AN EXAMINATION OF PRESAGE, PROCESS AND PRODUCT DIMENSIONS IN MASSIVE OPEN ONLINE COURSES

A THESIS SUBMITTED TO
THE GRADUATE SCHOOL OF NATURAL AND APPLIED SCIENCES
OF
MIDDLE EAST TECHNICAL UNIVERSITY

BY

BERKAN ÇELİK

IN PARTIAL FULFILLMENT OF THE REQUIREMENTS
FOR
THE DEGREE OF DOCTOR OF PHILOSOPHY
IN
COMPUTER EDUCATION AND INSTRUCTIONAL TECHNOLOGY

SEPTEMBER 2020

Approval of the thesis:

AN EXAMINATION OF PRESAGE, PROCESS AND PRODUCT DIMENSIONS IN MASSIVE OPEN ONLINE COURSES

submitted by **Berkan ÇELİK** in partial fulfillment of the requirements for the degree of **Doctor of Philosophy** i**n Computer Education and Instructional Technology, Middle East Technical University** by,

Prof. Dr. Halil Kalıpçılar

Dean, Graduate School of **Natural and Applied Sciences**

Dr. Hasan Karaaslan

Head of the Department, **Comp. Edu. and Inst. Tech.**

Prof. Dr. Kürşat Çağıltay

Supervisor, **Comp. Edu. and Inst. Tech., METU**

Examining Committee Members:

Prof. Dr. Erman Yükseltürk

Comp. Edu. and Inst. Tech., Kırıkkale University

Prof. Dr. Kürşat Çağıltay

Comp. Edu. and Inst. Tech., METU

Prof. Dr. Zahide Yıldırım

Comp. Edu. and Inst. Tech., METU

Prof. Dr. Nurettin Şimşek

Comp. Edu. and Inst. Tech., Ankara University

Assoc. Prof. Dr. Tuğba Tokel

Comp. Edu. and Inst. Tech., METU

Date: 15.09.2020

I hereby declare that all information in this document has been obtained and presented in accordance with academic rules and ethical conduct. I also declare that, as required by these rules and conduct, I have fully cited and referenced all material and results that are not original to this work.

Name, Last name : Berkan Çelik

Signature :

ABSTRACT

AN EXAMINATION OF PRESAGE, PROCESS AND PRODUCT DIMENSIONS IN MASSIVE OPEN ONLINE COURSES

Çelik, Berkan
Doctor of Philosophy, Computer Education and Instructional Technology
Supervisor : Prof. Dr. Kürşat Çağıltay

September 2020, 446 pages

Massive Open Online Courses (MOOCs) have made a great progress around the world in the recent years. Bilgeİş Online Learning Portal (bilgeis.net) is one of the most comprehensive MOOC portals providing pdMOOCs (Massive Open Online Courses for Professional Development) for any learner who would like to enroll in an online course in Turkey. This study provides overall understanding and exploration of presage, process, and product variables and the relationships between these variables using a variety of data sources in Bilgeİş pdMOOCs based on Biggs' 3P model of teaching and learning, and intention-behavior gap in pdMOOCs using a mixed methods research with the explanatory sequential mixed methods design. In particular, the purpose of this study is four folds. The first is to examine the motivations for enrolling in the pdMOOCs, pdMOOC completion rates based on different perspectives, and the relationship between relevant variables and pdMOOC completion. The second is to examine learner intentions with subsequent behaviors (intention-behavior gap) and explain the reasons behind intention-behavior gap. The third is to examine course satisfaction and perceived learning in MOOCs with respect to online learning readiness and perceived usability variables. The last is to explore the reasons for not starting, not completing, and completing the pdMOOCs, online learning readiness, course satisfaction, factors affecting learning, portal usability, and perceived benefits obtained from the courses. A total of four pdMOOCs (two for technical skills and two for soft skills) were selected for this study using a three stage sampling strategy. The participants were learners from these four pdMOOCs, and the number of participants was 12,666 and 704 for the quantitative stage and qualitative stage, respectively. The data were collected using quantitative and qualitative instruments, and analyzed using descriptive and inferential statistics. The results showed that learners in Bilgeİş pdMOOCs have diverse motivations including learning a new topic, personal development, increasing current knowledge, and interest in the topic. The main reason why learners did not start and complete pdMOOCs was learner related time issues. Moreover, completion rates based on traditional completion rates, active learners, and learner intentions showed very different percentages. pdMOOC completion was significantly associated with age, gender, education level, employment status, learner intent, self-directed learning dimension of online learning readiness, and learners' course behaviors, but not with previous online learning experience. The results also showed that intention-behavior gap occurs in pdMOOCs, and the main reason behind intention-behavior gap was learner related time issues. The results indicated a significant relationship between online learning readiness, course satisfaction and perceived learning, online learning readiness and course satisfaction, and perceived usability and perceived learning. In addition, learners were mostly feeling themselves ready for online learning in pdMOOCs. They were mainly satisfied with the course design, and the course design related issues influenced their learning positively. They also found the portal easy to use and well-designed. They mainly obtained knowledge benefits from the pdMOOCs. The results of the study were further discussed, and practical suggestions for MOOC designers and developers, and MOOC providers were given.

Keywords: Massive Open Online Courses, MOOC, Massive Open Online Courses for Professional Development, pdMOOC, Bilgeİş, Bilgeİş Online Learning Portal

ÖZ

KİTLESEL AÇIK ÇEVRİM İÇİ DERSLERDE GİRDİ, SÜREÇ VE ÇIKTI BOYUTLARININ İNCELENMESİ

Çelik, Berkan
Doktora, Bilgisayar ve Öğretim Teknolojileri Eğitimi
Tez Yöneticisi: Prof. Dr. Kürşat Çağıltay

Eylül 2020, 446 sayfa

Kitlesel Açık Çevrim içi Dersler (KAÇD'ler), son yıllarda dünya çapında büyük bir ilerleme kaydetmiştir. Bilgeİş Çevrim içi Öğrenme Portali (bilgeis.net), Türkiye'de çevrim içi bir derse kaydolmak isteyen herkes için pgKAÇD (Profesyonel Gelişim için Kitlesel Açık Çevrim içi Ders) sağlayan en kapsamlı KAÇD portallerinden biridir. Bu çalışma, KAÇD'lerde girdi, süreç ve çıktı değişkenlerinin ve bu değişkenler arasındaki ilişkilerin çeşitli veri kaynakları kullanılarak Biggs'in 3P öğretme ve öğrenme modeli ve niyet-davranış uyumsuzluğu temelinde genel olarak anlaşılmasını ve araştırılmasını karma yöntem araştırması (sıralı açıklayıcı desen) ile sağlamaktadır. Bu çalışmanın dört amacı vardır. Birincisi, öğrenenlerin pgKAÇD'lere kaydolma motivasyonlarını, farklı bakış açılarına dayalı pgKAÇD tamamlama oranlarını ve ilgili değişkenler ile pgKAÇD tamamlama arasındaki ilişkiyi incelemektir. İkincisi, öğrenen niyetlerini bunları izleyen davranışlarla (niyet-davranış uyumsuzluğu) incelemek ve niyet-davranış uyumsuzluğunun arkasındaki nedenleri açıklamaktır. Üçüncüsü, KAÇD'lerde ders doyumu ve algılanan öğrenmeyi çevrim içi öğrenmeye hazırbulunuşluk ve algılanan kullanılabilirlik değişkenleri açısından incelemektir. Sonuncusu ise öğrenenlerin

pgKAÇD'lere başlamama, tamamlamama ve tamamlama nedenlerini, çevrim içi öğrenmeye hazırbulunuşluklarını, ders doyumunu, öğrenmelerini etkileyen faktörleri, portalin kullanılabilirliğini ve dersleri tamamlama sonucunda elde edilen algılanan faydaları keşfetmektir. Bu çalışma için toplam dört pgKAÇD (ikisi teknik beceriler ve ikisi sosyal beceriler için olmak üzere) üç aşamalı örnekleme stratejisi kullanılarak seçilmiştir. Çalışmanın katılımcıları bu dört pgKAÇD'ye kayıt olan öğrenenlerden oluşmakta ve katılımcı sayısı, nicel ve nitel aşama için sırasıyla 12.666 ve 704'tür.Veriler, nicel ve nitel ölçme araçları kullanılarak toplanmış ve tanımlayıcı ve çıkarımsal istatistikler kullanılarak analiz edilmiştir. Çalışmanın sonuçları, Bilgeİş pgKAÇD'lerine kayıt olan öğrenenlerin yeni bir konu öğrenme, kişisel gelişim, sahip olunan bilgileri arttırma ve konuya ilgi gibi çeşitli motivasyonlara sahip olduğunu göstermiştir. Öğrenenlerin pgKAÇD'lere başlamamasının ve tamamlamamasının ana nedeni, öğrenenlerle ilgili zaman sorunları olarak bulunmuştur. Dahası, geleneksel tamamlama oranları, aktif öğrenenlere ve öğrenen niyetlerine dayalı tamamlama oranları çok farklı yüzdeler göstermiştir. pgKAÇD tamamlama durumu yaş, cinsiyet, eğitim seviyesi, istihdam durumu, öğrenen niyeti, çevrim içi öğrenmeye hazırbulunuşluğun öz-yönelimli öğrenme boyutu ve öğrenenlerin ders davranışları değişkenleri ile anlamlı ölçüde ilişkili bulunurken önceki çevrim içi öğrenme deneyimleriyle ilişkili bulunmamıştır. Sonuçlar ayrıca pgKAÇD'lerde niyet-davranış uyumsuzluğunun oluştuğunu ve niyet-davranış uyumsuzluğunun arkasındaki ana nedenin öğrenenle ilgili zaman sorunları olduğunu göstermiştir. Sonuçlar, çevrim içi öğrenmeye hazırbulunuşluk, ders doyumu ve algılanan öğrenme, çevrim içi öğrenmeye hazırbulunuşluk ve ders doyumu ile algılanan kullanılabilirlik ve algılanan öğrenme arasında anlamlı bir ilişki olduğuna işaret etmiştir. Buna ek olarak, öğrenenler çoğunlukla kendilerini Bilgeİş pgKAÇD'lerinde çevrim içi öğrenmeye hazır hissetmişlerdir. Genel olarak ders tasarımından memnun kalmışlardır ve ders tasarımıyla ilgili konular öğrenmelerini olumlu yönde etkilemiştir. Ayrıca portalin kullanımını kolay bulmuşlar ve portalin iyi tasarlanmış olduğunu belirtmişlerdir. Ağırlıklı olarak öğrenenler tamamladıkları derslerden bilgi edinmeye yönelik fayda elde etmişlerdir.

Çalışmanın sonuçları detaylı olarak tartışılmış ve KAÇD tasarımcıları, geliştiricileri ve sağlayıcıları için uygulamaya yönelik öneriler verilmiştir.

Anahtar Kelimeler: Kitlesel Açık Çevrim içi Dersler, KAÇD, Profesyonel Gelişim için Kitlesel Açık Çevrim içi Dersler, pgKAÇD, Bilgeİş, Bilgeİş Çevrim içi Öğrenme Portali

Sevgili Babaannem Meliha Çelik’e, sevdiğimiz ve sevildiğimiz günler için …

ACKNOWLEDGMENTS

I thank my advisor Prof. Dr. Kürşat Çağıltay for his contributions to my dissertation. His never-ending energy, motivation, and inspiration helped me a lot in my academic life. I also would like to thank my dear dissertation examining committee members Prof. Dr. Erman Yükseltürk, Prof. Dr. Zahide Yıldırım, Prof. Dr. Nurettin Şimşek, and Assoc. Prof. Dr. Tuğba Tokel for their valuable time, feedback and comments for this study.

For their support, I would like to thank Amine Hatun Ataş, Yeliz Tunga, Serdar Şen, Hande Koşansu, and Razni Muhutar. I also would like to thank people whom I lost during my PhD study.

Lastly, I would love to thank TÜBİTAK (Scientific and Technological Research Council of Turkey) for supporting me with scholarship during my PhD study.

As there is not enough space to thank everyone, thank you all. Once again, Survive!

TABLE OF CONTENTS

LIST OF TABLES

TABLES

LIST OF FIGURES

FIGURES

LIST OF ABBREVIATIONS

OE: Open Education

OERs: Open Educational Resources

OCW: Open CourseWare

MOOCs: Massive Open Online Courses

pdMOOCs: : Massive Open Online Courses for Professional Development

Bilgeİş Project: The Project on Capacity Development of Employees and Employers via Information and Communication Technologies

DPP: Dealing with Problematic People pdMOOC

PP-I: Python Programming I pdMOOC

VDP: Visual Design Principles pdMOOC

DMMA: Database Management with Microsoft Access pdMOOC

CHAPTER 1

INTRODUCTION

> "As innovative instances of using online learning environment proliferate, they encourage new ways of thinking about what it means to learn, to teach, and to become a learner outside the physical classroom" (Ronaghi, Saberi, & Trumbore, 2014, p. 104).

This section of of the dissertation provides the background of the study, statement of the problem, conceptual and theoretical framework used in the study, purpose of the study, research questions, significance of the study, and definition of terms.

