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Examining Mooc Videos in Terms of Learning Theories

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Research Article

Abstract

The purpose of this study is to reveal the learning theories based on the videos on different MOOC platforms. Videos in this context were examined in terms of the nature of the information, the role of the teacher, the role of the student, learning, learning and teaching type, teaching strategies, educational environments and evaluation variables. The data were analyzed by descriptive analysis method and quantitative research method was used to analyze MOOC video contents. The behavioral learning theory was found to be predominant in the videos in the five MOOC sites examined. In addition, some variables were found to be based on cognitive learning theories.

Keywords: Massive online open courses (MOOCs), learning theories, distance learning, online courses

1. INTRODUCTION

Although the history of open and distance learning is based on older sources in some sources, it is assumed that the first practices started with the correspondence study method in the 19th century (Aydın, 2011). The developments such as the rapid development of technology in the twentieth century, the expansion of the radio and television as well as the introduction of

computers to the end of the century have diversified and facilitated the application areas of open and distance learning activities.

Diversity in this area has made it easier for people to reach open and distance learning and for it to spread among people. Again, this process of development and diversity led to different definitions of open and distance learning in the literature.

Aydın (2011) in his study combined the common points of the definitions of Simonson and others on a definition: Open and distance learning is a learning process in which learners are remote from each other and from learning sources in the context of time and / or space, and their interactions with each other and learning resources are based on remote communication systems.

Although the concepts of open education and distance education are often used interchangeably, the concepts of open and remote in the above definition point to different characteristics. Tella (1997) explains the concept of openness as the necessity of giving flexibility and choice for learners, while explaining the concept of distance by pointing to the independence of learners as learning time and / or space.

Depending on the technological possibilities of the period, letter, radio, television, computer and internet technologies were used in distance education (Aydın, 2011). In the early 21st century, the development of computer and internet technologies accelerated the development of new learning environments that could be used in distance education. One of these learning environments is MOOCs which are used in mass education.

2. LITERATURE REVIEW

The courses offered in MOOCs consist of different types of content according to the needs of the fields. One of these content types is video. Although there is a lot of research about the MOOC systems in the literature, it is seen that the researches on the learning theories used in the videos are insufficient. Previously, Bozkurt (2013), Bozkurt (2015) and Ergüney (2015) conducted a study on MOOCs, but the aspect of videos used in these studies did not address directly the learning theories. In this context, in the current study, 38 distance education platforms were examined in the world and related course content was found in 5 platforms and the videos used in Mooc platforms were evaluated in terms of learning theories. In addition, in order to determine the current situation in MOOC platforms, selected MOOC videos were examined in terms of learning theories and the learning theories used in the videos were determined. Considering that these determinations can contribute to the selection of appropriate learning theories for instructional designers who prepare content for these platforms, this study can be claimed to be important for distance education field. It is thought that in the light of the results of this research, higher quality teaching designs can be developed and learners can access more efficient Mooc video contents. This research is one of the first original studies to examine learning theories preferred in MOOC videos.

The distance education process, which was started with a letter in the 19th century in the USA, was first developed in the form of sending postal course materials to the learners, then gained importance in terms of technology integration with the use of radio and then television

and hence took its current form with the use of computer and internet technologies. One of the most widely used internet technologies today is 'MOOC'. MOOC stands for Massive Open Online Course. This system is an open and free online platform where various courses are taught, these courses are mostly transferred by video, the number of participants can be thousands or even more massive (Bozkurt, 2015). These courses can be paid or free, depending on the platform's choice of pricing and the services offered by the platform. The courses offered in the MOOCs may include occasional tests or assignments, as well as forums where the learners can communicate with each other.

The word “massive”, which stands for MOOC stands for a large amount of learners. Thanks to online platforms, a large amount of people can get the same lesson at the same time which is not possible through formal education. The word “open” emphasizes that the online courses are accessible to anyone who wishes. Learners from all over the world can register to any platform they want at any time, spending as much time as they want. To participate in such online platforms, it is usually enough to have only a valid e-mail address. The Word “online” underlines that courses are delivered to learners through the Internet using information and communication technologies. The last word, “courses”, states that the lessons on these courses are not random but are carried out within the framework of a specific academic plan and program and pedagogical basis. MOOC platforms allow the learner to maintain their professional and personal development for life without restricting them according to any criteria such as their age, profession, past lives, etc. MOOCs are comprehensive enough to provide education in various fields from engineering to sociology, medicine to philosophy, foreign languages to dance and music (Ergüney, 2015).

