyenin zorluklarlarına ilişkin görüşleri)

As seen in Figure 3, students mostly had problems on coding stage of their project development process. Database access was another problem that they encountered while working. Some of the students stated other problems like working with the programming platform.

Third question in that questionnaire was "Did the online learning environment support you in order to work together with your friends?" The results of this question can be seen in Figure 4.
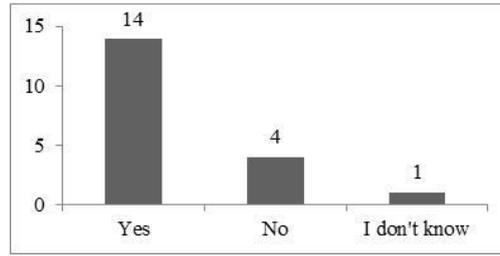

Figure 4. Students' views about learning environment support for working with their friends.
(Şekil 4. Öğrencilerin öğrenme ortamının arkadaşları ile birlikte çalışmayı desteklemesine ilişkin görüşleri)

As seen in Figure 4, students mostly stated that online learning environment supported them to work together with their friends while developing their projects. They stated that they found answers of their questions, they realized their classmates' problems and they interacted both with the students and the lecturer by using the environment. In other words online collaboration was achieved in this study.

Fourth question in that questionnaire was "Do you have any suggestions in order to improve online learning environment?" Students' responses were summarized in Figure 5.
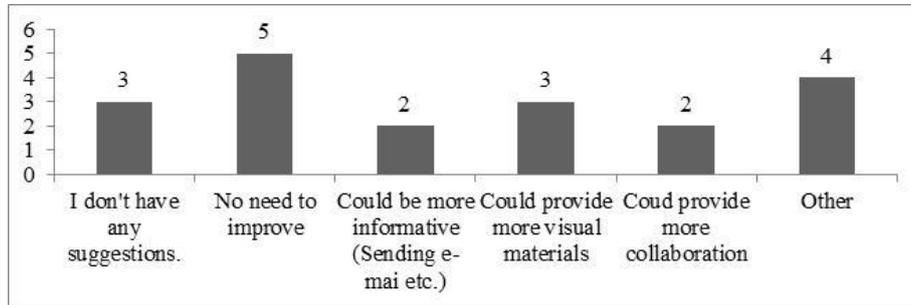

Figure 5. Students' views on improving online learning environment
(Şekil 5. Öğrencilerin öğrenme ortamının geliştirilmesine yönelik görüşleri)

Figure 5 showed that students emphasized the importance of visual learning materials, collaboration and support in web based learning environments. Some students stated that the environmental qualifications were enough so there was no need to improve, on the other hand some students didn't offer any suggestions.

Last question was "Were you satisfied with the programming languages course?" Most of the students (16) stated that they were satisfied taking the course with these environmental settings. A few students (3) stated that they were not satisfied. Very few (2) didn't specify their satisfaction level. Some of them (11) made explanations about why they were satisfied from the course. Concluded results of this question can be seen in Figure 6.
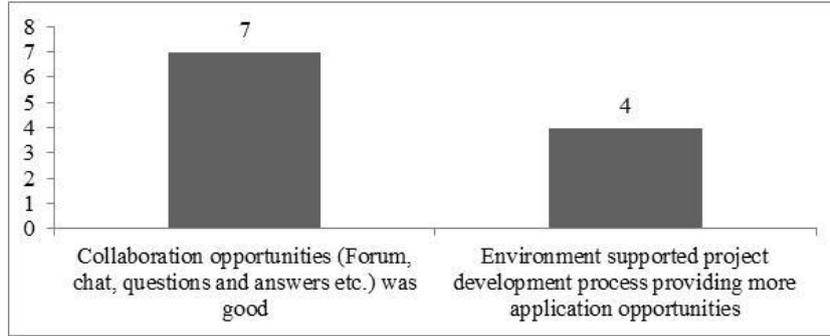
Figure 6. Qualifications of blended learning environment that students
were satisfied from.
(Şekil 6. Öğrencilerin karma öğrenme ortamının beğendikleri yönleri)

As seen in Figure 6, students stated that collaboration opportunities such as forum, chat, questions and answers improved their learning outcomes and environmental settings supported their project development process giving them more application opportunities.

5. DISCUSSION (TARTIŞMA)
This study investigated students' perceptions about the blended learning environment designed based on social constructivist approach for programming languages course in order to reorganize and improve the learning activities for that course for the future. In this context, students' expectations about the learning environment, their satisfaction about the course and finally their suggestions for the future practices for that course were explored. In order to achieve this purpose, the preferred form and actual form of COLLES was applied to students at the beginning and at the end of the course and students' responses to COLLES were supported by a Course Evaluation Questionnaire containing 5 open ended questions developed by the researchers.

According to the responses of students to COLLES, they had the highest expectation on the aspect of professional relevance, the lowest expectation on the aspect of peer support. Students' perceptions on the actual form of COLLES corresponded with the preferred form. Considering their responses to these two forms of COLLES it can be said that students were satisfied using the blended learning environment because students' mean scores on preferred and actual form of COLLES were nearly the same. It was thought that students' expectations were fulfilled with their perceptions. In addition, the majority of the students believed that programming languages course is a difficult course compared with the other courses in the department. Some students stated that this course is the most difficult course of the department. Students stated that this course requires too much application on computer, it requires good English and also it requires a bit prior knowledge about programming. These were the causes stated by students about why programming language is a difficult course. Other difficulties that students encounter while they were developing their software projects were related to writing the codes and accessing the database respectively. Additionally, majority of the students stated that the learning environment supported them in order to work together with their peers. They highlighted that they were able to find answers of their questions, they realized their classmates' problems and they interacted both with the students and the lecturer by using the environment. They reported that these factors increased their course outcomes. The students'

responses about blended learning environment showed that majority of the students were satisfied from the course. Collaboration opportunities such as forum, chat, questions and answers helped them to work together, they were able to share idea and knowledge about the projects they developed and this increased their learning outcomes. In addition to this, they highlighted that environment supported them to make more applications while they were developing their software project because they reported that they solved the software problems together with their friends by using the environment. On the other hand, the students' suggestions for the course improvement showed that students stressed the importance of supportive visual learning materials about programming languages. They also demanded more collaboration opportunities for better learning and requested more informative e-mail messages from the environment in order to better support the learning process.

As a result of these findings it was decided to improve and reorganize learning environment for the future practices of programming languages course. It was thought that increasing interactive visual learning materials can help students to learn programming language concepts more effectively and to solve the problems while developing their software projects. Adobe Captivate or Camtasia can be used in order to prepare these interactive learning materials such as screen captures, assessment and simulation videos and interactive materials in question and answer format. In addition, it was decided that increasing collaboration opportunities in learning activities may also provide a better support to students. It was decided to increase synchronous and asynchronous communication tools such as forums, e-mail and chat in LMS. Additionally adding pair work for small problem statements may increase collaboration and provide a better support for their software development process.

NOT (NOTICE)

Bu çalışma, 22-24 Eylül 2011 tarihleri arasında Elazığ'da düzenlenen "(ICITS-2011) 5. Uluslararası Bilgisayar ve Öğretim Teknolojileri Sempozyumu"nda sözlü bildiri olarak sunulmuştur.

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