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Harmanlanmış Öğrenim Ortamlarında Mobil Öğrenmenin Etkileri

Ahmet Berk Ustun**[1]

Öz

Öğrencilerin tutum ve bilgi birikimini arttırmak için mobil öğrenmeye hazırbulunuşluluk, teknolojinin eğitim ortamlarına entegrasyonunda yükselen eğilimdir. Mobil cihazların başarılı bir şekilde uygulanması öğrenmeyi geliştirme potansiyeline sahiptir. Bu anlamda, geleneksel öğrenmenin ve mobil öğrenmenin güçlü yanlarını birleştirilerek oluşturulan harmanlanmış öğrenme ortamları ümit verici bir eğilim olarak kabul edilebilir. Bu araştırmanın amacı, mobil öğrenmenin harmanlanmış öğrenme ortamlarına etkin şekilde entegre edilerek oluşturulan öğrenme ortamlarının, öğrenciler üzerindeki öğrenme kazanımları, akademik kazanımları ve tutumları üzerindeki etkilerini inceleyerek belirlemektir. Bu alanyazın tarama çalışmasında, önceden belirlenmiş kriterlere göre hakemli dergilerden seçilen 22 makale incelemiş (örneğin, yarı deneysel veya deneysel gibi nicel araştırma tasarımı kullanmış veya karma yöntem, vaka çalışması gibi benzeri bir araştırma tasarımı kullanmış araştırma tasarımında en az bir nicel boyut içeren çalışmalar) ve bu makaleler analiz edilerek güvenilir ve anlamlı bulgular çıkarılmıştır. Bulgular, mobil teknolojilerin harmanlanmış öğrenme ortamına entegre edilmesinin öğrencilerin öğrenme kazanımlarını olumlu yönde anlamlı şekilde etkilediğini ancak incelenen deneysel çalışmalardan az bir kısminin bu tür öğrenme ortamlarının öğrenme kazanımları üzerinde önemli bir etkisi olmadığını göstermektedir. Öğrencilerin tutumu ile ilgili olarak, incelenen çalışmaların çoğunluğu mobil teknolojilerin harmanlanmış öğrenme ortamlarında eğitim amaçlı kullanımının öğrencileri memnun ve motive ettiğini ortaya çıkarmıştır.

Anahtar Sözcükler

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Effects of Mobile Learning in Blended Learning Environments

Abstract

Mobile learning readiness for promoting student attitude and knowledge construction is an emerging trend to integrate technology into educational settings. The successful implementation of mobile devices has the potential to enhance learning. In this sense, blended learning environments combining the strengths of traditional learning and the strengths of mobile learning can be considered as a promising trend. This paper aims to examine the effective integration of mobile learning into blended learning environments in order to determine the impacts of these learning environments on students' learning acquisition, academic achievements and attitude. This literature review selected twenty-two peer-reviewed journal articles according to the pre-determined criteria (E.g., studies using a quantitative research design such as quasi-experimental and experimental, etc. or types of research designs such as mixed-method, case study, etc. including at least a quantitative aspect in their data collection procedure) and carefully analyzed these articles to extract reliable and meaningful information from them. The findings demonstrate that the integration of mobile technologies into a blended learning environment significantly influences students' learning acquisition in a positive way although there are few empirical findings from the reviewed articles which highlight no significant effect on their learning acquisition. With regard to student attitude, students were satisfied and motivated to use mobile technologies in blended learning environments for academic purposes according to the majority of the reviewed articles.

Keywords

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** **Corresponding Author:** abustun@bartin.edu.tr
[1] https://orcid.org/0000-0002-1640-4291, Dr., Bartin University, Bartin/Turkey,

Introduction

Non-traditional learning opportunities have rapidly been growing over the duration of the last few years with the development of internet technologies (Kim, Bonk, & Oh, 2008). However, online learning has its benefits and its drawbacks (Chou & Chou, 2011). It is obvious that one of the most significant benefits of online learning enables educators and students to remove the traditional learning boundaries of time and place (Ustun, 2011). Conversely, online learning has several weaknesses such as lack of peer contact and social interaction. Because of various limitations of online learning, an alternative instructional setting, Blended Learning, aims to alleviate the drawbacks and concerns of online learning (Chou & Chou, 2011).

Commonly, blended learning is a combination of the best features of face-to-face learning with the best features of online learning (Graham & Dziuban, 2008; Ustun, 2018). The combination of the best features of both practices provides several benefits. In this sense, a blended learning environment can be constituted by integrating mobile learning into face to face learning to make the learning environment more beneficial. Since mobile learning which has played a significant role in non-traditional learning has potential benefits that have been widely accepted (Cheon, Lee, Crooks, & Song, 2012).

Blended learning that is considered as one of the emerging trends is an effective learning approach (Graham & Dziuban, 2008; Kim, Bonk, & Oh, 2008) and mobile learning is an emerging trend as well (Pachler, Bachmair, Cook, & Kress, 2010). The existence of traditional face-to-face learning environments has been for centuries. Blended learning is the convergence of traditional face-to-face learning and mobile learning as an emerging learning environment. Accordingly, blended learning can be considered as an attempt for the process of mixing and matching of different delivery methods. In this point, it should be taken into consideration that a combination of face-to-face learning and mobile learning comprises only the strengths of these delivery methods in order to optimize the learning environment.