According to Siemens, there are two types of MOOCs. The first one is c-Massive Open Online Courses (cMOOC), which was started in 2008 by Siemens in the framework of the Connectivisim approach. The other type is usually x-Massive Open Online Courses (xMOOC), such as Coursera and edX, which are run by large institutions and have large financial budgets (Siemens, 2012b). cMOOC is the abbreviation of connectivist MOOC; whereas xMOOC is used as an abbreviation for extension MOOC. Also recently, Hybrid MOOC (Hybrid MOOC) has begun to emerge, offering cMOOC and xMOOC models in combination or in parallel, adopting a mixed learning approach and addressing a wider range of participants. c- Massive Open Online Courses adopt creativity, autonomy and social networks and adopt a connected approach; x- Mass Open Online Courses offer content using tools such as video presentations, quizzes and prefer traditional learning approaches (Bozkurt, 2013).

MOOC is a training system that is being implemented under the leadership of Massachusetts Institute of technology (MIT) and Harvard universities. The first examples of MOOC are presented through pioneering organizations' own platforms, but today there are more centralized platforms. edX is the MOOC platform founded by MIT and Harvard. edX is a pioneer platform in this field, with the participation of many universities such as Berkeley, Boston and UBC. The University of People, which opens higher education programs and gives university degrees with massively open online courses, is an independent and remarkable MOOC platform. Khan Academy, Iversity, Udacity and Alison are among the

major MOOC platforms. The MOOC platform providers listed in scholarly publications are presented in Table 1.

Table 1. MOOC Platform Providers Listed in Scholarly Publications

ALISON Canvans Network Class2Go Connexion Coursera CourseSties CourseSmart Desire2learn Digital Education edX Eliademy Ewant Futurelearn Google Course Builder	İVersity JMOOC Khan Academy Platform Mechanical MOOC MERLOT MiriadaX Mit OCW MITx Moodle NovoEd OERGlue Open University Open2study OpenLearn	Open Study OpenUpEd P2PU Peer-to-Peer University Saylor Foundation Schoo Udacity Udemy UniMOOC Veduca WEU Wikieducator XuetangX

Source: (İkinci, 2016, as cited in Peterson, 2014; Radford et al., 2014).

2.1. What are the benefits of MOOCs?

The benefits of MOOCs according to the MOOC Guide site are: wherever there is an internet connection, there is a possibility of getting education, the chance to get education in the mother tongue, the opportunity to choose between many course materials and materials, it is independent from time and place, easy and fast course preparation, sharing and reusable course materials, providing an informal learning environment, enhancing education by supporting the interaction between the learners, the lack of prerequisite for education and the freedom to choose the institution providing education, the possibility of having high-quality education either for free or for a low-price, individual learning at his own pace and supporting lifelong learning.

2.2. Learning Theories

Since each of the learning theories best describes a different type of learning, no learning theory is sufficient to explain and solve all learning types and all learning problems. For this reason, program development studies and teaching process should take advantage of the principles in each theory group according to the type of learning, the characteristics of the students and the type of knowledge learned (Senemoğlu, 2012). In the process of instructional design, there is a need for teaching theories that will guide designing the teaching-learning activities as well as the learning environment (Şendağ, 2016).

2.2.1 Behavioral Approach

In the first half of the twentieth century, behavioral theory, which dominated the field of learning, explained learning through observable and measurable changes in behavior (Gagne & Brings, 1985). According to behaviorists, learning occurs as a result of a bond between stimulant and response (Skinner, B. F., 1971). Small steps, individual speed, one-to-one teaching, concordance and reinforcement are the main principles of behavioral theories. (Schunk 1996, Akt: Caglar, Erdem, 2017). It is not important whether the organism is a human-being in behaviorism, because it is considered that the desired result can be achieved if the basic principles are applied. The process and the results are the most significant issues in this approach (Özer, 2005, p.106). It has been applied frequently in distance education due to advantages offered by behavioral approach such as providing education to large groups in a short time, being clear of teaching objectives, having measurable learning outcomes, giving learners the opportunity to learn at their own pace and teaching low cognitive skills effectively (Çakmak, Taşkın, Kokoç, 2017). Behavioral theorists believe that behavioral change occurs through classical conditioning, operant conditioning and observation. Behavioralism has been the main theory that was initially dominant in distance education processes and that led to the emergence of the theories in distance education (Moore Kearsley, 2012).