1.1 Background of the Study

Distance education progressed in order to satisfy the educational needs of people who were not able to be in the same place and time with the instructor (Naidu, 2014), and it has become an effective solution for providing education for people who are geographically dispersed. Keegan (1980) highlighted six characteristics of distance education, all of which are essential for comprehensive definition, after examining the relevant definitions in the field. Distance education includes the separation of teacher and student; distance education is supported by an educational organization, especially during the planning and preparation of learning materials; distance education includes the use of technical media; distance education includes the possibility of two way communication; distance education possibly includes occasional seminars between teacher and student; and distance education provides participation in education in the most industrialised form. In its historical development, distance education has progressed through some generations. The development of distance education could be classified under three generations of technology as correspondence, telecommunications, and computer (Garrison, 1985). According to Moore and Kearsley (2011), there are five generations of distance education, namely correspondance study, broadcasting, open university, teleconferencing, and computer and Internet-based virtual classes. Although there are different generations, open and distance learning as well as e-learning have been given strong support for quite different reasons, namely economic competitiveness, lifelong learning, social equity and access, better education, cost effectiveness, geography, and commercialization of education (Bates, 2015).

In the last decades, the rate of developments in Information and Communication Technologies (ICTs) and the widespread use of ICT have led the traditional models of teaching and learning to easily expand to online environments. In parallel with this, open education movement has accelerated with the developments in Open Education Resources (OERs), which includes OpenCourseWare (OCW), Open Content, and Open Source Software, in the 21st century (Yuan & Powell, 2015).

MOOCs are online courses which "provide a structured curriculum around a given theme or topic, but learners are expected to be autonomous and manage their own learning by making their own social and conceptual connections to suit their own needs" (Tschofen & Mackness, 2012, p. 126). Joksimović et al. (2018, p. 46) refer MOOCs as "planned learning experiences within nonformal, digital educational settings, used to facilitate learning at scale". The first use of the term MOOC (Massive Open Online Course) occurred for a course, which was a non-credit course called Connectivism and Connective Knowledge (CK08), offered in Canada (see Figure 1.1). The course was designed by George Siemens, Stephen Downes, and Dave Cormier. The course enrolled 27 on-campus tuition fee paying students, yet it also enrolled 2,200 students in the free online version, and this has been a surprise for the course instructors. Following the years, the Introduction to AI (artificial intelligence) MOOC was launched by two computer science professors, Sebastian Thrun and Peter Norvig, from Stanford University in the fall of 2011. This course attracted over 160,000 learners. This was quickly followed by two other computer science MOOCs from Stanford instructors Andrew Ng and Daphne Koller. Then Udacity was founded by Thrun, and Coursera was established by Ng and Koller. Udacity and Coursera are for-profit companies, and they provide their own software which enables massive numbers of enrollments. They also developed partnerships with other universities in a way that universities provide their own MOOCs on these platforms and they pay a fee to these platforms in return. Udacity's focus has currently shifted more on the vocational and corporate training market. edX, which is an open source MOOC platform, was developed by MIT and Harvard University in 2012. edx also have set partnerships with some leading universities to provide MOOCs. After edX, other MOOC platforms such as FutureLearn from Open University were developed (Bates, 2019). MOOCs have received attention around the globe in the last decade, and the year 2012 was even declared as the year of the MOOC (Pappano, 2012). Figure 1.1 summarizes MOOCs and open education timeline provided by Yuan and Powell (2015).

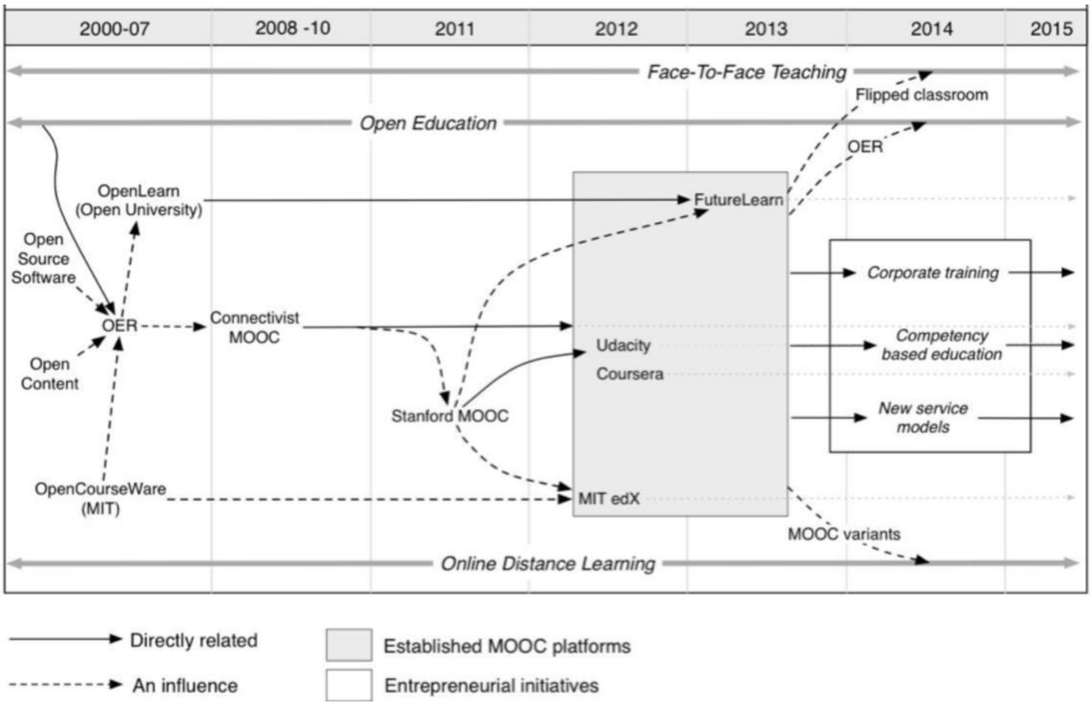


Figure 1.1. MOOCs and Open Education Updated Timeline by Yuan and Powell (2015, p. 2)

MOOCs provide anytime and anywhere learning opportunities for massive number of students. The potential to provide education for everyone and for all interests free of charge created excitement about MOOCs (Fischer, 2014). In the past years, there has been a rapid development and expansion of MOOCs in terms of MOOC providers and the number of students participating in the MOOCs. Based on the analysis made by Class Central, which is a MOOC aggregator, the number of MOOCs provided by 900+ universities for 101 million students worldwide excluding China, has reached 11.4k by the end of 2018 (Shah, 2019). These statistics indicate that the number of learners registered to MOOCs is greater than the learners registered to traditional courses. Coursera is the top MOOC provider with 45 million registered users followed by edX (24 million), Udacity (11.5 million), and FutureLearn (10 million), and Swayam (10 million) (Shah, 2019). Of these top MOOC providers, Swayam is the only non-English MOOC platform.

MOOCs can be distinguished from more traditional online distance learning by the fact that MOOCs provide no personalized academic support and guidance for students or provide this in a highly limited manner (Universities UK, 2013). Based on different pedagogical emphases and organizational models, MOOCs were classified into two broad categories as xMOOCs and cMOOCs (Universities UK, 2013). To be more specific, as the most of MOOCs provided by platforms dominantly include video lectures and computer graded tests, these MOOCs were classified as xMOOCs by Siemens Downes so that they are distinguishable from more connectivist cMOOCs (Bates, 2019).

MOOCs support continuing education, life-long learning as well as self-directed professional development (Li, 2019). On MOOC portals, one can find a course, register, and start anywhere immediately. By playing course videos from any device, one can start a course at home, continue taking it at work, and easily finish it over a weekend from anywhere they would like (Bersin, 2015). MOOCs provide an environment which no other physical classrooms could do on earth, and participants in a MOOC “classroom” are very heterogeneous concerning the backgrounds and intentions (Chuang & Ho, 2016). As MOOCs offer a flexible learning environment, learners can proceed in any learning pathway based on their motivations and needs (Kahan, Soffer, & Nachmias, 2017). Participation in MOOCs can have different forms from informal non-accredited participation to a part of a formal course offering. In some cases, tuition-paying students can take the same MOOC for credit with the learners who are non-tuition paying and non-credit learners (Conole, 2014). MOOCs might provide an opportunity for people in exploring specific instructors and universities without actually visiting the university campuses (Pursel, Zhang, Jablokow, Choi, & Velegol, 2016). In other words, by means of open online learning, individuals could enroll in courses across institutions without conventional institutional boundaries (Chuang & Ho, 2016). Providing open online content is a step towards fulfilling the promise of increasing access to a high-quality education as well as increasing equitable access to high-quality online learning opportunities (Ho et al., 2015). Many higher education institutes around the world have shown attention to MOOCs. Proponents of MOOCs supported the view that MOOCs could help make education more available for massive cohort of people as possible, help institutions increase their reach, and empower professors experiment the pedagogy of online teaching through the courses taken by large number of diverse students. Opponents of MOOCs see MOOCs as a potentially harmful and disruptive technology providing a watered-down education and having the likelihood of increasing the risk of further state school budget cuts (Hew & Cheung, 2014). Moreover, MOOC learners can experience disorientation in MOOCs as they might be expecting the orderly classroom or lecture hall setting, and the massiveness of a MOOC can also be perceived negatively as this characteristic can cause learners being “overwhelmed” (Knox, 2014).

MOOCs can be used to offer new means for providing opportunities on a larger scale regarding capacity building, education, and skills development (Porter & Beale, 2015). Much has been written about the disruptive potential of MOOCs on higher education; however, MOOCs are “neither useless nor the salvation of higher-education” (Ho et al., 2014, p. 33). Instead, MOOCs are one of the fascinating developments in the field of technology education. As it is the case for other developments, writings about MOOCs are overloaded with hype and myth; however, the reality includes contradictions and paradoxes (Daniel, 2012).

1.2 Statement of the Problem

This section has been constructed based on motivations for enrolling in the pdMOOCs and reasons for not starting, not completing, and completing the pdMOOCs; completion rates from different perspectives; relevant variables and pdMOOC completion; intention, behavior, and intention-behavior gap; the predictors of course satisfaction and perceived learning in pdMOOCs; and online learning readiness, factors affecting learning, course satisfaction, portal usability, and perceived benefits.

First of all, learner motivation is significantly related to participation and performance. The possession of extrinsic and intrinsic motivation has significant influence on learning performance (Ryan & Deci, 2000), and both intrinsic and extrinsic motivation affect the success and failure of online learning (Saade, He, & Kira, 2007). Similar to online learning, different motives for course participation affect course performance (Phan, McNeil, & Robin, 2016) and completion status (Liu, Zou, Shi, Pan, & Li, 2019) in MOOCs. However, unlike online and traditional learning, MOOCs support the diversity of learner motivations which were simply were not possible or suitable in earlier educational offerings (Zheng, Rosson, Shih, & Carroll, 2015). As a result, different participants enroll in MOOCs with different motivations. Some participants consider MOOCs as regular school classes, some others seem to enroll in MOOCs based on their current needs, and some use them as modularized resources (Zheng et al., 2015). Only a few research studies examined the effect of motivation on MOOC completion (Zhang et al., 2019). Further analysis is required to understand different groups of learners enrolled in MOOCs (Morris, Hotchkiss, & Swinnerton, 2015) to better make sense of both their objectives and achievements (Cisel, 2014) and to reveal novel learner motivations for enrollment in MOOCs if they exist. By investigating why students enroll in MOOCs, a prominent understanding of what students might be expecting from a MOOC can be developed. This could help explain the high attrition rates in MOOCs, provide insights for this issue, and improve retention and learning eventually (Crues et al., 2018). Therefore, learner motivations should be examined in MOOCs. In addition, in extant literature, student drop out from MOOCs are surrounded by several reasons (Hew & Cheung, 2014). As MOOCs have diverse learner backgrounds, making sense of the reasons behind dropout rates in MOOCs and locating the areas which can be improved are crucial for MOOC development (Onah, Sinclair, & Boyatt, 2014). Moreover, exploring the dropout reasons is essential in MOOCs to give rise to proper implications as MOOCs may face negative evaluations and unnecessary interventions because of insufficient insight into the reasons behind completion and dropout rates in MOOCs (Henderikx, Kreijns, & Kalz, 2017b). Although completion rates can provide trends and patterns, they fail to explore the reasons behind the trends in detail (Jordan, 2014). Therefore, eliciting more information from students is useful in such situations (Halawa, Greene, & Mitchell, 2014). MOOC-designers need to be well informed regarding the reasons behind completion and dropout rates in MOOCs; for this reason, exploring these reasons are important (Henderikx et al., 2017b). Although the relevant research has focused on the reasons for completing and not completing the MOOCs, to date, there is a scarcity of research studies particularly focusing on the motivations of non-starters for enrolling in MOOCs and the reasons for not starting the MOOCs. Taking abovementioned issues into consideration, through a holistic approach, this study captured the motivations of non-starters, non-completers, and completers for enrolling in the pdMOOCs. This study also captured why learners completed the pdMOOCs, why they did not complete the pdMOOCs, and why they did not start the pdMOOCs they registered for.