The aforementioned delivery method, mobile learning, has several potential benefits and opportunities. Furthermore, the benefits and opportunities of blended learning are accepted by a myriad of researchers (Hijazi, Crowley, Smith, & Shaffer, 2006). In light of the facts, the purpose of the paper is to reveal the effects of using mobile learning in blended learning environments on students' learning acquisition, academic achievements and attitude.

Blended Learning

Blended learning is generally defined as a combination of face-to-face and online instruction (Bonk & Graham, 2006; Graham & Dziuban, 2008). According to Graham (2006), this usage of the definition accurately reflects the historical emergence of blended learning.

Blended learning is an effective choice to meet the need of the students in an academic world (Hijazi et al., 2006; Ustun & Tracey, 2019). This assertion can be supported by several benefits of blended learning. According to Osguthorpe and Graham (2003), six points which blended learning environment provides are as follows: (1) pedagogical richness, (2) access to knowledge, (3) social interaction, (4) personal agency, (5) cost-effectiveness, and (6) ease of revision. For instance, one of the significant benefits is social interaction. Students can constantly communicate with each other to ask questions about any topics which remained unclear in the face-to-face setting (Hijazi et al., 2006). Another comprehensive study stated the benefits of blended instruction (Grassian, Botello, Phares, & Turnbow, 2005):

- The ability to share, standardize and reuse content
- Learner control over pace and sequencing, and the ability to review online content multiple times
- Immediate feedback on computer-graded quizzes and exercises and quicker feedback on writing assignments
- Reduced grading load for instructors
- Lessened demand for classroom space
- More flexible scheduling for students and instructors

As a result, it is obvious that many benefits exist in the blended learning environment as long as a learning environment is built with a combination of the best feature of face-to-face learning with the best features of online learning (Ustun & Tracey, 2019).

Mobile Learning

There are a lot of definitions of mobile learning. One of the definitions is made by Educause Learning Initiative (ELI) "mobile learning can be any educational interaction delivered through mobile technology and accessed at a student's convenience from any location (ELI, 2010)". The Advanced Distributed Learning (ADL) Initiative approaches mobile learning from a different perspective which provides a more flexible and comprehensive view

of mobile learning. Mobile learning means "leveraging ubiquitous mobile technology for the adoption or augmentation of knowledge, behaviors, or skills through education, training, or performance support while the mobility of the learner may be independent of time, location, and space (ADL, 2014). Both definitions emphasize the promise of "anywhere, anytime" learning that mobile devices enable. In this sense, mobile learning can be considered as breaking chains of computers and internet connections. Indeed, mobile learning provides a variety of benefits and opportunities as well as anywhere and anytime learning. These opportunities are inherent in mobile learning.

GSMA Development Fund (2010) presented a set of benefits of mobile learning in three categories. Mobile learning is inclusive and nondiscriminatory. An individual user accesses educational content which can be tailored to meet her/his needs. Second, mobile learning provides on the go and real-time learning which means educational content can be updated on a regular basis. Third, mobile learning is complementary and independent. Meaning it is flexible and capable. The same institution also presented opportunities for mobile learning in two categories in the same study. The initial opportunity is access and ubiquity and another one is the current market. Indeed, these two opportunities complement each other. Whilst new mobile devices are being produced at the current market, the ubiquity of mobile devices is rapidly pervasive among individuals. For instance, mobile phones are the forefront of technology as a fundamental tool for health, education and other fields (GMSA Development Fund, 2010).

Elias (2011) gathered sets of opportunities for mobile learning in three categories. First, mobile learning provides a relatively inexpensive learning opportunity. Distinctive reasons why it can be considered as an inexpensive is that handheld devices and cellular services are less expensive than computers with fixed internet services. Second, mobile learning has a multimedia content delivery and creation option which means that users can download and upload sound, text, pictures, and video files. Third, mobile learning supports continuous and situated learning.

Shuler (2009) stated the five key opportunities in mobile learning.

1) Encourage "anywhere, anytime" learning: Mobile devices enable students to break the barriers between home, school, and afterschool and enhance their ability to gather, access, and process information.
2) Reach underserved children: Mobile devices are relatively low cost and accessibility from low-income communities. Because of these facts, they help children who are from economically disadvantaged communities and from developing countries to get an education.
3) Improve 21st-century social interactions: The essential consideration factor for 21st-century success is collaboration and communication and mobile technologies have the power to support and foster these essential factors.
4) Fit with learning environments: Mobile devices can fit the nature of various learning environments by coping with many of the challenges associated with technologies
5) Enable a personalized learning experience: Instruction should be tailored according to learners' background knowledge, readiness, language, preferences, and interests. Mobile devices can be used by considering these backgrounds to make the learning environment customized.

Mobile Learning in a Blended Learning Environment

Blended learning attempts to take advantage of the strengths of traditional learning and online learning by combining both practices into one learning environment (Osguthorpe & Graham, 2003; Graham, 2006; Graham & Dziuban, 2008). In this sense, an attempt can be the combination of the best features of face to face learning and the best features of mobile learning. Mobile learning embraces a myriad of benefits and opportunities such as multimedia content and communications with other students through the flexibility of time and location. Thus, the integration of mobile learning into a blended learning environment can be constituted but coming with a question that should be answered.