2.2.2. Cognitive Approach

The focus of learning theory is to understand how human memory works to get information and promote learning. Learning depends on students' specific strategies; planning, monitoring, evaluation and the impact of prior knowledge, beliefs, attitudes and values on learning define the focus point here (Tennyson and Schott, 1997). This theory more clearly shows how information is processed and saved, as well as how it is stored in memory structures to retrieve the previous information. Robert Gagne (1985) proposed nine learning events corresponding to specific cognitive processes. Nine learning events (Gagné 1985) are as follows: gain attention of the learners, inform the learners of the objectives, encourage the recall of previous learning, present existing stimulus content, provide learning guidance, elicit performance, provide feedback, asses the performance, ensure that it is memorable and improve the transfer (Stavredes, 2011). Gagne has shown that these nine events provide the learning conditions that reveal the intellectual skills that need to be learned and define the teaching sequence. He believed that the classes would be organized according to these activities so that the students could relate the new information to the existing structures. He also thought that he could provide the appropriate building level to support learning (Slavich and Zimbardo, 2011). This approach includes the role that teachers can play in changing students 'attitudes, values, and beliefs, as well as examining students' responsibilities in shaping the learning experience of themselves and their peers. It is thought that students should be able to read, write, discuss and engage in problem solving in order to maximize their intellectual development potential (Bonwell and Eison, 1991; Meyers and Jones, 1993; Svinivki and McKeachie, 2011). Cognitive learning theorists believe that learners do not only withdraw information from the environment or do not simply respond to external stimuli (Cahyadi, 2007). They actively participate in mental studies to understand what they

experience. They seek information to satisfy their curiosity, reconstruct their knowledge in the light of new information and change their behavior accordingly (Sawyer, 2014). The transition from a traditional face-to-face class to an online learning environment requires that the object that focuses on students' learning be considered content or teacher-centered. From the instructional transfer model on providing information to instructors on instructional design, the teacher made progress on the transition to a learning-centered model where the teacher actively guided students in creating a material understanding (Gunderson, 2009). In the form of a complex learning process, the process order is dealt with in the form of reasoning, solving the problem, processing the information, effectively transmitting / transmitting the information. Learning outcomes that focus on complex higher learning levels, such as problem solving, are best explained by cognitivism because the focus is on the content to be learned in advance to break up complex problems into their components and build a higher level of understanding.

2.2.3. Constructive Approach

The constructive approach has emerged as a result of many ideas and theories in order to overcome the deficiencies in teaching-oriented processes and to make the learning process permanent. The basis of the approach is that the learner configures and puts into practice what they learn, not the repetition of knowledge, but the transfer and restructuring of knowledge (Özkan, from Perkins, 2012). Instead of teacher directly giving the knowledge to the learner, the learner must be in pursuit of knowledge. During the process of constructing and constructing, the learner plays an active role and the teacher only acts as a guide in this process. When the learners have an active role, their learning becomes more permanent and they can create experiences in real life. In constructive approach, the student does not pass on the transferred information to his / her mind. Students learn by interacting with their active efforts and environment.

The student actively takes the knowledge through the activities such as inquiry, problem solving, connects with the works, pre-knowledge, adds his / her own comments and places them in his mind. The student learns through his active efforts, no one can teach him. Learning is done by the learner and no one can replace him. Learning is in control of the learner. S/he makes decisions about learning her/himself. The learner gives directions to the learning together with his/her teacher (Basque, 1999, Labédie and Guy, 2001, Güneş, 2010).

The prior learning of the learners in constructivist approach always plays a key role. New information is added to the previous information and the meaningful integration of this information with each other is necessary for the permanence of learning. The integrity achieved by the parts of information that are added together must be meaningful. The soundness of the structure depends on the interrelation of all information.

Constructivist can be summarized as follows (Savaş, 2007, as cited in Zorillo, 2000):

- Information is configured by the learner.
- Learning takes place depending on the general content of the learner.
- Information is created by the individual and influenced by culture.

- The new process takes place in an effective process. Copying the content directly from the program and presenting passive information is out of question. The effective process starts when the student sees the difference between the knowledge about the subject and his / her own information.

The Constructivist approach, in which the learners play an active role and the instructors monitor the educational processes as a guide, conducts a learner centered teaching. Within this dynamic processes, learners have permanent and meaningful learning.