Secondly, enrolling in open online courses are quite different from enrolling in conventional courses (Kruchinin, 2019). With this enrollment freedom in MOOCs, massive number of learners in MOOCs has led to the problem of low completion rates (e.g., Jordan, 2014; Reich & Ruipérez-Valiente, 2019). Low completion rates and accordingly high dropout rates are used as a killer argument to dispute xMOOCs by MOOC critics (Lackner, Ebner, & Khalil, 2015). However, there are some issues associated with traditional completion rates. Traditional completion rates incorporate the learner group who never got in touch with the learning material (Meinel, Willems, Renz, & Staubitz, 2014). Calculating the completion rate solely based on initial enrollment is a poor metric to evaluate the success of MOOCs as the evidence shows that the majority of participants who enroll in MOOCs do not start participating in the MOOC in any way (Perna et al., 2014; Reich & Ruipérez-Valiente, 2019; Rieber, 2017). This raises the concern of including these learners in the traditional calculation of completion rates. The more realistic metric to judge the success of a MOOC is taking into account the level of activity among learners who really participate in the MOOC (Rieber, 2017). When completion is defined based on a percentage of active learners in courses, the wider range of completion rates was observed (Jordan, 2014). Despite the many criticisms they received, certification rates can describe and evaluate MOOCs when they are properly contextualized (Chuang & Ho, 2016). One of the contextualization can be the focus on learner intentions. Completion rates can be calculated based on a percentage of students enrolled in a course having the intention to complete the course and to receive a certificate (Reich, 2014). Traditional certification rates ignore participant intentions as well and in this way, it leads to inappropriate comparisons with residential certification rates, which is more consistent regarding participant intention to certify (Chuang & Ho, 2016). Because of the aforementioned issues and corresponding criticisms caused by these issues, the educational value of MOOCs is being surpassed. This study provides an overall view of completion rates which are calculated based on enrolled learners, active learners, and learners' intention in four pdMOOCs. In this way, a thorough comparison can be made with the completion rates, and it might be shown that the completion rates indeed are not that low despite having received many criticisms due to low completion rates located commonly in the literature.

Thirdly, a limited number of research studies have attempted to investigate the predictors of MOOC completion predominantly in western MOOC portals (Alraimi, Zo, & Ciganek, 2015), and there is limited research on how MOOC learners persist and achieve in MOOCs (Greene, Oswald, & Pomerantz, 2015). On the other hand, available research revealed similar and contradictory findings regarding the variables affecting MOOC completion (e.g., Breslow et al., 2013; Cisel, 2014; Greene et al., 2015; Hone & El Said, 2016; Morris et al., 2015; Pursel et al., 2016; Zhang et al., 2019). However, the attempts to explore what variables are associated with MOOC completion should continue for a number of reasons. Due to employment of open entry policy, the students enrolled in online courses are likely to have varying characteristics with respect to previous academic achievements, prior experiences or relevant skills (Lee & Choi, 2011). Hence, in order to better understand what skills and experiences are needed to be successful in a MOOC, more research on the factors impacting MOOC completion should be given attention (Schulze, 2014) since understanding MOOC students and discovering their characteristics which lead to success in MOOCs can help modify the courses for increased student achievement, and they might also contribute to informing teaching in the traditional classroom as well (Engle, Mankoff, & Carbrey, 2015). In addition, researching MOOC participants' behaviors and their characteristics can enable to make courses suit different learners' needs, and in this way, the impact of MOOCs in providing lifelong learning at scale can be maximized (Kahan et al., 2017). In order to benefit from online learning, participants must be ready for online courses. In other words, they should possess the necessary characteristics and skills (Hung, Chou, Chen, & Own, 2010) as some facets of e-learning can be found challenging by students (Parkes, Stein, & Reading, 2015), and studying via MOOCs can also be a challenging experience for learners (Park, Jung, & Reeves, 2015). Although online learning readiness of learners as entry characteristics and its associations with other variables were widely researched in online learning contexts, research studies have not focused on how well MOOC learners are ready to take MOOCs and how their readiness levels were linked to course completion and to other variables. This study explored the associations between course completion rates and the variables which are learners' characteristics, online learning readiness, learners' intent, and learners' course behaviors.

Fourthly, learner intentions have been taken into consideration soon after the major western MOOC portals began to provide the courses. When certain behavior is not performed consistently with a person's intention, this results in intention-behavior gap. In other words, "there is a contradiction between what people say they will do and what they actually do" (Fishbein & Ajzen, 2010, p. 59). This literal inconsistency is called intention-behavior gap. Reich (2014) reported a strong positive relationship between course completion and the self-reported intent in the MOOC context; however, many students not intending to complete a MOOC do so, and those intending to complete a MOOC do not complete. Although that was one of the signs of intention-behavior gap in MOOCs, this concept was not studied properly in this study. In a similar vein, Kizilcec and Schneider (2015) found that learners intending to earn a certificate are more likely to watch most of the course video lectures and attempt to do most assessments; however, contrary to what was hypothesized, the intention to earn a certificate did not predict the likelihood of earning a certificate. In other words, the ones reported the intention to earn a certificate were not actually more likely to do that way. This indicated a partial disconnection between the intention and actual behavior. This disconnection is related to intention-behavior gap as a formed intention does not always translate into the actual behavior (Fishbein & Ajzen, 2010). What is more, standardized measurements of certification intention are quite rare in MOOCs (Ho et al., 2015). Henderikx, Kreijns, and Kalz (2017a) studied intention-behavior gap properly in their study of refining success and dropout in two MOOCs based on more profound and theoretically grounded research. They provided the typology for intention and behavior relations taking the perspectives of MOOC-takers into account. The typology was based on the MOOC-takers' individual intentions versus their actual behavior. In this way, a more detailed insight into learner success as well as MOOC success was provided; however, in their typology, Henderikx et al. (2017a) did not include disinclined abstainers, who are the ones with no intentions and not acting accordingly, in the context of MOOCs for assuming that these individuals will never start a MOOC (Henderikx et al., 2017b). It might be useful to evaluate the consistency of learners' intention and their subsequent behaviors comprehensively. Still, there is limited research on learner intention and intention-behavior gap in MOOCs. Further research studies are needed to examine the practical applicability of the typology (Henderikx et al., 2017a). Further research is also required to analyze learner profiles of inclined actors and their activities in detail, to understand the reasons behind the behaviors of disinclined actors, and to explore possible reasons causing the intention-behavior gap in MOOCs (Henderikx et al., 2017a). As the intention-behavior gap in MOOCs mainly occurs due to non-MOOC related reasons, this can be a valuable input for further research and for guiding the development interventions which can support MOOC learners in reaching their personal learning intentions (Henderikx, Kreijns, & Kalz, 2018a). Moroever, the insights into individual intentions of MOOC-takers and the types of barriers they experienced provide a richer knowledge base for whether redesign of MOOCs is necessary (Henderikx et al., 2017b). This study is a step towards providing these insights. This study explored the relationship between intention and behavior, and the reasons behind intention-behavior gap using a larger sample which was not studied in the literature before. In this way, this study provides insights into the reasons than can lead to the intention–behavior gap in MOOCs.

Fifthly, majority of the MOOC research have focused on completion rates as the outcome variable and other variables have been mostly overlooked in MOOC research. However, research findings have supported the claim that completion rates are not sufficient in order to evaluate the value and effectiveness of MOOCs (Hone & El Said 2016; El Said, 2017). With a single metric, it is hard to evaluate the impact and effectiveness of a MOOC; therefore, further research is needed to explore other metrics for evaluating MOOCs' impact other than the narrow constraints of completion rates (Hadi & Gagen, 2016). In addition to course completion, learning outcomes have been defined using the variables of engagement, social interactions, sociability and learning gains, and learning in MOOCs has been studied using the analysis of the trace data together with survey or discussion data generally derived from a single course. Very few research studies used more than two data sources (Joksimović et al., 2018). Many MOOC research studies focused on a single variable as a proxy for examining learning outcomes, and learning outcomes have been mostly investigated considering retention and academic performance (Deng, Benckendorff,

& Gannaway, 2019a). As MOOCs provide unique affordances and come with unique challenges, they require new ways of thinking about student success (Greene et al., 2015). In MOOCs, learners have different learning objectives and different life contexts, and these result in different participation levels in learning activities and different learning outcomes (Kop, Fournier & Mak, 2011). Hence, research studies should focus on measuring other product variables reflecting the diverse and contextualized patterns of participation as well as reflecting the range of outcomes in MOOCs (Hood & Littlejohn, 2016b). For example, course satisfaction is important to measure as learners who stopped participating in a MOOC were 12% less satisfied than learners who did not stop (Kizilcec & Halawa, 2015). As potentially another important outcome variable, usability of MOOC platforms and comparison of usability of MOOC platforms have been researched (e.g., Korableva, Durand, Kalimullina, & Stepanova, 2019; Tsironis, Katsanos, & Xenos, 2016); however, the relationship of usability with relevant variables, especially with learning related measures in MOOCs, has been scarce although relevant research has shown that usability has effect on learning and motivation to learn (e.g., Deshpande & Chukhlomin, 2017; Meiselwitz & Sadera, 2008). Examination of learners' perspectives of taking a MOOC also showed that course design is found important by MOOC learners since participants' learning experience and perception of the course were negatively affected by navigations and not-so-intuitive interface (Liu, Kang, & McKelroy, 2015). For this reason, examination of usability and its contribution to learning process deserve worthwhile attention (Zaharias, 2004). Due to aforementioned issues, other variables and metrics in MOOC research and their associations should be evaluated. This study focused on course satisfaction and perceived learning because making robust inferences about learning is constrained by the fact that most MOOCs do not have assessment structures (Reich, 2015). This study enhances the relevant literature by focusing on different MOOC outcomes and their predictors with respect to online learning readiness and perceived usability other than solely focusing on course completion rates.

Lastly, students' perspectives should be a major consideration for understanding learning in MOOCs (Brooker, Corrin, de Barba, Lodge, & Kennedy, 2018). Understanding the learner activity in MOOC contexts is usually limited by analyzing log and clickstream data (Pilli & Admiraal, 2017). Although MOOCs present enormous amount of students' online activities data, mapping of these online behaviors is not the same with mapping their learning. What is more, the MOOC debate should shift from the questions about comparing MOOCs with campus-based education or MOOCs' disrupting effect on higher education to how potential unique contributions MOOCs can provide to improve learning (Gillani & Eynon, 2014) as in depth examinations of what people learn in MOOCs and what affects their learning in MOOCs is scarce (Pilli & Admiraal, 2017). Learning analytics alone cannot fully provide explanation for learning in MOOCs, and therefore, investigation of individual learners is required in MOOCs (Littlejohn, Hood, Milligan, & Mustain, 2016). Moreover, exploring course design issues in detail can contribute to improving learning experience for all MOOC learners whether their intention is to complete the whole MOOC or just some parts of it (Eriksson, Adawi, & Stöhr, 2017). More research is required to understand the effect of course design characteristics and pedagogical practices on user outcomes (Perna et al., 2014). Further research into learner experiences in MOOCs could lead to creating more learning opportunities in such a way harnessing the educational potential of the Internet and ICTs (King, Pegrum, & Forsey, 2018). Revealing learner experiences in MOOCs is vital for improving the scholarly understanding of learning and teaching online, and learners experiences should be examined more deeply in order to obtain a more comprehensive understanding of learning and participation in MOOCs (Veletsianos, Collier, & Schneider, 2015). Understanding the lived experiences of MOOC learners can allow to reevaluate the interpretations of MOOC phenomena (Veletsianos, Reich, & Pasquini, 2016). Understanding MOOCs from students' perspective is essential for figuring out the benefits of MOOCs (Brooker et al., 2018). It is unclear how learners benefit from MOOCs as the relevant literature presents very limited evidence (Pilli & Admiraal, 2017). What is less well-known is how learners from developing countries experience MOOCs and benefit from them. Further research studies exploring how learners from the developing world can benefit from MOOCs are needed (El Said, 2017). These can help overcome the MOOC discussions surrounded by low completion rates.

1.3 Conceptual and Theoretical Framework Used in the Study

1.3.1 The 3P Model of Teaching and Learning

When distance education is seen as a total system, it is best understood and practiced in this way because none of the components of distance education can be best understood in isolation, and it is essential to understand all of them (Moore & Kearsley, 2011). Following a systems approach, Bigg's 3P (Presage, Process, and Product) model of teaching and learning was used to frame the current study. 3P model of teaching and learning was built upon Dunkin and Biddle's model of teaching, and it was further developed to conceptualise the relationships between student factors, teaching context, learning-focused activities, and learning outcomes that interact mutually and form a dynamic system (Biggs, 2003). The 3P model is a descriptive framework which helps combine the components of a specific system in a coherent way (Biggs, 1993a). The 3P model approaches teaching as a balanced system where all of the components of the system support each other as in any ecosystem. When all components are aligned to each other, the system works properly (Biggs, 2003). Although 3P model was originally used to support student learning in the higher education contexts, and it has been used extensively in these contexts, the model has been adapted and used in different learning environments including online learning and MOOCs (e.g., Deng et al., 2019a; Haverila, 2010, 2011; Hood & Littlejohn, 2016b; Pilli & Admiraal, 2017).