How is the balance between the components of traditional and mobile learning determined? The degree to which the usage of mobile learning components and the degree to which the usage of components of traditional learning is determined according to the nature of the instructional goals, student characteristics, instructor background, and resources. Determination of variations of the balance between components of two different learning environments is significant for the proper way to deliver instruction. However, the main point is to ensure that blended learning involves the strengths of each type of learning environment and none of the weaknesses (Osguthorpe & Graham, 2003). For instance, the aforementioned benefits and opportunities for mobile learning are considered to be the strengths of the learning model. After determining the balance by taking account of the nature of the instructional goals, student characteristics, instructor background, and resources, the goal should be taking advantage of strengths of mobile learning in order to effectively and efficiently generate a learning environment.

The potential benefits of the utilization of mobile learning in blended learning environments are obvious. In this sense, the aim of this review is to reveal how mobile learning implemented in blended learning environments impacts students' learning acquisition, academic achievements and attitude. The following research questions guided this review.

- What attitudes do learners have towards the use of mobile learning in a blended learning environment?
- What does the use of mobile learning impact on students' learning acquisition and academic achievements in a blended learning environment?

Method

To answer the two research questions that directed this study intending to objectively report the synthesis and interpretation of relevant and high-quality studies, the systematic review was conducted (Gough, Oliver, & Thomas, 2012). Systematic review is the process of selecting, identifying, and synthesizing pertinent research studies to give more explicit and encompassing illustration of the collected studies than any single study can produce (Gough et al., 2012). To address the research questions, an extensive systematic literature review was carried out by following the detail steps of the review.

Search strategy for identification of relevant studies

Systematic review began with the identification of the literature related to the scope of the study. In systematic review process, two major databases were screened as follows Web of Science and Scopus. The following search terms were used "blended learning" and "mobile learning". The combination of these search terms was chosen because these words are widely used while identifying blended learning and mobile learning. The study selection was done according to the following criteria. There was no limitation in the search in terms of publication years. The search was restricted to identify only peer-reviewed English language articles. The databases were last accessed on June 5, 2019. The initial search resulted in 227 articles.

Inclusion/exclusion criteria

For this systematic review, the inclusion and exclusion criteria were determined. The 227 articles were reviewed according to the following criteria (see Fig. 1 for a demonstration of the selection process).

1. The studies that implemented mobile learning in a blended learning environment were selected.
2. The studies that examined the participants' attitudes or academic achievement were selected.
3. The studies that included full text were selected.
4. The studies that used a Laptop or Netbooks as mobile devices were not selected.
5. The studies that used a quantitative research design such as quasi-experimental and experimental, etc. or types of research designs such as mixed-method, case study, etc. including at least quantitative aspect in their data collection procedure were selected.

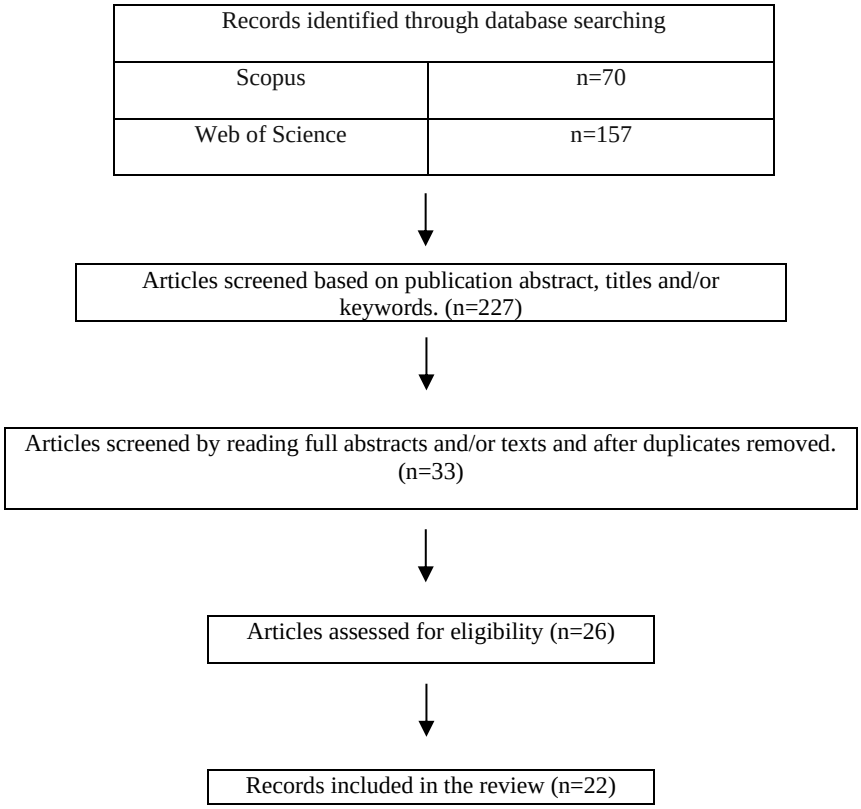

Figure 1. Demonstration of the selection process

According to the formulated criteria, the most relevant studies were selected to answer our research questions. In the first phase of the identification process, records were selected based on criterion 1. In the second phase of the screening process, records were excluded based on criterion 2 and then full-text records were included, and duplicates were removed based on criterion 3 and 4. In the third phase of the assessment process, records were omitted based on criterion 5.