3. METHOD

In this study, descriptive research method, which is a non-experimental research design, was used to examine videos used in Massive Open Online Course (MOOC) which is an extension of open and distance education. Descriptive study is a type of study that aims to present the current existing situation. In addition, quantitative method was used in the study because the features used in the video content were examined and analyzed numerically with the help of a checklist. The research process consists of the following steps: (1) Determining the scale; (2) determination of MOOCs; (3) Deciding which videos to be examined in designated MOOCs; (4) Testing of videos according to scale; (5) Arrangement and interpretation of the findings.

3.1. Purpose and Scope of the Study

The main purpose of this study is to reveal the learning theories based on the video content used in MOOC platforms. In this context, videos were examined in terms of the nature of the information, the role of the teacher, the role of the student, learning, learning and teaching, teaching strategies, educational environments and evaluation variables. It was decided that the content to be studied was basic mathematics and in this context; 38 MOOC platform providers given in Table 1 were examined and only 6 of them (Saylor, Khan Academy, FutureLearn, Alison, edX and Udemy) were found to be related to basic mathematics. The content of one of the platforms (Udemy) was not included in the study since it was not free at the time of research. For this reason, 5 MOOC platforms were used in the study. These; Saylor, Khan Academy, FutureLearn, Alison and edX.

3.2. Data Analysis

In order to examine and evaluate the videos, 3 different scales including basic outcomes of learning theories were examined and the scale developed by Schurman (1998, as cited in Deryakulu, 2019) with the common opinion of 10 researchers in the evaluation of Mooc videos was used for the purpose of checklist. The scale is arranged in the form of a matrix consisting of 3 items in the vertical and 9 items in the horizontal orientation. Behavioral behavioral, cognitive and constructivist theories are included in the vertical, while the features of these theories are horizontal.

Table 2. Source: Schurman, 1998 akt. Deryakulu, 2001: 67.

Key Elements	**Behavioral**	**Cognitive**	**Constructivist**
Nature of Information	Based on objective reality, independent of a specific person	Based on objective reality, dependent of a specific person	Based on individual and socially constructed subjective reality
The Role of the Teacher	Transfering information	Managing information acquisition process	Helping students, collaborating
The Role of the Student	Passive	Semi-active	Active
Learning	Change in open behavior as a result of conditioning	Processing information	Individual discovery and configuration of information
Learning Type	Separation, Generalization, Association, Chaining	Processing information in short-term memory, storing in long-term memory	Problem solving based on real situations
Type of Education	Inductively	Inductively	Deductively
Teaching Strategies	Presenting information, practicing, giving feedback	Stimulate the student's cognitive learning strategies	Effective, self-controlled, internal motivated, researcher learning
Educational Environments	Various traditional environments, (programmed-instruction, computer-assisted etc.)	Teacher and computer based teaching	Interactive environments that require students to demonstrate physical / mental responses to progress
Evaluation	Separate from the teaching process and based on criteria	Separate from the teaching process and based on criteria	Within the learning process and independent of the criterion

During the analysis of data, videos were examined separately by 10 researchers using the checklist. The investigations were checked by an expert in the field, the missing or mistaken parts were corrected, then the matrix results were analyzed and the research findings and comments were obtained through the collaboration of the researchers.

4. RESULTS

The results of the analyzes of the videos examined in this section are discussed under the nature of the information, the role of the teacher, the role of the student, learning, type of learning, type of teaching, teaching strategies, educational environments and evaluation headings.

4.1. Nature of Information

Table 3. The Nature of Information

Source	Behavioral	Cognitive	Constructive
Alison	1		
Khan Academy	1		
FutureLearn	1		
edX	1		
Saylor Academy	1		

Table 3 shows the results of the course videos in the five different MOOC platforms in terms of the nature of the information. In terms of the nature of information, it was seen that the approach in each platform is based on behavioral theory and did not include cognitive and constructivist theories. In all of the educational platforms examined, behavioral theory based on objective reality, which is independent of a specific person, was chosen. This result shows that there is a general tendency for educational platforms to choose behavioral theory as a single source in terms of the nature of information, while it indicates that they lack any contributions in terms of cognitive and constructivist approaches. It can be envisaged that the platforms should consider cognitive and constructivist theories as new perspectives for future MOOC preparation studies and include those in their studies.