The 3P model consists of three points in time, and learning-related factors are placed in these three points. Based on 3P model, these three points construct the learning experience. Presage is before learning takes place, process is what happens during learning, and product is the outcome of learning (Biggs, 2003). In other words, Biggs divided the learning ecosystem into three types of variables as presage, process, and product variables, and these three factors correspond to an input–environment–output model (Hood & Littlejohn, 2016a).

Biggs' 3P model was used to frame this study because it approaches teaching and learning systematically and depicts the presage, process, and product factors and their relationships heuristically. Biggs' 3P model describes a cycle of a system in which presage factors (student characteristics and teaching context) and process factors (students' learning processes) continuously interact to result in product factors (learning outcomes). The model is flexible enough to be adapted to the MOOC contexts (Deng et al., 2019a). Furthermore, this model can be adapted to be used in various learning environments, and any identifiable factors influencing learning can be added to the model (Biggs as cited in Deng et al., 2019a). In order to interpret how a particular ecosystem (in this case MOOCs) works, it is essential to break it down into its components, to investigate how these components are associated with each other, and how the components combine to form a whole (Hood & Littlejohn, 2016a).

The adapted 3P model for this study and the related variables are shown in Figure 1.3 below. In this study, learner factors are the characteristics of MOOC learners (gender, age, education level, employment status, previous online learning experience), readiness for online learning, course participation intent, and learner motivations. These construct the presage variables. The process variables include learners' patterns of engagements with the course materials of the pdMOOCs. The product variables include course completion, perceived learning, course satisfaction, and perceived usability. These variables interact with each other at different times in the pdMOOC taking process. Learner factors interact and facilitate learning-focused activtities, in this case learners' patterns of engagements with the course materials of the pdMOOCs. The interaction of the presage and process variables determines the product variables, in this case course completion, perceived learning, course satisfaction, and perceived usability.

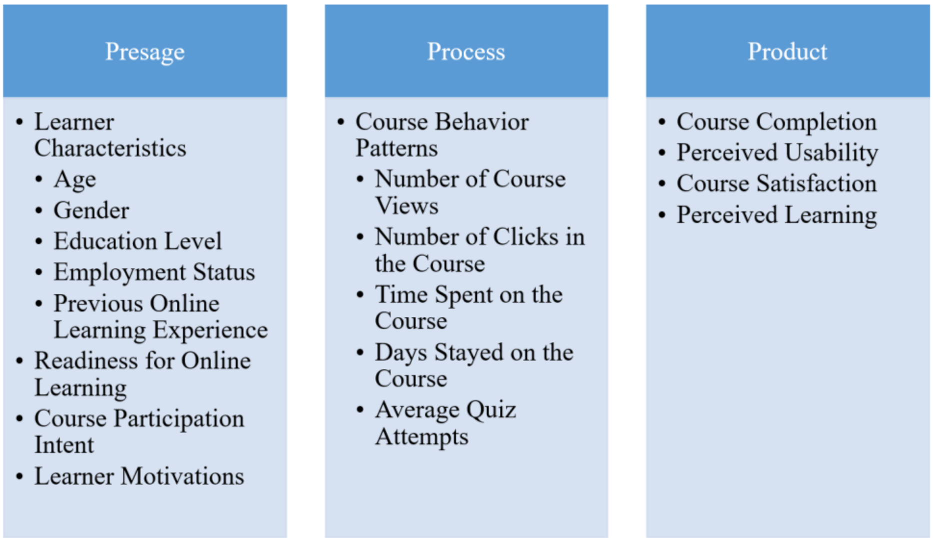


Figure 1.2. Adapted 3P Model

1.3.2 Intention-Behavior Gap

Intentions are “indications of how hard people are willing to try, of how much of an effort they are planning to exert, in order to perform the behavior” (Ajzen, 1991, p. 181). In several social psychological models of behavior, intention is “the key index of a person’s mental readiness for action” (Sheeran, 2002, p. 29). This study has benefited from the intention behavior relations in the Theory of Reasoned Action (TRA), Theory of Planned Behavior (TPB), and intention-behavior classifications in order to reveal intention and subsequent behavior relations. The Theory of Reasoned Action (Fishbein & Ajzen, 2010) and Theory of Planned Behavior (Ajzen, 1991) point out the direct and/or indirect prediction of behavior based on the influence of behavioral intention and the antecedents of behavioral intention. Particularly, the Theory of Reasoned Action focuses on the direct effect of attitude and subjective norm on behavioral intention and the direct effect of behavioral intention on behavior (Madden, Ellen, & Ajzen, 1992). Another point in TRA is the intention-behavior gap. That is, not all intentions translate into actual behavior, and there might be many reasons behind this situation (Kalz et al., 2015). People may indicate an intention to perform a given behavior on a questionnaire, yet their perceptions might change when they face the real situation, which produces a different intention (Fishbein & Ajzen, 2010). The Theory of Planned Behavior is the extension of TRA, and it focuses on the direct effect of attitude, subjective norm, and perceived behavioral control on behavioral intention and the effect of behavioral intention on behavior as well as the direct effect of perceived behavioral control on behavior (Madden et al., 1992). For a person to perform a behavior, the following three variables are necessary and sufficient to produce a given behavior: (1) The person has a strong positive intention or commitment to perform the behavior, (2) There are no environmental barriers that impede the occurrence of the behavior, and (3) The person possess the required skills or resources to perform the behavior (Fishbein & Ajzen, 2010). If a person lacks these three variables, the translation of intention into actual behavior can be problematic. When certain behavior is not performed consistently with a person's intention, this results in intention-behavior gap. In other words, "there is a contradiction between what people say they will do and what they actually do" (p. 59). This literal inconsistency is called intention-behavior gap (Fishbein & Ajzen, 2010).

The classification of the gap between intention and behavior dates back to McBroom and Reed's (1992) study which put forward a reconceptualization of attitude-behavior consistency under four categories. The four categories included inclined actors, inclined abstainers, disinclined actors, and disinclined abstainers. Inclined actors are the ones performing a behavior consistently with their inclination. Inclined abstainers are the ones not performing a behavior consistently with their inclination. Disinclined abstainers are the ones not inclined to perform a behavior and not performing in accordance with this inclination. Disinclined actors are the ones performing a behavior although they were not inclined to perform a behavior (McBroom & Reed, 1992; Orbell & Sheeran, 1998). Among these intention-behavior categories, the behaviors of inclined actors and disinclined abstainers denote consistency while the behaviors of inclined abstainers and disinclined actors denote inconsistency (Sheeran, 2002).

In general, intentions have noticeable predictive validity. In particular, without controlling for any potential moderators, the meta-analyses of intention-behavior literature found that intentions have about .50 correlation with behavior (Fishbein &

Ajzen, 2010). Sheeran's (2002) meta-analysis of meta-analyses results showed that on average 28% of the variance in future behavior is explained by intentions. Sheeran and Webb (2016) revealed that the intention-behavior gap is still substantial based on the current evidence, and this large gap showed that intentions result in action approximately one-half of the time.

1.4 Purpose of the Study

This study applies a holistic approach towards MOOCs. It provides overall understanding of presage, process, and product variables and the relationships between these variables using a variety of data sources in four pdMOOCs based on Biggs' 3P model of teaching and learning, and intention-behavior gap in pdMOOCs. This study also builds on quantitative results following qualitative research. In particular, the purpose of this study is four folds. The first is to examine the motivations for enrolling in the pdMOOCs, pdMOOC completion rates based on different perspectives, and the relationship between relevant variables and pdMOOC completion. The second is to examine learner intentions with subsequent behaviors (intention-behavior gap) and the reasons behind intention-behavior gap. The third is to examine course satisfaction and perceived learning in pdMOOCs with respect to online learning readiness and perceived usability variables. The last is to explore the reasons for not starting, not completing, and completing the pdMOOCs, online learning readiness, course satisfaction, factors affecting learning, portal usability, and perceived benefits obtained from the courses.

1.5 Research Questions

The research questions which guided this study are as follows:

1. What are the learner motivations for enrolling in the pdMOOCs and reasons for not starting, not completing, and completing the pdMOOCs?

2. What are completion rates based on traditional and alternative approaches in pdMOOCs?

3. What are learners' behaviors based on their intentions and what are the reasons behind intention-behavior gap?

4. What are the relationships between learners' characteristics, online learning readiness, learners' intent, learners' course behaviors, and pdMOOC completion?

5. What are the predictors of course satisfaction and perceived learning in pdMOOCs?

6. What do learners think about their online learning readiness, course satisfaction, factors affecting their learning, portal usability, and perceived benefits obtained from the courses?

1.6 Significance of the Study

First of all, many of the existing research studies are from the MOOC portals from western world. The majority of the MOOCs are offered in English language and includes many learners from different countries. Unlike their western counterparts, MOOC portals in developing countries are still in their infancy stage. In most developing countries, local languages are spoken and a small portion of the population can be competent in understanding an international language. The majority of the MOOCs today are offered in English language, and this might limit the learners from developing countries to access the MOOCs as their English language competency may not be adequate to the level to take up an online course (Liyanagunawardena, Williams, & Adams, 2014). This study makes a valuable contribution to expansion of MOOC research on the MOOC portals offering MOOCs in the local language in the context of a developing country. In addition to providing data regarding MOOCs from a developing country, this study also contributes to the very limited MOOC literature in Turkey.

Secondly, this study provides a comprehensive understanding of Bilgeİş pdMOOCs from a developing country perspective. Bilgeİş pdMOOCs are provided free of charge including the certificates, which is the indicative of fully open philosophy. Courses are offered in native Turkish language so that learners do not experience any language barriers. As most of the popular western MOOC portals offer MOOCs in English language, this can create language barrier for MOOC learners from other countries whose English language proficiency is not enough to comprehend the course content. In a study, MOOC learners dropped out from some courses due to language difficulty (El Said, 2017). The study of Kurt (2019) found that students' participation in MOOCs is usually prevented by language barriers. Schulze (2014) reported a mediating effect of English speaking ability on self-directed learning and MOOC completion. Since the MOOCs in this study remove the language barrier to access the courses, deep information regarding learners and MOOCs can be obtained. All of the courses are self-paced (7/24 available); their duration is shorter than other MOOCs (approx. 3 weeks, relatively short to the point courses); and courses are in the form of reasonable size learning objects. This design is good for learners having limited or short time for their studies. Course content mostly provides procedural knowledge rather than conceptual knowledge so that learners can directly apply what they learn from the courses. Course materials include interactive videos, and course assessments include auto-graded exams and/or course assistant-graded authentic assignments/projects. There is no presence of instructors in Bilgeiş pdMOOCs, and learning heavily relies on interaction between learners and course content. With these characteristics, Bilgeiş pdMOOCs are quite different from mainstream MOOCs. The specific context of this online learning portal will provide useful information for the MOOC literature.

Thirdly, Hew (2016) loosely grouped the studies conducted to examine student engagement in MOOCs into three categories corresponding to registration, activity, and completion phase of the MOOCs. Studies in the registration phase mostly explored student engagement at the sign-up phase of MOOCs like the number of student enrollment in MOOCs, and the reasons of why students signed up for MOOCs. Studies in the activity phase examined students' behavioral engagement types or patterns such as student video views, assignment submissions or participation in discussion forums etc. during the progress of the MOOCs. Studies in the completion phase examined the student outcomes at the end of a MOOC like rates of completion and dropout or the grades students achieved. Each of these phases correspond to presage, process, and product dimensions. This study enhances the MOOC literature by focusing on registration, activity, and completion phases at the same time. This study uses a holistic approach towards MOOCs. In specific, this study focuses on entry, process, and outcome factors in MOOCs, and provides a comprehensive understanding of these factors in MOOCs. Briefly, this study contributes to understanding of the motivations of non-starters, non-completers, and completers in detail instead of focusing on only the learners enrolled in the MOOCs. This study explores the reasons for not starting, not completing and completing the pdMOOCs. Different from other research studies, this study captures the views of non-starters as non-starters are under-represented in MOOC research and reveals why learners did not start the pdMOOCs although they were enrolled in these pdMOOCs. This study also explores the completion rates based on traditional and alternative approaches, including active learners and learner intentions. In this way, it allows multiple comparisons. This study fills the gap in intention-behavior literature in MOOCs by exploring intention-behavior gap in four pdMOOCs and the reasons behind intention-behavior gap. This study expands on earlier studies and analyzes the associations between learners' characteristics, online learning readiness, learners' intent, learners' course behaviors, and pdMOOC completion. In this way, it presents the characteristics of successful MOOC learners. This study enhances the literature regarding the outcomes in MOOCs through delving into the predictors of course satisfaction and perceived learning with respect to online learning readiness and perceived usability. This study provides quantitative evidence of online learning readiness as well as qualitative evidence. The results can be used to construct related measurement instruments for especially online learning readiness in MOOCs by researchers and practitioners. The results of this study reveal what affects course satisfaction and learning positively and negatively so that this information can be used for MOOCs to promote effective student learning. This also provides valuable understanding of the factors influencing learners' course satisfaction and learning. Currently, it is not clear how learners benefit from MOOCs. This study provides qualitative evidence on the perceived benefits learners obtained from pdMOOCs. Lastly, this study also obtained the views of learners on portal usability as learners' views were missing in other research studies that mostly focused on the usability comparisons of western MOOC portals.