Examples of studies included in the review

An example is a semi-experimental study conducted by Jafarkhani, Jamebozorg and Brahman (2017) who investigate the effectiveness of the use of mobile social networks in the blended learning approach to improve the level of listening and speaking English skills of 90 primary school students. In that study, the experimental group taught by a blended approach using a mobile phone and the control group taught by the traditional face-to-face method. They found that the scores of the final exam of the experimental group were better than the scores of the final exam of the control group and the difference in scores of the final exam between the experimental and control groups was a statistically significant difference. Therefore, they concluded that the use of mobile social networks in the blended learning approach had a positive impact on the learning process. Another example is a quantitative study conducted by Wang, Shen, Novak and Pan (2009) who designed a cutting-edge mobile learning system and reported the implementation of the system in a blended English classroom. The results showed that students were strongly interested in mobile learning and this method of learning content delivery.

Examples of studies not included in the review

A study which was conducted by Mejía (2016) to examine the benefits of integrating Mobile Learning into language teaching activities to promote active student engagement and independent learning in a blended learning class. this study was excluded as it does not comply with criterion 5 which necessitates that a study includes at least a quantitative aspect in their data collection procedure. However, this study employed only qualitative data collection method. A similar study conducted by Annamalai (2018) was excluded due to the same reason although the study explored the pre-service teachers' views of the use WhatsApp in teaching and learning activities through a blended learning approach.

Findings

Impact of the use of Mobile learning in a blended learning environment on learning outcomes

18 out of 22 reviewed studies reported the impact of using mobile learning in a blended learning environment on students' learning acquisition and academic achievements. Yen and Lee (2011) investigated the impact of problem-solving patterns on learning achievement in the combination of mobile learning, web-based learning, and classroom teaching in a blended learning environment and the results of their study showed that learning achievement was not statistically improved. Lau et al. (2010) investigated the impact of the proposed b-learning model using podcasting on teaching and learning effectiveness and uncovered that the use of podcasts in the proposed b-learning model did not have a significant contribution to academic performance. Suana et al. (2019) investigated the effectiveness of using mobile instant messaging in a blended learning environment and uncovered that students who used mobile instant messaging in the experimental group did not have significantly higher improvement of learning outcomes in comparison to students in control group. Sun et al. (2017) examined the level of knowledge building in mobile collaborative learning blended environments using a mobile synchronous communication tool in higher education and found out that the use of Moodle was a better tool for a deeper level of knowledge building than the use of WeChat as a mobile synchronous communication tool.

On the other hand, Hsu et. al (2018) developed a blended mobile game-based learning to promote children's learning experiences and found that this learning environment had the potential to enhance children's long-term learning. Zhou and Li (2019) investigated the applicability of a proposed blended mobile learning environment in theatre arts classrooms and uncovered that this blended m-learning was effective and efficient to enhance teaching and learning experiences. Hou et al. (2014) empirically examined students' learning performances in a blended mobile museum learning environment and uncovered that the experimental group in blended mobile learning acquired knowledge statistically better than the traditional learning group. Barrett and Liu (2019) explored factors that help students to develop oral presentation skills and found that the use of mobile devices improved group efficiency and collaboration that helped develop language skills within a social learning environment. Albrecht, Folta-Schoofs, Behrends and Jan (2013) explored the effect of the heightened realism of a self-developed mobile Augmented Reality blended learning environment (mARble) on learning outcomes and revealed that the mARble group in comparison to the group using conventional learning material showed greater knowledge gain. Avci & Adiguzel (2017) utilized the Mobile-Blended Collaborative Learning model to teach foreign language and investigated the effects of using mobile instant messaging on group project works. They demonstrated that instant messaging had positive effects on students' performance and the quality of their work. Shen, Wang, Gao, Novak, and Tang (2009) examined the effects of using a cutting-edge mobile learning system on students' learning in a computer science class and found out that students significantly increased their grades. Chen and Hu (2018) explored the effects of a mobile-supported tool used in blended learning on students' critical thinking skills in English as a second language class and revealed that students who use the system enhanced their critical thinking skills better than others who did not use the system. Jafarkhani, Jamebozorg and Brahman (2017) explored the impacts of using the mobile social networks in the blended approach to the level of listening and speaking skills of the level of listening and speaking skills of primary school students in learning English and revealed that students in the experimental group who were taught by blended designing instruction got significantly higher scores in the final exam than those in the control group taught through current face-to-face method. Marçal et al. (2016) analyzed the effect of the use of mobile messages texts in blended learning modality in a post-graduate course and found out that the students who received mobile messages outperformed students who did not receive mobile messages. Ono, Ishihara and Yamashiro (2015) implemented a blended instruction model incorporating mobile-based e-Learning into a traditional nonwired classroom in foreign language teaching and their evaluation of the implementation demonstrated that students' vocabulary acquisition and speaking skills were improved. Lander (2015) investigated if the use of a mobile digital flashcard tool called Quizlet in a blended learning model improves student test-scores at a university in Japan and the results showed that it positively enhanced student test-scores. Sulisworo, Rahayu and Akhsan (2016) investigated the impacts of using Facebook in blended mobile learning environment to determine if this environment improve student writing skill and unearthed that this teaching approach had positive effects on student writing skill of shaping ideas and organizing the ideas. Chiu, Tseng and Hsu (2017) investigated the efficacy of blended context-aware ubiquitous learning (b-learning) by comparing b-learning platform with context-aware ubiquitous learning (u-learning) and e-learning environments and the results showed that b-learning was an effective learning framework because the students performed better in the b-learning environment than other learning platforms.