4.2. The Role of the Teacher

Table 4. Role of Teacher

Source	Behavioral	Cognitive	Constructive
Alison	1	1	
Khan Academy	1		
FutureLearn	1		
edX	1		
Saylor Academy	1		

As can be seen in Table 4, when the educational videos were examined in terms of the role of the teacher, it was determined that the role of the teacher in all the platforms examined was information transfer. Except for one platform (Alison), it was seen that behavioral theory was used as a base in all studied platforms (Khan Academy, FutureLearn, edX, Saylor). Considering the fact that the examined platforms are very popular, it can be said that the constructivist approach is not preferred for the role of the teacher.

4.3. The Role of the Student

Table 5 shows the results of the students' role in five different MOOC videos.

Table 5. The Role of the Student

Source	Behavioral	Cognitive	Constructive
Alison	1	1	
Khan Academy		1	
FutureLearn	1	1	
edX		1	
Saylor Academy	1		

Looking at the results, the two platforms (Alison, FutureLearn) enriched their MOOC videos using both behavioral and cognitive approaches. The results of the platforms show similar results between the behavioral and cognitive approaches in terms of the student's role. The lack of the usage of constructivist approach provides a research area for educational platforms.

4.4. Learning

Table 6. Learning

Source	Behavioral	Cognitive	Constructive
Alison		1	
Khan Academy	1		
FutureLearn	1	1	
edX	1	1	
Saylor Academy	1	1	

As shown in Table 6, in order to provide instruction in the videos examined, the open change in behavior as a result of conditioning and the methods of processing the information were

used which includes the behavioral and cognitive approaches of learning together. This result is in line with the type of learning and the type of teaching results.

4.5. Learning Type

Table 7. Learning Type

Source	Behavioral	Cognitive	Constructive
Alison	1	1	
Khan Academy	1		
FutureLearn	1	1	
edX	1		
Saylor Academy	1		

When the data given in Table 7 were analyzed, it was seen that the behavioral approach was used as a base in terms of the learning type in all of the videos in the related MOOCs. In addition, two of the 5 videos examined (Alison and FutureLearn) were enriched in terms of their types of learning by using a cognitive approach as well as a behavioral approach.

4.6. Type of Education

Table 8. Teaching Type

Source	Behavioral	Cognitive	Constructive
Alison	1	1	
Khan Academy	1	1	
FutureLearn	1	1	
edX	1	1	
Saylor Academy	1	1	

Videos included in the sampling were examined in two groups as inductive and deductive in terms of teaching type. The method based on inductive expression, ie, from the parts to the whole, is appropriate for the teaching activities of both Behavioral and Cognitive approaches. The deductive method is more appropriate to the teaching activities of the Constructivist approach because it expresses the environments in which the subject is told from the whole to the parts. As shown in Table 8, the Inductive method was preferred in the videos examined. Deductive teaching method, which is more suitable for constructivist approach, was not preferred as the teaching type in the videos studied.

4.7. Teaching Strategies

In the matrix used for research, Behavioral teaching strategies were given as: presenting information, practicing and giving feedback; Cognitive teaching strategy was given as; stimulating student's cognitive learning strategies while Constructivist teaching strategies were listed as: active, self-controlled, internal motivated, researcher learning. The findings on the teaching strategies in the contents of the five MOOCs platforms examined are shown in Table 9.

Table 9. Instructional Strategies

Source	Behavioral	Cognitive	Constructive
Alison	1		
Khan Academy	1		
FutureLearn	1	1	
edX	1	1	
Saylor Academy	1		

When we look at the findings in Table 9, it is seen that behavioral teaching strategies were predominantly used in the contents. Only two MOOC platforms (FutureLearn and edX) had both behavioral and cognitive teaching strategies. Constructive teaching strategies were not encountered in the contents.

4.8. Educational Environments

Table 10. Educational Environments

Source	Behavioral	Cognitive	Constructive
Alison	1		
Khan Academy	1	1	
FutureLearn	1	1	
edX	1	1	
Saylor Academy	1		

The courses developed using Alison and similar MOOC platforms such as Khan Academy, FutureLearn, edX were based on cognitive-behavioral pedagogy with some minor components. The role of teacher was similar to face-to-face teaching and the courses were structured to have a specific content and a specific set of goals each week. As a result, the

interaction between students and teacher was limited. Web and social constructivist technologies facilitate the learning of useful information and establish cognitive connections. In the behavioral approach, when we consider primarily the observable, measurable behaviors instead of mental processes, we can see traces of observable behavioral approach related to learning in the courses.