Lastly, sampling bias poses serious threats to MOOC research. The data of Pursel et al. (2016) suggested that high-achieving students, who are course completers, in MOOCs were more likely to complete the surveys and this leads to sample selection bias as the survey samples include more completers than other student cohort in MOOCs. This study overcomes this bias by collecting background information during registration for the portal, and it makes it possible to see the background of diverse MOOC learners. Regarding sampling, studies investigating intention-behavior gap in MOOCs also have some limitations. Firstly, the samples include relatively small number of learners, particularly when the intention-behavior gap is compared based on the pre-and-post questionnaire. Secondly, the MOOC-takers who filled in the questionnaires tend to belong to the group having higher intentions, and this causes survival bias (Henderikx et al., 2017a, 2017b). This study overcomes this by increasing the sample size by including all MOOC-takers, who gave consent and started to take pdMOOCs. Moreover, using self-report instruments for measuring intention and subsequent behavior may not be as accurate as using independent observation when interpreting results (Henderikx et al., 2017a). This study used self-report instruments for measuring intention, yet the subsequent behavior was based on independent observation.

To summarize, the results of this study provide a better and comprehensive understanding of learners' participation in MOOCs, including the entry, process, and outcomes. This analysis will be valuable for the successful design of the MOOCs, and it can help other institutions who can run a new MOOC portal or academics who think of providing MOOCs themselves. This study included multi-perspectives based on quantitative and qualitative evidence; in this way, a broad view on MOOCs is provided, and this can help identify the areas which need improvements. Overall, the results of this study might be useful for instructional designers, content providers, technical support team, and learners interested in MOOCs.

1.7 Definition of Terms

Active learner/Starter based completion rate: Completion rates based on starters were calculated via dividing the number of completers by the number of starters.

Active participants/learners: Learners who started the pdMOOCs after enrollment. They are also called as starters in this study as well.

Certificate: The statement of accomplishment learners received after satisfying 70% of the pdMOOC requirements.

Completers: Learners who completed a pdMOOC after satisfying pdMOOC requirements.

Completion: Completing 70% of the pdMOOC and receiving a certificate of completion.

Course behaviors: Learners' interactions and engagement in the learning environment.

Course satisfaction: Learners' feelings of sense of achievement after taking a pdMOOC.

Enrolled participants/learners: Learners who enrolled in the pdMOOCs.

Intention based completion rate: In order to calculate the completion rates based on intention, the number of completers was divided by the number of participants who stated their intention as complete.

Intention: Self-evaluation of one's course participation as unsure, browse, audit, and complete.

Intention-behavior gap: The gap between learners' course participation intentions and their subsequent behaviors in the pdMOOCs.

MOOCs: Massive Open Online Courses are the online courses that anyone can enroll in free of charge.

Non-completers: Learners who started to take a pdMOOC, but failed to complete the pdMOOC due to not satisfying the pdMOOC requirements.

Non-completion: Enrolling in the pdMOOC until April 26th, 2018 and not completing 70% of the pdMOOC until July 9th, 2018.

Non-start: Enrolling in the pdMOOC until April 26th, 2018 and not starting the pdMOOC until July 9th, 2018.

Non-starters: Non-starters are the participants who registered for a pdMOOC, but never carried out any activity on the pdMOOC. In other words, learners who registered for a pdMOOC, but never engaged in any course activity.

Online learning readiness: Learner preparedness to learn in online learning environments. In this study, online learning readiness refers to the level of learner preparedness to learn in the pdMOOCs.

pdMOOC: A Massive Open Online Course aims for professional development of learners.

Perceived benefits: Learners' perceptions of the benefits they obtained from Bilgeİş pdMOOCs.

Perceived learning: Self-evaluation of one's subjective learning in the pdMOOCs.

Perceived usability: Learners perception of usability of Bilgeİş Learning Portal with respect to system usefulness, information quality, interface quality, and overall satisfaction.

Traditional completion rate: Traditional completion rates based on enrolled participants were calculated via dividing the number of completers by the number of total registration.

CHAPTER 2

LITERATURE REVIEW

This chapter of the dissertation presents the relevant literature and the gaps in the literature.

2.1 The 3P Model of Teaching and Learning

3P model of teaching and learning was built upon Dunkin and Biddle's model of teaching and it was further developed to conceptualise the relationships between student factors, teaching context, learning-focused activities, and learning outcomes that interact mutually and form a dynamic system (Biggs, 2003). The 3P model is a descriptive framework which helps combine the components of a specific system in a coherent way (Biggs, 1993a). The 3P model approaches teaching as a balanced system where all of the components of the system support each other as in any ecosystem. When all components are aligned to each other, the system works properly (Biggs, 2003).

The presage factors focus on student based characteristics and teaching context based characteristics prior to learning process. These factors include, but are not limited to, prior knowledge, ability, and motivation of students, objectives, assessment, and instructional procedures. The presage factors interact at the process level and facilitate students' immediate learning-focused activities. Then the interaction of the presage and process factors determines the learning outcomes, which are the product factors. The possible interactions in the 3P model are manifold, and they should not be considered as unidirectional. Especially, the general direction of influences is shown by the heavy arrows, and every component in the model is connected together by the light arrows (Biggs, 2003). That is, there is a linear progression from presage factors to process factors to product factors as well as interaction of each component with all other components, creating a system which is in equilibrium (Biggs, 1993b).

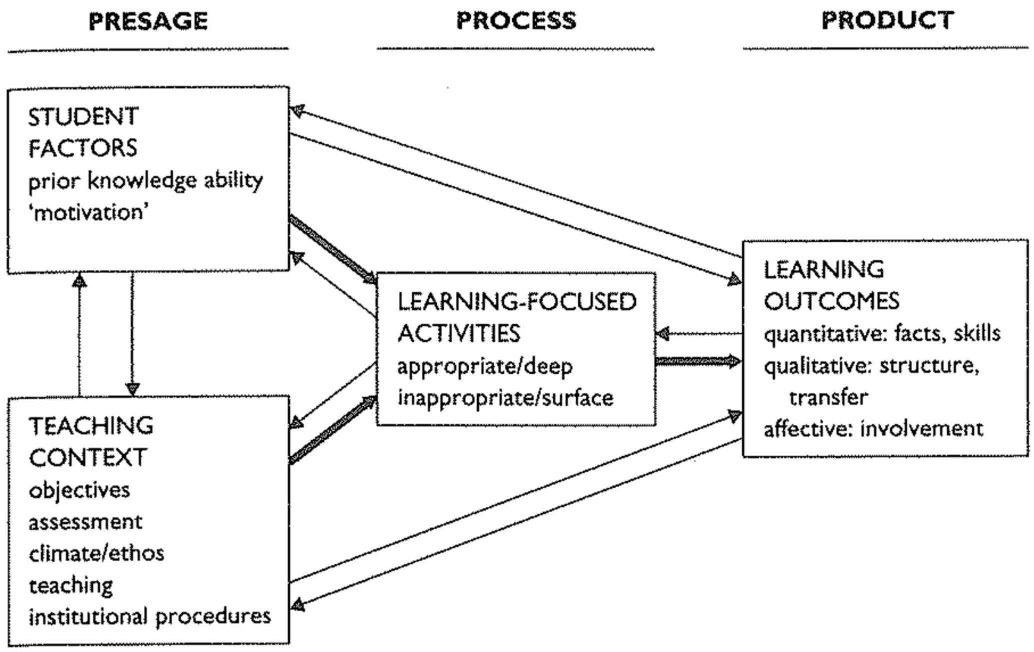


Figure 2.1. The 3P Model of Teaching and Learning (Biggs, 2003, p. 19)

2.2 Open Education

The launch of the World Wide Web made open information resources having widely varying quality rapidly available to individuals free of charge. However, the available materials did not promote enhanced learning, and they did not incorporate the latest technological and pedagogical advances with the rare exceptions. Moreover, lack of quality assurance regarding the content of these materials and information overload also affected the educational impact these materials would bring about (Atkins, Brown, & Hammond, 2007). Although openness has a long history in higher education, the past decade or so has witnessed the growth of a global open education movement (Weller, 2014). Open education includes different activities in education, and it might mean different things to different people based on who one speaks to (Aesoph, 2019). The foundations of openness are based on the fact that education is considered a public good (Weller, 2014). As a result of the digital and network revolution, openness has experienced many interpretations and adaptations, ranging from open entry to study as the primary focus to openly available content and resources (Weller, 2014).

According to the University of British Colombia, open education is a “collection of practices that utilize online technology to freely share knowledge.” (Aesoph, 2019, para. 1). Moreover, open learning is considered an approach to education which aims to remove all unnecessary barriers to learning (Butcher, 2015). Open education is also an umbrella term under which sharing of knowledge happens in a number of specific practices including open access publishing, open data, open source software, open admissions or open registration, open teaching or open pedagogy, open scholarship, open educational resources including open courseware and open textbooks (Aesoph, 2019). Among these practices, Open Educational Resources (OERs) have proliferated quickly.

OERs are “teaching, learning, and research resources that reside in the public domain or have been released under an intellectual property license that permits their free use or re-purposing by others. (Atkins et al., 2007, p. 4). Basically and shortly, the concept of OERs addresses “any educational resources that are openly available for use by educators and students, without an accompanying need to pay royalties or licence fees.” (Butcher, 2015, p. 5). Open educational resources include any materials and techniques which are used to support access to knowledge, including full courses, course materials, modules, textbooks, streaming videos, tests, software, etc. (Atkins et al., 2007). The term OER is often used synonymously with another term Open CourseWare (OCW); however, the latter one might be referred to a more structured and specific subset of OER (Butcher, 2015).

2.3 Distance Education and Online Learning

Distance education is the overall and inclusive term for e-learning, virtual education/virtual schooling, and online learning/online education. Recent innovations in hardware and software technologies support distance education systems to be more available, easier to use, and less costly (Simonson, Smaldino, & Zvacek, 2015). “Distance education is teaching and planned learning in which teaching normally occurs in a different place from learning, requiring communication through technologies as well as special institutional organization” (Moore & Kearsley, 2011, p. 2).

According to Moore and Kearsley (2011), there are five generations of distance education, namely correspondance study, broadcasting, open university, teleconferencing, and computer and Internet-based virtual classes. The first generation included text as the medium of communication and instruction took place by postal correspondence. The second generation included teaching via broadcast radio and television. The third generation did not include communications technology, but rather it focused on open universities. The fourth generation included the delivery of courses by telephone, satellite, cable, and computer networks in the 1980s. Lastly, the fifth generation, which is the most recent generation, includes teaching and learning online based on Internet technologies. In a smilar way, Zawacki-Richter and Naidu (2016) revealed the trends in distance education research covering 35 years of publications (1980–2014) through classifying the trends into five-year time periods. The emerged trends between 1980 and 1984 were professionalization and institutional consolidation, followed by instructional design and educational technology between 1985 and 1989. Quality in distance education emerged between 1990 and 1994, and this was followed by student support and early stages of online learning between 1995 and 1999. In the 21st century, the emergence of the virtual university between 2000 and 2004 was followed by collaborative learning and online interaction patterns between 2005 and 2009. The latest trend between 2010 and 2014 was interactive learning, MOOCs, and OERs.

Online learning is the major subset of distance education (Anderson, 2008), and it is "the use of the Internet to access learning materials; to interact with the content, instructor, and other learners; and to obtain support during the learning process, in order to acquire knowledge, to construct personal meaning, and to grow from the learning experience" (Anderson, 2008, p. 5). Online learning provides many benefits for learners. For learners, there is no time zone, location or distance issues in online learning. Learners can use the online meterials anytime they would like to use by means of asynchronous online learning, and learners have opportunities to have real-time interaction with instructors by means of synchronous online learning. Moreover, they can access up-to-date and relevenat learning materials by means of the Internet as well as communicate with experts in their study fields. As learners can take online courses while working or during their own space, this can facilitate situated learning, which is the application of knowledge and skills in particular contexts (Anderson, 2008). Online learning also provides many benefits for instructors as well. Instructors can tutor anytime and anywhere. They can update the online metarials, and these changes can be seen by learners immediately. Furthermore, instructors can direct learners to appropriate information considering learners' needs (Anderson, 2008).

2.4 Massive Open Online Courses (MOOCs)

Massive Online Open Course, abbreviated as a MOOC, does not have a final certain definition. As each MOOC might have different nature, it is not easy to provide exact definitions of MOOCs. Several different definitions were provided for MOOCs and in parallel to this, there is no certain agreement for theeach letter in MOOC. These points lead to MOOCs programs and projects to be ill-defined (OpenUpEd, 2015) and because of this ill-defined nature, the definition and every letter in MOOC are open for discussion. Also, multiple definitions of MOOCs are appearing as there is no entity as a MOOC, and it is also misleading to refer to MOOC concept by a single name (Baggaley, 2013). The definition published by the Cambridge Dictionary is that a MOOC is “a course of study that is made available over the Internet and that can be followed by a large number of people” (Cambridge Dictionary, 2020a). Another definition of MOOCs was provided by HOME (Higher education Online: MOOCs the European way) and OpenUpEd as the following: “MOOCs are courses designed for large numbers of participants, that can be accessed by anyone anywhere as long as they have an Internet connection, are open to everyone without entry qualifications, and offer a full/complete course experience online for free” (OpenUpEd, 2015, p. 1). MOOCs are “university-affiliated courses offered to masses of online learners for little or no cost” (Selwyn, Bulfin, & Pangrazio, 2015, p. 175).