Impact of the use of Mobile learning in a blended learning environment on student attitude

14 out of 22 reviewed studies reported the impact of using mobile learning in a blended learning environment on students' attitudes. Tulinayo, Ssentume and Najjuma (2018) investigated the use and acceptance of mobile technologies in a blended learning context and found out that the integration of mobile technologies in students'

learning and teaching was high. Hsu et al. (2018) created a blended mobile game-based learning service and evaluated the use of this mobile service in a museum's physical space. The results demonstrated that students were satisfied and motivated to re-visit game-based museum learning tours. Zhou & Li (2019) proposed a mobile blended learning environment and examined its applicability in theatre arts classrooms. They uncovered that students were willing to use mobile devices for educational purposes in theatre arts classrooms. Avci and Adiguzel (2017) investigated the effects of integrating WhatsApp into the Mobile-Blended Collaborative Learning model on students' language proficiency and revealed that students had positive attitudes towards synchronously and asynchronously making conversations with their peers. Shen, Wang, Gao, Novak, and Tang (2009) described a cutting-edge mobile learning system to explore the effects of using mobile devices in a blended learning class and unearthed that student conveniently utilized the system and satisfied with the use of interactive mLearning in their computer science class. Chen and Hu (2018) examined the effects of the mobile-supported platform for blended learning and uncovered that the use of platform helped students to reduce their reluctance and hesitance for interacting with their peers and instructors. Lau et al. (2010) investigated the proposed b-learning model using podcasting and revealed that the proposed model increased students' motivation to utilize course materials and enhanced their learning satisfaction. Ozdamli (2013) explored the effects of using cloud systems and social network applications in a blended learning environment on students' perception on self- directed abilities and seamless learning and found out that the use of systems and applications positively changed their perception on seamless learning. Marçal et al. (2016) investigated the impact of m-learning using mobile messages texts in Blended Learning modality and revealed that most students were satisfied with the use of mobile technology in a post-graduate course. Ono et al. (2015) integrated mobile-based e-Learning into a traditional nonwired classroom in a blended instruction model and examined its implementation. The results demonstrated that students' motivation was positively influenced. Wang, Shen, Novak and Pan (2009) proposed a cutting-edge mobile learning system in a blended English classroom of 1000 students and reported of its implementation that indicated students were behaviorally, intellectually and emotionally involved in their learning tasks. Yahya, Abas and Yussof (2018) incorporated online screencast video in the blended classroom through the Quick Response code and evaluated the effectiveness of this learning environment. The results illustrated that students had a positive attitude towards the use of screencast video with the Quick Response code. Lander (2015) the utilization of a mobile digital flashcard tool called Quizlet in a blended learning class and evaluated its effectiveness in foreign language acquisitions. The results showed that the use of mobile learning techniques enriched student attitudes toward learning. On the other hand, many studies indicated that the use of mobile learning in a blended learning environment positively contribute to student attitude while Sun et al. (2017) explored the impacts of using a social interactive network, WeChat, on students' perception level on usefulness in mobile collaborative learning environments. Students had a higher perceived level of the use of Moodle than using WeChat due to the benefits of Moodle for collaboration.

Discussion and Conclusion

In this systematic review, the integration of mobile learning into blended learning environments was investigated in terms of the effects of students' learning acquisition, academic achievements and attitude. The relevant studies that are congruent with our pre-defined criteria from major databases were screened. As a result, 22 articles were analyzed to answer the research questions.

The majority of the reviewed studies assessed the impact of the use of mobile learning in blended learning environments on students' learning acquisition or academic achievements. The most reviewed articles demonstrated that the integration of mobile learning into a blended learning environment is practical in facilitating student success and an effective learning framework to increase student academic achievement. This finding aligns with the study conducted by Hou et al. (2013) explored the effectiveness of a blended mobile museum learning environment through empirical research. According to their findings, a higher interactive mechanism appears to be inherent in a blended mobile learning environment that allows participants to willingly devote more time on the website for the pursuit of learning. One of the considerable results was that blended mobile learning group gained significantly greater knowledge than the traditional learning in comparison with the blended mobile learning to the other group. However, some reviewed articles showed that these mobile blended learning environments don't have any effects on improvement of learning outcomes according to the evaluation of the implementation of these learning environments (Lau et al., 2010; Suana et al., 2019; Sun et al., 2017; Yen & Lee, 2011).

The majority of the reviewed studies illustrated that students had positive attitudes towards using mobile technology in a blended learning course because of its benefits such as free and timely communication and its convenience for academic purposes. Pieri and Diamatini (2009) revealed that a blended mobile learning environment which was a combination of face-to-face learning and mobile learning suited the needs of technological transfer managers better than blended e-learning which was face-to-face learning and e-learning in

their training. One of the significant reasons is that not only does mobile learning include many futures of e-learning but it also allows trainees to utilize time and location that they previously lost in an e-learning setting (such as spending time on the bus). Another experience with mobile learning in a blended learning environment was delivered by Ortega-Rivas, Saorin, Torre, and Elsheikha (2013). Their results showed that their second-year pharmacy students welcomed the blended learning environment. Also, the learning environment encouraged students who were unwilling to contribute to the course to be more confident to share the results they obtained.