4.9. Evaluation

Table 11. Evaluation

Source	Behavioral	Cognitive	Constructive
Alison	1	1	
Khan Academy	1	1	
FutureLearn	1	1	
edX	1	1	
Saylor Academy	1		

When we look at the findings in Table 11, it is seen that the majority of the content in the examined videos were based on a non-process-based and criterion-based evaluation in accordance with the behavioral and cognitive approach. In a behavioral and cognitive approach, students are tested to determine if the students have reached the learning outcome (Moedritscher, 2006). On the other hand, no independent assessment, which would be in accordance with the constructive approach, was observed in the learning process.

5. CONCLUSION, DISCUSSION

The use of MOOCs, in other words, massively open online courses in educational environments is becoming more and more common, and different platforms are emerging each day. Videos are widely used in MOOC platforms to enhance learners' interaction and enrich educational environments. In this study, a research was conducted with the scale chosen to determine the learning theories used in the online videos used for educational purposes.

Within the scope of the study, 38 MOOC provider platforms listed in Table 1 were examined one by one and scanned in the framework of the determined subject. The content of the 6 related platforms were found related. Access, as stated in the MOOC definition, was open and free, but access was not free on one of the platforms at the time of the study. In this study, only completely open and free platforms were utilized. In the 5 MOOC sites examined for this study (Saylor, Alison, edX, FutureLearn, Khan Academy), behavioral approach was revealed to be predominant in videos about basic mathematics education. In addition, it was also observed that the teaching was often supported by cognitive approach. It was found out that

knowledge was based on objective realism, that the teacher was transmitting knowledge, and that the learners were passive or semi-active. It was observed that the learning type was separational, generalizing, associating, chaining and hence, teaching was mostly inductive. The mainly used teaching strategies were providing information, practicing and giving feedback. Moreover, it was thought that the distance between teacher and student could be the reason behind the fact that evaluations in MOOC platforms were not independent assessments within the education process. No constructive approach was encountered in the investigations and the reason to this was thought to be that the MOOCs were addressing to a broad audience and that the trainings were being conducted asynchronously.

This study, which was conducted to examine MOOC videos in terms of learning theories, can be repeated using different parameters. The new findings can be compared to the results of the present study and a more comprehensive evaluation can be made for the platforms. It is recommended to the researchers who will examine in the same subject area to change the parameters such as selected MOOC platforms, subject of the videos examined, the number of investigators and the evaluation criteria and repeat the current research with those different parameters. The increase in the number of similar studies may contribute to the instructional designers who prepare content for MOOC platforms to choose the appropriate learning theory for the course content and to develop higher quality teaching designs.

Mooc Eğitim Videolarinin Öğrenme Kuramlari Açisindan İncelenmesi

Özet

Bu çalışmada, MOOC platformlarında kullanılan videoların dayandığı öğrenme kuramlarını ortaya koymak amaçlanmıştır. Bu kapsamda videolar; bilginin niteliği, öğretmenin rolü, öğrencinin rolü, öğrenme, öğrenme ve öğretim türü, öğretim stratejileri, eğitim ortamları ve değerlendirme değişkenleri açısından incelenmiştir. Çalışmada; veriler betimsel analiz yöntemiyle çözümlenmiş, MOOC video içeriklerinin incelenmesinde nicel araştırma yöntemi kullanılmıştır. Çalışma sonucunda incelenen beş MOOC sitesinde videolarda davranışçı öğrenme kuramının ağırlıklı olduğu görülmüştür. Ayrıca bazı değişkenlerde ise bilişsel öğrenme kuramlarına dayanan içeriklerin olduğu saptanmıştır.

Anahtar Kelimeler: Kitlesel çevrimiçi açık dersler (MOOCs), öğrenme kuramları, uzaktan eğitim, çevrimiçi dersler

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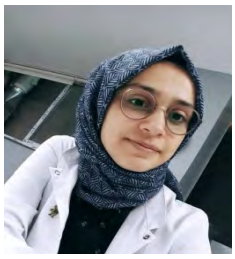

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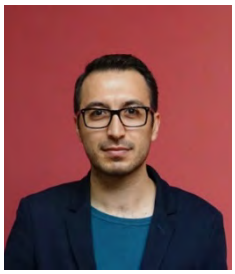

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