Briefly, the Commonwealth of Learning considers a MOOC “to be an online course that requires no prior qualifications for entry, can be accessed by anyone who has an Internet connection, and includes large or very large numbers of learners” (Porter & Beale, 2015, p. 6). These learners involve in a course having various content forms, activities, peer-to-peer and mentor interactions, and tests. They obtain acknowledgement from the MOOC provider in the form of digital badges or certificates upon fulfilling certain criteria (Porter & Beale, 2015). MOOCs are likely to be simpler and more impersonal when compared to previous forms online education as they include “no teachers; no supervision; no fees nor entry requirements; the only equipment required being the computers purchased by the students; thousands of students in a single course; students teaching each other; students grading each others’ work.” (Baggaley, 2013, p. 368). A MOOC builds on the active involvement of many students who organize their participation based on their learning goals, prior knowledge and skills, and common interests. In addition to sharing some characteristics of an ordinary course, such as a defined timeline and weekly course topics for consideration, a MOOC generally comes with no fees, no requirements other than Internet access and interest, no prerequisite for participation, and no formal accreditation (McAuley, Stewart, Siemens, & Cormier, 2010). MOOCs can be used to offer new means for providing opportunities on a larger scale regarding capacity building, education and skills development (Porter & Beale, 2015).

MOOCs, as another educational approach relient upon learning technologies, has attracted significant attention in recent years (Garrison, 2017), and they have generated great excitement amongst educational entrepreneurs and acedemics as no subject in educational technology could have achieved in recent years (Weller, 2014). Instead of being a new form of learning, MOOCs are considered a new form of organizing learning which is similar to the open university movement, and they offer more flexibility and access than open universities (Koçdar, Okur, & Bozkurt, 2017). In the past years, there have been a rapid development and expansion of massive online open courses (MOOCs) in terms of MOOC providers and the number of learners participating in MOOCs. Releated statistics are reported in the MOOCs around the world section of this literature review.

2.4.1 Strengths and Weaknesses of MOOCs

Glance, Forsey, and Riley (2013) summarized the attributes of MOOCs and the associated pedagogical consequences. Online mode of delivery is associated with efficacy of online learning. MOOCs support retrieval learning, meaning that MOOC learners can bring the information to their minds with the help of online quizzes and assessments. Videos and quizzes provided by MOOCs support mastery learning. Peer and self-assessment used in MOOCs lead to enhanced learning. Short videos lead to enhanced attention and focus. Online forums provide peer assistance and out-of-band learning. According to Reeves and Hedberg (2014), the most defensible rationales for the benefits of MOOCs are potential to provide learning opportunities for those who are not able to access education and to enhance quality of learning and teaching.

Bates (2019) summarized the main strengths and weaknesses of MOOCs as the following. First of all, the world’s best universites provides MOOCs, especially xMOOCs, with high quality content free of charge for anyone having a computer and an Internet connection. MOOCs can be useful for supporting people’s access to high quality content, especially in developing countries. MOOCs are useful for teaching basic conceptual learning as well as for creating online communities of practice or interest. MOOCs are an extremely helpful form of lifelong learning and continuing education. MOOCs have challenged conventional and elite institutions to reevaluate the strategies they apply for online and open learning. Institutions can extend their brand and status through making their expertise and excellence public with the help of MOOCs. MOOCs can also have potential to eliminate the very large variable costs in higher education caused by providing learner suppport and quality assessment.

Bates (2019) also summarized the weaknesses of MOOCs as the following. MOOCs have high registration numbers, but these are misleading as the majority of the registrants do not show up again after registration, and less than half of these registrants actively participate in MOOCs. What is more, only a small percentage successfully complete the course, but still absolute numbers are higher than the numbers for conventional courses. Developing MOOCs is expensive. MOOC platforms offered by commercial organizations have various opportunities for sustainable business models; however, it is likely to be difficult for publicly funded higher education institutions to develop sustainable business models for MOOCs. MOOCs are likely to attract people with already high educational attainments instead of widening access. MOOCs have been limited in developing high level academic learning or the intellectual skills required by a knowledge based society. MOOCs fail to assess higher levels of learning, and this remains a challenge for MOOCs as most MOOC providers will not formally recognize their own MOOCs for credit. MOOC learning materials might be protected by copyright, and they might include time restrictions for re-use in the form of open educational resources.

2.4.2 Taxonomies of MOOCs

The first offered MOOC dates back to 2008. Stephen Downes and George Siemens at the University of Manitoba provided a course on connectivism in 2008. Initially, 24 students enrolled in the course for obtaining a credit. Then the course was opened to anyone interested in the topic. After this, additional 2200 students signed up for the course. This large cohort of students help to bring about the innovation that made the online course a MOOC instead of a simple large online course (Downes, 2017). These type of MOOCs were called cMOOCs later. Not long after the first MOOC, in the fall of 2011, an artificial intelligence open online course was offered by Sebastian Thrun, a professor of Computer Science at Stanford University, and Peter Norvig, Director of Research at Google. This course offered no credit, but a statement of accomplishment for those who finished the course. 160,000 people enrolled in this course. Then the world realized what had become a phenomenon, the MOOC (Downes, 2017). The design of Stanford's course was different from earlier examples focusing on connectivism and collaboration, and it focused on one-way presentation of the content using instructivist approach to learning. As more MOOCs have been offered by universities, many of them followed Stanford's approach which was then classified as an xMOOC (Pursel et al., 2016). In short, two distinct course formats for MOOCs are cMOOCs that fall into the connectivist category and AI-Stanford like courses that mainly fall into the cognitive-behaviorist category, though including some social constructivist components (Rodriguez, 2012). Later on, these AI-Stanford like courses were labeled as xMOOCs, and cMOOCs stayed the same.

In the literature, there are different taxonomies provided as well. Being not mutually exclusive categories, Clark (2013) provided the taxonomy of MOOCs from the pedagogical perspective based on their learning functionality instead of their origins. In Clark's taxonomy, there are eight types of MOOCs: (1) transferMOOCs, (2) madeMOOCs, (3) synchMOOCs, (4) asynchMOOCs, (5) adaptiveMOOCs, (6) groupMOOCs, (7) connectivistMOOCS, and (8) miniMOOCs. It is important to mention that this taxonomy is not a definitive taxonomy. Furthermore, Reeves and

Hedberg (2014) provided the differences among three types of MOOCs (cMOOC, xMOOC, and pMOOC) based on learner role, instructor role, learning theory, primary pedagogy, metaphor, development approach, primary type of assignment, and funding source. Concerning learning role, learners in cMOOCs and pMOOCs are active while they are passive in xMOOCs. In cMOOCs, instructor is a co-learner while instructor is "sage on video stage" in xMOOCs and "guide on the side" in pMOOCs. Regarding learning theories, connectivism is associated with cMOOCs; behaviorism is associated with xMOOCs, and constructivism is associated with pMOOCs. About primary pedagogy, cMOOCs focus on knowledge integration; xMOOCs focus on knowledge duplication; and pMOOCs focus on knowledge production. The metaphors "we link movies", "we watch movies", and "we make movies" are provided for cMOOCs, xMOOCs, and pMOOCs, respectively. cMOOCs are developed based on learning design; xMOOCs are developed based on instructional design; and pMOOCs are developed based on educational research design. The primary type of assessment for cMOOCs is self-assessment; it is external and/or peer assessment for xMOOCs, and self and client assessment for pMOOCs. Funding source for cMOOCs is "seat of the pants funding"; it is "large external funding" for xMOOCs, and "moderate client provided funding" for pMOOCs.

In brief, different taxonomy classifications have been provided by different researchers in the relevant literature. However, the most common classification is the cMOOC and xMOOC.

2.4.3 MOOCs Around the World

As one of the online learning delivery approaches, MOOCs have experienced tremendous growth quickly. There has been a huge rise in the number of MOOC portals and MOOC learners worldwide. Shah and Pickard (2019) provided the list of MOOC providers around the world. The providers included Coursera, edX, Udacity, Kadenze, Canvas Network, Stanford Lagunita, and Complexity Explorer from United States, FutureLearn from United Kingdom, SWAYAM from India, XuetangX, CNMOOC, Chinese MOOCS, University of China MOOC — icourse163.org, and Zhihuishu from China, Miríadax from Spain, MéxicoX from Mexico, France Université Numérique (FUN) from France, EduOpen and Federica.eu from Italy, ThaiMOOC from Thailand, Campus-Il from Israel, ewant — education you want and Open Education (openedu.tw) from Taiwan, Edraak (Arabic) from Jordan, European Multiple MOOC Aggregator (EMMA) from European Union, OpenHPI from Germany, gacco, Fisdom, OpenLearning, and JMOOC from Japan, Open Education (openedu.ru) from Russia, K-MOOC from Korea, IndonesiaX from Indonesia, and Prometheus from Ukraine.

The top five MOOC providers are Coursera with 37 million registered learners, edX with 18 million registered learners, XuetangX with 14 million registered learners, Udacity with10 million registered learners, and FutureLearn with 8.7 million registered learners (Shah, 2018). When the latest statistics of 2019 are checked, Coursera is the top MOOC provider with 45 million registered users followed by edX (24 million), Udacity (11.5 million), and FutureLearn (10 million), and Swayam (10 million) (Shah, 2019). In 2019, China (in this case XuetangX from the top MOOC providers) was dropped from the list as the metrics required to present were sometines not available or sometimes available but hard to validate, and the reflected view sometimes failed to adequately show the overall state of MOOCs in China. As a result, Indian MOOC provider Swayam was added to the list (Shah, 2019).

Class Central, a MOOC aggregator, has provided the statistics on the numbers for MOOCs. In 2013, MOOCs reached to 8 million learners, and to 900+ courses provided by 150+ universities (Shah, 2013). In 2014, MOOCs reached to 16-18 million learners, and to 2,400+ courses provided by 400+ universities (Shah, 2014). In 2015, the number of people signed up for MOOCs increased sharply when compared to the first three years of modern MOOC movement, which started with Stanford’s first MOOC in 2011, and this number reached to 35 million for learners who registered to at least one course in 2015 (Shah, 2015). In 2016, MOOCs reached to 58 million learners, and to 6,850 courses provided by 700+ universities (Shah, 2016). In 2017, MOOCs reached to 81 million learners, and to 9,400 courses provided by 800+ universities (Shah, 2017a). In their seventh year in 2018, the modern MOOC movement reached to 101 million learners and to 11,400 courses provided by more than 900 universities worldwide (Shah, 2018). Recenty in their eighth year in 2019, the modern MOOC movement reached to 110 million learners, excluding China, and to 13,500 courses provided by more than 900 universities worldwide (Shah, 2019). Although MOOCs are offered in 16 different languages, the majority of MOOCs are in English (Shah, 2015).

Table 2.1. *Development of MOOCs over the Years*

Year	Number of Learners	Number of Universities	Number of MOOCs
2013	8 million	150+	900+
2014	16-18 million	400+	2,400+
2015	35 million	500+	4,200
2016	58 million	700+	6,850
2017	81 million	800+	9,400
2018	101 million	900+	11,400
2019	110 million	900+	13,500

2.4.4 MOOCs in Turkey

The number of MOOCs are still scarce in Turkey, and there are a limited number of MOOCs in Turkey. Still the MOOC movement being in the infacy stage, MOOCs are provided by a few universities and some for-profit initiatives in Turkey. Ataturk University and Anadolu University have been the major MOOC providers in Turkey. Both of this universities launched their MOOC plarforms in 2014, and they provided their first courses in 2015 (Aydin, 2017).

In their study, Aydemir et al. (2016) reported experiences with regard to AtademiX (http://atademix.atauni.edu.tr), which is considered the first MOOC portal providing 13 MOOCs in Turkish language in Turkey, and is supported by Ataturk University

Distance Education Application and Research Center and Ataturk University Faculty of Open Education. AtademiX started to offer courses on 29th December 2014 with three courses. The course structure/components included live sessions, videos, course notes, presentations, and assignments/exams. At the end of the courses, successful learners received the certificate of participation free of charge. The courses were categorized into 4 as public, advanced academic, academic, and business sector courses. The number of total participants was 4500 in May, 2016. The courses for public (46.78%) were the most preferred courses followed by advanced academic (26.46%), academic (15.72%), and business sector (11.04%). The most popular course was the Ottoman Turkish with 1205 participants, and the least popular one was Lean Manufacturing with 97 participants. The most completed course was Public Health Educaiton, and the least completed course was Basic Statistics in Education The certification rates changed between .77% and 48.77%. Among 4872 participants, 650 of them received the certificate of participation, and the mean certification rate was 13.34%.