In this study, the focal point was to provide insight into the effects of using mobile technologies in blended learning on students' academic achievement and satisfaction. These technologies are ubiquitous and allow students to study anytime and anywhere without being chained to their computers (Ustun, 2019), and they have a potentially positive effect on students' academic achievement and satisfaction according to the findings. Those who design and implement a blended learning course may take into account the integration of mobile learning into blended learning courses because of the appropriateness and customizable of mobile technologies. The utilization of mobile learning enables instructors to draw on suitable and manageable mobile online tools to offer options for self-paced learning, maximize the interactions among students and help develop students' critical thinking skills. Integrating mobile technologies into blended learning opens up teaching and learning opportunities. Therefore, if designers, instructors or trainers intend to design and teach a desired blended learning course, mobile learning needs to be explored to exploit in today's classrooms.In conclusion, this review sought to answer the impact of blended learning on students' learning acquisition, academic achievements, and attitude. In terms of students' learning acquisition and academic achievements, the reviewed studies that showed positive effects of the integration of mobile technologies into a blended learning environment on students' academic outcomes outnumber other reviewed studies that demonstrated no significant effects. The most majority of the reviewed articles also revealed that a blended learning environment which combines the strengths of traditional learning and the strengths of mobile learning has great potential to increase students' attitude towards learning.

Genişletilmiş Özet

Giriş

Bilişim teknolojilerinin gelişmesiyle birlikte çevrimiçi tabanlı öğrenme fırsatları gün geçtikçe çeşitlenmekte ve artmaktadır. Ancak, çevrimiçi öğrenme yöntemlerinin avantajları olduğu gibi bazı dezavantajları da mevcuttur (Chou ve Chou, 2011). Çevrimiçi öğrenmenin en önemli yararlarından bir tanesi eğitimciler ve öğrenciler için geleneksel yüz yüze öğrenimdeki zaman ve mekanın sınırlarını kaldırmasıdır (Ustun, 2011). Bununla beraber çevrimiçi öğrenmenin yüz yüze etkileşim olanaklarının ortadan kalkması sonucu sosyal etkileşim eksikliği gibi bazı zayıf yönleri vardır. Çevrimiçi öğrenmenin çeşitli zayıf yönleri nedeniyle, alternatif bir öğretim ortamı olan Harmanlanmış Öğrenme, çevrimiçi öğrenmenin sakıncalarını ve kaygılarını hafifletmeyi amaçlamaktadır (Chou ve Chou, 2011).

Genel anlamda harmanlanmış öğrenme, yüz yüze öğrenmenin en iyi özellikleri ile çevrimiçi öğrenmenin en iyi özelliklerinin birleşimidir (Graham ve Dziuban, 2008; Üstün, 2018). Her iki öğrenim yönteminin, en iyi özelliklerinin birleşimi çok çeşitli avantajlar sağlar. Örneğin, harmanlanmış öğrenmenin en önemli faydalardan biri sosyal etkileşimdir. Yüz yüze ortamda tam anlamıyla oturmamış, belirsiz kalan konular hakkında sorular sormak için öğrenciler birbirleriyle rahatlıkla iletişim kurabilirler (Hijazi ve diğ. 2006). Grassian, Botello, Phares ve Turnbow (2005) harmanlanmış öğrenmenin bazı avantajlarını şu şekilde sıralamışlardır.

- İçeriği paylaşma, standartlaştırma ve yeniden kullanabilme olanağı sağlaması,
- Öğrencinin öğrenme hızına göre ilerleyebilmesine ve çevrimiçi içeriği birden çok kez tekrar etme imkanı vermesi,
- Öğrenci alıştırma ve ödevlerine anında geri bildirim verilmesine olanak sağlaması,
- Sınıf alanları için taleplerin azalması
- Öğrenciler ve eğitmenler için daha esnek zaman planlamasına imkan sağlaması.

Yüz yüze öğrenmenin en iyi özellikleri ile çevrimiçi öğrenmenin en iyi özellikleri bir arada kullanıldığı sürece, harmanlanmış öğrenmenin birçok yararının olduğu açıktır (Ustun ve Tracey, 2019).

Çevrimiçi tabanlı öğrenme ortamlarında önemli bir rol oynayan mobil öğrenmenin, yaygın olarak kabul edilen potansiyel yararları vardır (Cheon, Lee, Crooks ve Song, 2012). Bu anlamda, harmanlanmış öğrenme ortamı, öğrenme ortamını daha faydalı hale getirmek için mobil öğrenmeyi yüz yüze öğrenmeye entegre ederek oluşturulabilir.

Mobil öğrenmenin birçok tanımı vardır. Bu tanımlardan biri, Educause Learning Initiative (ELI) tarafından yapılmıştır: “mobil öğrenme, mobil teknoloji yoluyla iletilen herhangi bir eğitim etkileşimi olabilir ve öğrencinin uygun zamanında istediği yerden öğrenme ortamına erişilebilir (ELI, 2010)”. Genel anlamda mobil öğrenme tanımları verilen tanımda da vurgulandığı gibi mobil cihazlar “her yerde, her zaman” öğrenimi mümkün kılmaktadır. Bu bakımdan ele alındığında mobil öğrenme yaygın olarak bilgisayarların kullanıldığı çevrimiçi öğrenme ortamlarına yeni bir boyut kazandırmıştır. Aslında, mobil öğrenme, her yerde ve her zaman öğrenmeyi mümkün kılmasının yanı sıra çeşitli avantajlar ve fırsatlar da sağlar. Shuler (2009), mobil öğrenmede beş önemli fırsatı şu şekilde belirtmiştir.