Akadema (http://akadema.anadolu.edu.tr) provides 107 MOOCs in a total of 14 categories. The MOOCs are offered in supervised by a guide and self-paced formats (Akadema, 2020). Aydin (2018) explained that the MOOC project Akadema was launched in 2014 with four courses having 2,500 enrollments. The number of courses reached to 58, and the number of single users climbed up to 28,000 in May 2018. Although the main motive of Anadolu University for offering MOOCs was increasing the visibility in the beginning, the university benefited from its MOOCs to show the decision makers and general public that the courses on science, health, sports, music, and other fields can be taught effectively via the open and distance learning. Akadema MOOCs were designed in the form of xMOOCs following an activity-based aproach, and the course content consisted of modules, each targeting specific learning outcomes. The course lengths were between three weeks and eight weeks. The completion rates of MOOCs varied between 3.5% and 7.3%, which was aligned with the global trend. The majority of the enrollments (almost 70%) came from the student cohort who were actually students in formal education or ODL

(Open and Distance Learning) programs at Anadolu University and other universities. One of the top five motives of students for participating in Akadema MOOCs was to get a support for their regular classes.

In addition to MOOCs provided by universities in Turkey, İstanbul İşletme Enstitüsü (https://www.iienstitu.com/) provides online courses on technical and soft skills. Moreover, a private Turkish university and a private corporation provided a number of courses on Coursera (https://www.coursera.org/koc) and edX (https://www.edx.org/course?search_query=turkish). Lastly, there are also some inititatives providing online materials such as Campus Online (campusonline.com), UniversitePlus (https://www.universiteplus.com), and Turkcell Akademi (www.turkcellakademi.com); however, they might not be classified as MOOCs as they are more in the form of OCW. Therefore, they are out of the scope of MOOCs in Turkey.

2.5 MOOC Learners/Participants

Since their launch/initiation, the researchers have been interested in the question of "Who are MOOC participants?", and this led to satisfactory amount of literature on demographic factors. Christensen et al. (2013) investigated the background of 34,779 MOOC participants from 32 MOOCs provided by the University of Pennsylvania on the Coursera platform and their reasons for taking MOOCs. The results revealed that the student cohort was likely to be younger, well-educated, and employed individuals mostly coming from developed countries. More than 40% of them were younger than 30, and only small percentage (less than 10%) were over 60 years of age. The students held high education degrees such as a post-secondary degree (2 or 4 years) (83%), Bachelor's degree or higher (79.4%), and above Bachelor's degree (44.2%). While more than half of the students (62.4%) were working individuals (employed full-time or self-employed), only 13.4% were unemployed or retired. There were more male students than female ones and the percentage of males taking MOOCs was significantly higher in BRIC and other developing countries. Social science and business courses on the platform drew the attention of large number of students. About the reasons for enrolling in a course, almost half of MOOC students stated their reason for enrollment as curiosity and fun, and gaining skills to do their jobs better. Yet, the weight of these reasons depend on the course type; for example, their weight can change from one course category to another such as humanities and social science courses.

Dillahunt, Wang, and Teasley (2014) presented the analysis results of six Coursera courses provided by the University of Michigan between fall 2012 and winter 2013. For gender data, 41,636 responses were received. Of these learners, 68.65% (n=28,585) were males. For age data, 41,734 repsonses were received. Of these learners, the largest age group was 25-34 years old (39.78%, n=16,603) followed by 18-24 years old (22.67%, n=9,461). For the highest educational degrees attained, 41,709 responses were received. Of these, while 37.04% (n=15,450) had a bachelor's degree, 33.63% (n=14,028) had a master's degree. Macleod, Haywood, Woodgate, & Alkhatnai (2015) aimed at understanding Edinburgh MOOC learners based on 6 MOOCs. Edinburgh MOOCs were offered on Coursera MOOC platform. More than 30% of Edinburgh MOOC learners were between 25 and 34 years old, followed by the age group 18 and 24. In spite of the initial rhetoric that MOOCs would provide the disadvantaged with universal access to higher education, this was not validated in this study as the significant majority of Edinburgh MOOC learners were well educated (70% having a first or second degree) and employed. Although the gender distribution of Edinburgh's first MOOCs approximately included the same number of men as women, it was found that gender participation rates depended on the MOOCs' subject matter since courses on technical subjects such as AI Planning had 15% females whereas courses on health subjects such as Equine Nutrition had 90% females.

Another MOOC provider FutureLearn (2014) provided the summary of pre-course survey data based on the sample size of 45, 797. Almost 60% of FutureLearn learners were females. The majority of learners' age distribution was between 26 - 35 years old (20.1%), followed by 46 - 55 years old (19.7%) and 36 - 45 years old (17.4%).

The highest level of education FutureLearn learners completed was university / college (degree level) (49.4%) and university / college (masters level) (23.8%). The majority of FutureLearn learners work full time (35 or more hours per week) (48.5%). The top three course aims of FutureLearn learners were to learn new things (25.3%), to try out FutureLearn or MOOCs in general (13.5%), and to try out learning online (11.6%). In a FutureLearn MOOC, Liyanagunawardena, Lundqvist, & Williams (2015) explored the characteristics of learner groups in two consecutive runs of a MOOC called FLMobiGame, which was the first University of Reading MOOC and lasted 7 weeks. The first run of the course in October 2013 attracted 10,000 enrollments while the second run in February 2014 attracted 38,000 enrollments. The authors analyzed the two sets of pre-course survey data from 3606 learners in the first run and 2657 learners in the second run. The results showed that the majority of learners were males in two runs of the course with 76% and 74%, respectively. The majority's age distribution was between 36 and 45 years old (24%) followed by 26 and 35 years old (23%) in the first run and 26 and 35 years old (26%) followed by 18 and 25 years old (20%) in the second run. The large majority of learners held a degree or higher level of education (72% for the first run and 67% for the second run).

HarvardX and MITx provided comprehensive analysis of their courses. In the first year of open online courses (Fall 2012-Summer 2013), the most common course registrant, almost one third (n=222,847, 31%), was found to be a male having a bachelor's degree whose age is 26 or older. 29% (n=213,672) of the registrants were females (Ho et al., 2014). In the fourth year of open online courses (Fall 2012-Summer 2016), the typical HarvardX and MITx open online course had 33% female participants, the participants with 73% bachelor's degree, and the participants with a median age of 29. Regarding the course categories, CS and STEM courses had younger, less female, more international, and less than college level educated participants when compared to other course categories. HarvardX includes more courses on HHRDE (Humanities, History, Religion, Design, Education) and GHSS (Government, Health, Social Sciences) whereas MITx includes more courses on CS

(Computer Science) and STEM (Science, Technology, Engineering, Mathematics). When MITx and HarvardX are compared, participants enrolled in HarvardX courses tend to be female, older and to have more levels of education than participants enrolled in MITx courses (Chuang & Ho, 2016).

In Spanish context, Gil-Jaurena, Callejo-Gallego, & Agudo (2017) reported the demographics of the MOOC learners at Spanish National University of Distance Education (UNED). 17 MOOCs offered via UNED's own platform were included in the analysis. Learners' general profile was approximately 37 years old Spanish female generally in employment with a university degree. The gender distribution was revealed to be 36.4% male and 63.6% female. The female majority in UNED MOOCs might be related to the knowledge area as the most of the MOOCs in the study were from Social Science and Humanities areas, and these MOOCs included more females as the majority as opposed to the STEM MOOCs which included more males as the majority. Among 24,412 learners, the largest age group was 31-45 years old (42.7%), and the second largest age group was 18-30 years old (36.2%). The majority of UNED learners were either continuing their studies or graduated from higher, university-level education.

In Turkish context, Aydemir et al. (2016) reported the demographics of AtademiX MOOC participants in Turkey. The majority of the participants were male (57%). The education level of participants was high school and below (5%), associate degree (7%), bachelor's degree (42%), and graduate (46%). The participants had diverse professions, mainly civil servants and academicians followed by self-employed people, students, and people who were not working at that time. The majority of the participants were mainly from the city Erzurum (32%) followed by İstanbul (8%), Ankara (6%), and the rest (50%) were from other cities of Turkey.

In conclusion, regarding the characteristics of MOOC learners, Emanuel (2013, p. 342) concluded that "Far from realizing the high ideals of their advocates, MOOCs seem to be reinforcing the advantages of the 'haves' rather than educating the 'havenots'. Better access to technology and improved basic education are needed worldwide before MOOCs can genuinely live up to their promise".

2.5.1 Classification of MOOC Learners/Participants

Studies tried to explore and classify the types of learners in MOOCs. Sometimes grouping MOOC learners into categories is defied due to the fact that some MOOC learners engage with course content in different ways. However, it has been possible to classify MOOC learners into clear categories because the majority exhibit behaviors which can be grouped under clear categories, in which differences in learner motivaton and intention are reflected (Koller, Ng, & Chen, 2013). As these learner groups have varied behaviors, these variations reflect that they have different goals for taking MOOCs (Koller et al., 2013).

As the design of the MOOCs are different than each other, researchers have identified types of MOOC learners. For example, Koller et al. (2013) classified MOOC learners as browsers and committed learners. Browsers often register for a course during a burst of interest, but they never exist in the first class or browse the course for a week or two weeks and then they disengage. On the other hand, committed learners tend to stay engaged in the the most parts or all of the course. Committed learners were also classified into three partially overlapping categories as passive participants, active participants, and community contributors. Kizilcec, Piech, and Schneider (2013) analyzed learner subpopulations in MOOCs, and they presented a simple, scalable, and informative classificiation method identifying engagement trajectories in MOOCs. The classifications of the patterns of learners' interaction with course video lectures and assessments resulted in four trajectories as auditing, completing, disengaging, and sampling. Ho et al. (2014) identified four mutually exclusive and exhaustive groups of course registrants as only registered, only viewed, only explored, and certified. Those who were "only registered" never accessed the course. Those who were "only viewed" accessed the course, and viewed less than half of the available chapters in the course. Those who were "only explored" accessed more than half of the available chapters in the course. Those who were "certified" earned a certificate in the course. Ferguson and Clow (2015) examined engagement via analyzing learner subpopulations in four FutureLearn MOOCs. They revealed seven patterns of engagement as Samplers, Strong Starters, Returners, Mid-way Dropouts, Nearly There, Late Completers and Keen Completers. Morris et al. (2015) categorized learners into four groups in order to identify learners' level of engagement as week1 only, returning learners, completers, and 100% engaged. Barak, Watted, and Haick (2016) identified five types of MOOC completers as problem-solvers, networkers, benefactors, innovation-seekers, and complementary-learners. Employing Ward's hierarchical and k-means non-hierarchical clustering methods, Tseng, Tsao, Yu, Chan, and Lai (2016) classified types of MOOC learners' behaviors while they engaged in the learning activities. Three types of MOOC learners were classified into categories as active learner, passive learner, and bystander. Moreover, the term lurker was used to classify MOOC learners/participants. Lurker is term which is used for MOOC participants following the course, looking at the course recordings, and browsing the available course resources (Rodriguez, 2012).

2.5.2 Motivations of MOOC Learners/Participants for Enrollment in MOOCs

Shapiro et al. (2017, p. 42) defined motivation as "a reason for taking or completing the course" for their research purposes. Learner motivations to enroll in the MOOCs were studied for the MOOCs provided by different platforms using quantitative and qualitative research methods. The results yielded that MOOC learners have a variety of motivations. Although there are a few research studies examining motivation in MOOCs, it is tough to sum them up due to the fact that these studies count on different motivational components and theories (Luik et al., 2019).

Hew and Cheung (2014) reviewed students' and instructors' use of MOOCs with regard to motivations and challenges. They synthesized four reasons why students register for MOOCs, namely for the desire to learn about a new topic or to increase current knowledge, being curious about MOOCs, personal challenge, and the desire to collect completion certificates as many as one could.

Liu et al. (2015) examined learners' MOOC taking from the perspectives of reasons, excitement, and perception of usefulness with a sample of 320 participants. The findings of this study provided that learning more about the topic for personal reasons (71.25%) and for participants' current job (70.31%) were the top two reasons for taking the MOOC. Other reasons to take Introduction to Infographics and Data Visualization MOOC were learning about future career possibilities (42.19%), experiencing MOOCs (30.63%), obtaining course materials (29.69%), and learning from particular instructors (24.38%). However, obtaining a certificate (18.75%) was less than aforementioned reasons for taking the MOOC, yet Macleod et al. (2015) noted that learners from developing countries or learners from countries having particular economic difficulty, such as Spain and Greece, had more interest in MOOCs to obtain a certificate and/or to enhance their careers.

Shapiro et al. (2017) examied attitudes, motivations, and barriers to understand MOOC student experience using a case study, which employed text analysis of interview transcripts, with 36 participants enrolled in Introduction to Chemistry or Data Analysis and Statistical Inference MOOCs. The background of the participants varied in age, experience with the MOOC subject, and geographical location. The most prevalent motivations were found as knowledge, work, convenience, and personal interest. The least commonly coded motivation categories were taking MOOCs as a hobby, motivation supported by the high quality of the course, or motivation supported by the MOOC materials which were easier to understand than the materials participants previously encountered.

In their study, Egloffstein and Ifenthaler (2017) surveyed 119 employees from different enterprises regarding motivation, credentials, and incentives which are related to participation in MOOCs. The findings indicated that high importance was given to on-the-job and career development learning purposes and also to general interest in MOOC topics. However, the acceptance of credentials, though they are deemed necessary, among the relevant stakeholders is valued rather low. The findings also suggested that the reasons to participate in MOOCs are similar for emloyees working in businesses and students studying in higher education.