- “Her zaman, her yerde” öğrenmeyi teşvik eder. Mobil cihazlar, öğrencilerin ev ve okul arasındaki engelleri aşmalarını ve bilgi toplama, erişme ve işlem yapma yeteneklerini geliştirmelerini sağlar.
- Yetersiz eğitim hizmeti alan çocuklara ulaşım imkanı sağlar. Mobil cihazlar düşük gelirli toplumlar için nispeten düşük maliyetli ve erişilebilirdir. Ekonomik olarak dezavantajlı toplumlar ve gelişmekte olan ülkelerde de çocukların eğitiminde fırsat eşitliği sağlar.
- Sosyal etkileşimi güçlendirir. Günümüz çağında başarılı olabilmek için temel faktör, işbirliği ve iletişimdir. Mobil teknolojilerin bu temel faktörleri destekleme ve geliştirme gücü vardır.
- Öğrenme ortamlarına uygundur. Mobil cihazlar, çeşitli öğrenme ortamlarının doğasına uygun olarak kullanılabilir.
- Kişiselleştirilmiş bir öğrenme deneyimi sağlar: Öğretim, öğrencilerin geçmiş bilgilerine, hazırbulunuşluğuna, dillerine, tercihlerine ve ilgi alanlarına göre uyarlanmalıdır. Öğrenme ortamını kişileştirilmiş hale getirmek için bu ilkeler dikkate alınarak mobil cihazlar kullanılabilir.

Mobil öğrenmenin faydaları göz önünde bulundurulduğunda harmanlanmış öğrenme ortamlarında kullanılmasının potansiyel yararları açıktır. Bu anlamda, bu alanyazın incelemesinin amacı harmanlanmış öğrenme ortamlarında uygulanan mobil öğrenmenin öğrencilerin öğrenme kazanımlarını, akademik başarılarını ve tutumlarını nasıl etkilediğini ortaya çıkarmaktır. Bu amaç doğrultusunda, aşağıdaki araştırma sorularına cevap aranmaya çalışılmıştır.

- Mobil öğrenme ile tasarlanmış harmanlanmış öğrenme ortamına karşı öğrenci tutumları nasıldır?
- Harmanlanmış öğrenme ortamında mobil öğrenme kullanımı, öğrencilerin öğrenim kazanımlarını ve akademik başarılarını nasıl etkiler?

Yöntem

Bu çalışmayı yönlendiren iki araştırma sorusuna cevap vermek için, ilgili ve yüksek kaliteli çalışmaların sentezini ve yorumunu objektif olarak rapor etmek amacıyla sistematik bir şekilde alanyazın taraması yapılmıştır (Gough, Oliver ve Thomas, 2012). Çalışmanın kapsamı dahilinde ilgili literatürün sistematik inceleme sürecinde, iki ana veri tabanı olarak Web of Science and Scopus taranmıştır. "harmanlanmış öğrenme (blended learning)" ve "mobil öğrenme (mobile learning)" anahtar kelimeleri kullanılarak belirlenen veri tabanlarında taramalar gerçekleştirilmiştir. Anahtar kelimelerin seçiminde bu terimlerin alanyazında yaygın ve tanımlayıcı olarak kullanılması etkin olmuştur. Bu alanyazın taramasında yayın yıllarına göre herhangi bir sınırlama getirilmemiş fakat yalnızca yayın dili İngilizce ve hakemli dergilerin makaleleri araştırmaya dahil edilmiştir. Veritabanlarına son olarak 5 Haziran 2019'da erişilmiştir. İlk tarama toplam 227 makale ile sonuçlanmıştır.

Belirlenen kriterler doğrultusunda ilk taramada bulunan 227 makale gözden geçirilerek kriterlere uygun makaleler çalışmaya dahil edilmiştir. Belirlenen kriterler şu şekildedir;

- Mobil öğrenmeyi harmanlanmış öğrenme ortamına entegre eden çalışmalar seçilmiştir.
- Araştırma katılımcılarının tutumlarını veya akademik başarılarını inceleyen çalışmalar seçilmiştir.
- Tam metin olarak yayınlanan ve tam metnine ulaşılabilen çalışmalar seçilmiştir.
- Dizüstü veya Netbook'ları mobil cihaz olarak kullanan çalışmalar seçilmemiştir.
- Veri toplama prosedürlerinde nicel araştırma yöntemi (yarı deneysel ve deneysel gibi) kullanan veya nicel ve nitel araştırma yöntemin (durum çalışması gibi) birlikte kullanıldığı çalışmalar seçilmiştir.

Belirlenen kriterler doğrultusunda 227 makale gözden geçirilerek 22 makalenin kriterlere uygun olduğu tespit edilmiştir. Seçilen çalışmalar analiz edilmiş ve çalışma sorularına cevap aranmıştır.

Bulgular

İncelenen 22 araştırmadan 18'i, mobil öğrenmeyi harmanlanmış öğrenme ortamına entegre etmenin, öğrencilerin öğrenme kazanımları ve akademik başarıları üzerindeki etkisinin olup olmadığını incelemiştir. Bu çalışmalardan 4 tanesi mobil öğrenme ile yüz yüze öğrenmenin birleşimi ile oluşturulmuş harmanlanmış öğrenme ortamının öğrencilerin öğrenme kazanımları ve akademik başarıları üzerine anlamlı bir etkisinin olmadığı sonucuna ulaşmıştır. Bununla birlikte geriye kalan 14 çalışma ise pozitif anlamlı bir etkisi olduğu sonucuna ulaşmıştır. Örneğin, Lau ve diğ. (2010) podcast kullanılarak oluşturulmuş harmanlanmış öğrenme modelinin öğretme ve öğrenme süreçlerine etkisini incelemiş ve sonuç olarak oluşturulan podcast kullanılarak oluşturulan harmanlanmış öğrenme ortamının akademik başarıya anlamlı bir etkisinin olmadığı bulunmuştur. Fakat bu sonucun aksine, Hou ve diğ. (2014) harmanlanmış mobil müze öğrenme ortamında öğrencilerin öğrenme performanslarını deneysel olarak incelemiş ve harmanlanmış mobil öğrenme deney grubunun geleneksel öğrenme grubundan istatistiksel olarak daha iyi öğrendiği sonucuna ulaşmıştır.

Tetkik edilen 22 çalışmadan 14'ü, öğrenmenin harmanlanmış öğrenme ortamına entegre edilmesinin öğrencilerin tutumları üzerindeki etkisini incelemiştir. Sadece bir çalışmanın sonuçları hariç yapılan bütün çalışmalar öğrencilerin mobil öğrenme ile yüz yüze öğrenmenin birleşimi ile oluşturmuş harmanlanmış öğrenme ortamındaki verilen derslere karşı pozitif tutum sergilediği sonucuna ulaşmıştır. Örneğin, Zhou ve Li (2019) mobil harmanlanmış öğrenme ortamı oluşturmuş ve tiyatro sanatı derslerinde uygulanabilirliğini incelemişlerdir. Sonuç olarak, öğrencilerin tiyatro sanatları derslerinde mobil cihazları eğitim amaçlı kullanmaya istekli oldukları ortaya çıkmıştır.

Tartışma ve Sonuç

Analiz edilen çalışmaların çoğu, harmanlanmış öğrenme ortamlarında mobil öğrenmenin kullanımının öğrencilerin öğrenme kazanımları veya akademik başarıları üzerindeki etkisini değerlendirmiştir. Bu çalışmaların büyük bir kısmı, mobil öğrenmenin harmanlanmış öğrenme ortamına entegrasyonu, öğrenmeyi kolaylaştırdığı ve öğrenci akademik başarısını artırmak için etkili bir öğrenme ortamı olduğunu göstermiştir. Bu sonuç, harmanlanmış mobil müze öğrenme ortamının etkinliğini deneysel araştırma yoluyla araştıran Hou ve diğ. (2013) tarafından yapılan çalışma ile paralellik göstermektedir. Yapılan çalışmanın sonuçları, mobil öğrenme uygulamalarının harmanlanmış öğrenme ortamında kullanılması, öğrenme ortamının yüksek etkileşimli bir

öğrenme ortamına dönüştürmüştür ve bu dönüşüm öğrencilerin öğrenme içeriklerinde daha fazla zaman geçirmelerini sağlamıştır. Ayrıca sonuçlar, harmanlanmış mobil öğrenme grubunun diğer geleneksel öğretim yoluyla oluşturulan gruba kıyasla bilgi ediniminin önemli ölçüde daha fazla olduğunu göstermiştir. Bununla birlikte incelenen bazı makaleler, mobil harmanlanmış öğrenme ortamlarının öğrencilerin öğrenme çıktılarını iyileştirilmesi üzerinde anlamlı bir etkisinin olmadığını göstermiştir (Lau et al., 2010; Suana et al., 2019; Sun et al., 2017; Yen & Lee, 2011).

Analiz edilen çalışmaların çoğu, çalışma sürelerinin esnekliği ve anında geri dönüt alabilme gibi faydaları ile beraber akademik amaçlara uygunluğu nedeniyle öğrencilerin harmanlanmış öğrenme ortamında mobil teknolojileri kullanma konusunda olumlu tutumları olduğunu göstermiştir. Pieri ve Diamatini (2009), teknoloji transfer yöneticilerine verilen bir eğitimde yüz yüze öğrenme ve mobil öğrenmenin birleşimi ile oluşturulan harmanlanmış mobil öğrenme ortamıyla yüz yüze öğrenme ile e-öğrenmenin birleşimi ile oluşturulan harmanlanmış öğrenme ortamını karşılaştırmıştır. Araştırmacılar harmanlanmış mobil öğrenme ortamının diğer öğrenme ortamına göre, eğitim alan kursiyerlerin ihtiyaçlarına daha fazla cevap verdiği sonucuna ulaşmıştır. Çıkan sonucun önemli nedenlerinden birisi, kursiyerlerin tamamen zaman ve mekandan bağımsız olarak (örneğin otobüste geçirdikleri zaman süresince) eğitim içeriklerinden yararlanabilmesidir.

Sonuç olarak, öğrencilerin öğrenme kazanımı ve akademik başarıları açısından analiz edilen çalışmalar incelendiğinde, mobil teknolojilerin harmanlanmış öğrenme ortamına entegrasyonunun öğrencilerin öğrenme çıktılarına istatistiksel olarak olumlu yönde etkisini ortaya koyan çalışmaların, herhangi bir etkisinin olmadığını sonucuna ulaşan çalışmalardan daha fazla olduğu sonucuna ulaşılmıştır. Ayrıca, yapılan tarama sonucunda geleneksel yüz yüze öğrenme ile mobil öğrenmenin güçlü yanlarını birleştirerek oluşturulan harmanlanmış öğrenme ortamının öğrencilerin öğrenmeye karşı tutumlarını arttırmada büyük bir potansiyele sahip olduğunu da ortaya koymuştur.

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