In another study, Loizzo, Ertmer, Watson, and Watson (2017) explored perceptions of motivation, success, and completion with 12 self-directed adult MOOC learners using virtual ethnographic methods. The findings revealed the adult learner experience in MOOCs and showed that enrollment reasons ranged from personal enjoyment to personal development. Learners were motivated by the MOOC content, which shows content interest, and they had a desire to learn more about it, which shows information retrieval. The third most prominent motivator was professional development. In addition, almost half of the informants mentioned that their enjoyment of MOOCs (for fun or as a hobby) motivated them. However, some learners mentioned that their enrollment reason in the MOOC was to solely watch video or to access new resources, which shows no intention of actually completing the course.

Psathas, Chalki, Demetriadis and Tsiara (2018) presented participant motivation of 591 learners in a Greek MOOC for Python Programming. They reported that the most prevalent reason of participation in the MOOC was learners' current or future working career development, followed by general interest in Python, application of knowledge in practice, and obtaining the certificate of participation. The study also showed that the course certificate positively affected participants' participation in the course activities as learners who have asked for the certificate were more determined to complete course requirements. For this reason, the course certificate can be considered as an important motivational factor.

Chen, Gao, Yuan, and Tang (2019) examined MOOC learner motivation by surveying 646 MOOC learners who took courses from different MOOC providers, but mainly from XuetangX in STEM subjects and other subjects including arts, history, language, and sociology. Participants' motivation scores were the highest in interest in knowledge dimension which is followed by curiosity and expansion, and professional relevance. The lowest motivation scores were in connection and recognition dimension.

Lastly, Luik et al. (2019) explored what motivates enrollment in programming MOOCs with 1229 adult learners from a course called “About Programming”. The highest-rated motivational factors affecting enrollment in programming MOOC were found as interest in the course, expectations for the course, and suitability of distance learning. The lowest-rated motivation to enroll in MOOCs was usefulness related to certification. Briefly, intrinsic motivation motivates these learners more than extrinsic motivation based on the results of the study.

2.6 MOOC Completion and Dropout

MOOCs provides a new field for traditional colleges and universities to experiment, yet there is no consensus on how to define and characterize success and persistence in MOOCs (Evans & Baker, 2016). Various definitions of MOOC completion are available in the literature (Jordan, 2015). In the relevant literature, MOOC completion and drop out have been used by different terms such as persistance, retention, success, attrition, noncompletion. Yet, each different definition of success and persistence comes with their advantages and disadvatages as certain populations of MOOC students are either included or excluded in these definitions. Different contexts might require different definitions (Evans & Baker, 2016). Completion rate has been used to measure the success of a MOOC; however, it is not for many students although it is one of the many factors which underlie the success in MOOCs (Koller et al., 2013).

Completion rate (also known as retention) basically has been calculated as the fraction of individuals who initially enroll and successfully finish a course based on the course requirements specified by the instructor (Jordan, 2014; Koller et al., 2013). In the earliest MOOC research, MOOC learners on edX were assessed in the same way with the on campus students through homework assignments, labs, midterm, and final exam. Taking these into account, “success” in 6.002x MOOC was defined as the grades students earned. This “success” was kept equal as “achievement”, and “achievement” was operationalized as “total points in the course, weighting the individual assessments (i.e., homework, lab assignments, midterm, and fnal) as originally laid out in the syllabus” (Breslow et al., 2013, p. 20). In her research study, Jordan (2015) located several MOOC completion definitions. Earning a certificate was the most prevalent definition provided in 93 MOOCs out of 129 MOOCs followed by completed course (14 MOOCs), passed course (10 MOOCs), and completed assignments (6 MOOCs). Other definitions were also present, yet they were provided in one MOOC each. In their study, Greene et al. (2015) operationalized retention as “the completion of the week’s end-of-unit exam” (p. 940). In another study, retention was operationalized as “number of days between the start of the MOOC and the last day of activity by the student” (Xiong et al., 2015, p. 28). Pursel et al. (2016) operationalized course completion in their study as “the number of quizzes and reflection surveys completed” (p. 207). Henderikx et al. (2017a) used traditional success rate as “number of certificates earned by the MOOC-takers divided by the total number of registered MOOC-takers” (p. 361). Halawa et al. (2014) defined dropout in two ways, either the MOOC student has been absent in the course for more than one month or the MOOC student has viewed less than 50% of the course videos. Indeed, their findings showed that being absent exceeding three weeks is related to dropout on multiple performance metrics.

Although completion rate is a convenient and simple metric, the interpreted completion rates can provide misleading views about the online course due to the fact that this rate fails to include the diversity of goals and engagement patterns of the students (Koller et al., 2013). For this reason, a better approach can be utilized to calculate MOOC completion rates. In other words, completion rates can be calculated based on a percentage of students enrolled in a course having the intention to complete the course and to receive a certificate (Reich, 2014).

2.6.1 MOOC Completion and Dropout Rates

Completion rates in MOOCs have generally been criticized in the literature, and they have been reported low by many research studies. Breslow et al. (2013) studied edX's first MOOC called Circuits and Electronics (6.002x), which started in March 2012 and ended in June 2012. Initially, over 155,000 students registered for it. One of the troubling aspects of MOOCS is their low completion rates, and this was also observed in this course as well, where less than 5% of the students who registered for the course at any one time completed the course. Cisel (2014) examined the completion rates in the first French xMOOC. Of 3495 participants who registered for the course, 38.1% (n=1332) received a certificate. Although 48.5% (n=1697) of participants were active in the course, they did not obtain any certificate. These participants were referred as "non completers" because they included participants who were either dropouts and auditing learners.13.4% (n=466) participants did not go beyond the registrations process as they never accessed the course. These participants were referred as "no-show".

Jordan (2014) examined the initial trends in enrollment and completion of MOOCs by focusing on 91 MOOCs for enrollment numbers and 42 MOOCs for completion from three main MOOC portals (Coursera, EdX, and Udacity). The number of students in MOOCs varied between 4,500 and 226,652. She revealed that around 43,000 students enroll in an average MOOC, and 6.5% of the students complete the MOOC. Particularly, completion rates were found to change between .9% and 36.1%, with a median of 6.5%. In the data, 5% completion rate was the typical rate. Courses characterized active users as students who engaged in the course material to some extent as opposed to enrolled users who did not use the course materials at all. When completion rates are calculated as the percentage of active students who completed the courses, this time completion rates ranged from 1.4% to 50.1%, with a median of 9.8%. Then Jordan (2015) revisited the MOOC completion rates with respect to assessment type, course length, and attrition extending her previous work (Jordan, 2014). The dataset of the study included 221 MOOCs from different

MOOC providers, mostly from Coursera (120 MOOCS) and Open2Study (43 MOOCs) and independent MOOCs; however, in this sample, 220 MOOCs provided the enrollment figures, and 129 MOOCs provided the completion figures. Completion rates, calculated by the traditional method, varied between .7% and 52.1% having the median value of 12.6%. Hew and Cheung (2014) summarized the accumulated state of knowledge concerning the use of MOOCs, and they reported that the dropout rates in MOOCs are high, and the courses are completed by only 10–20% of students.

Perna et. al. (2014) reported the progress of MOOC learners in 16 Coursera courses provided by University of Pennsylvania faculty between the dates June 2012 and July 2013. They considered two different groups of MOOC users, registrants who registered for a MOOC before it was officially opened for registration or who registered for a MOOC no more than 2 months aftter the course is officially ended and starters who registered for a MOOC no later than 1 week after MOOC's official start date, in their study of understanding the progression of users in MOOCs. The 16 Coursera MOOCs included a total of 710,385 registrants and 541,576 starters. Their study revealed that completion rates were found low even if they were calculated based on accessing the last lecture, attempting the last quiz, or having at least 80% of a final grade. That is, in none of the courses, less than 12% of registrants or starters received at least 80% of the final grade.

Meinel et al. (2014) provided the reflections on the enrollment numbers and success rates in five openhpi MOOCs, provided on the platform of the German Hasso Plattner Institute, focusing on different ICT subjects. These MOOCs were designed for six consecutive weeks with a balanced schedule, and they had a fixed start and end date. Three of them were in German, and two of them were in English language. The enrollment numbers in these courses changed between 5,000 and 15,000 students. They differentiated between the number of total enrollment and the number of students actively taking part in the course. Then the competion rates based on these numbers were computed. The traditionally computed completion rates were between 13.15% and 23.55%, with an average of 18.30%. The researchers arbitrarily defined the active participants as the users who submitted at least one homework or contributed to the discussion forum. The rate of active participants changed between 29.6% and 44.5%, with an average of 38.8%, meaning that aprroximately between 55% and 70% of the enrolled students never make any contribution to the course. The completion rates based on active participants were 32.13% and 55.88%, with an average of 51.11%. As a result, there were remarkable differences between the completion rates based on traditional calculations and active students.

Similar to Meinel et al. (2014), Hadi and Gagen (2016) proposed a new methodology for measuring achievement in MOOCs, which focuses on the overall completion rates plus the micro learning occurring in MOOCs. This includes two key metrics, which are percentage of units completed and percentage of learners achieving meaningful learning, in addition to traditional MOOC completion rates. They reported the data from two MOOCs, and defined enrolled learner as "learners who have signed up to the MOOCs" and active learner as "the number of enrolled learners who are active, i.e. viewing at least one page of the course" (p. 6). Based on the percentage of units completed, the completion rate was 29.47% for enrolled learners and 43.56% for active learners in the first MOOC. Similarly, the completion rate was 12.26% for enrolled learners and 20.50% for active learners in the second MOOC. Based on the percentage of learners achieving meaningful learning, the completion rate was 39.12% for enrolled learners and 57.82% for active learners in the first MOOC. Similarly, the completion rate was 19.21% for enrolled learners and 32.13% for active learners in the second MOOC. However, based on standard/traditional completion rates, the completion rate was 9.35% for enrolled learners in the first MOOC and 24.01% for enrolled learners in the second MOOC while the completion rate was 15.64% for active learners in the first MOOC and 35.48% for active learners in the second MOOC.

Pursel et al. (2016) reported the completion rate as 5.6% for the overall sample who earned a statement of accomplishment, and as 20.3% for the survey sample. This shows that the survey sample includes a serious sample self-selection bias. The data of Pursel et al. (2016) suggested that high-achieving students, who are course completers, in MOOCs were more likely to complete the surveys and this leads to sample selection bias as the survey samples include more completers than other student cohort in MOOCs.

Gil-Jaurena et al. (2017) reported the completion and drop out rate of 17 MOOCs offered by the Spanish National University of Distance Education (UNED). The traditional completion rate, which considers the whole enrollment, was reported as 13.71%, and the completion rate based on learners who started the course was reported as 17.79%. The drop out rate was reported to be more than 80% for the students who started the course, but did not finish it. Henderikx et al. (2017a) reported the completion rates using the traditional approach for two MOOCs as 6.5% and 5.6%, respectively.

EdX provided their respective statistics over the years comprehensively and consistently. Ho et al. (2014) reported the first year of HarvardX and MITx open online courses covering the first 17 courses between the fall 2012-summer 2013. The traditional completion rates in HarvardX courses changed between 1% and 8%, with an average of 5%. The traditional completion rates in MITx courses changed between 4% and 12%, with an average of 6%. Ovarall, the average completion rate in all HarvardX and MITx courses were 5%. Ho et al. (2015) reported two years of HarvardX and MITx open online courses covering 68 courses between the fall 2012-summer 2014. In the second year report, non-entrants, who never click-into the courses, were excluded from the analyses. The reported average certification rates were 7% and 6%, 14% and 11% for CS, STEM, HHRDE, and GHSS courses, respectively. Chuang and Ho (2016) reported four years of HarvardX and MITx open online courses covering the largest surveys of 290 courses between the fall 2012-summer 2016. The median certification rate differed from the naive certification rate partly after exluding the courses not offering free certificates. Ranging from 0.2% (Field Theory) to 34% (a Chinese History module), the median certification rate was 7.7% (4.05 million participants in 236 HarvardX and MITx courses). Lastly, Reich and Ruipérez-Valiente (2019) have provided the most recent analysis results by analyzing data of all MOOCS which were provided on edX platform covering the dates between October 2012 and May 2018. The dataset included 261 different courses, in the form of 565 course iterations, having 12.67 million course registrations done by 5.63 million learners worldwide. The striking conclusion was that the growth in MOOC participation has been significantly in the world's wealthy countries from the developed world, and not surprisingly low completion rates in the MOOCs has not shown any improvement over 6 years. In other words, low completion rates have been maintained over 6 years meaning that they did not show any significant positive improvements. Moreover, most people who register for a MOOC leave the MOOC right after enrollment, and in particular, 52% of those who register for a MOOC never start the course (Reich & Ruipérez-Valiente, 2019).

In addition to examination of traditional and alternative completion rates, completion rates based on fee paying learners were calculated in the literature. Payment might demonstrate commitment and thereby, learners who have indicated that commitment are more likely to persevere (Onah et al., 2014). For example, Ho et al. (2015) reported certification rates among MOOC learners who paid $25-$250 to get ID verification for their edX certificates. On average, across 12 courses, verifying MOOC participants certified at a significantly higher rate of 59% when compared to 5% rate for non-verifying students. Verifying MOOC participants were slightly older, more educated, more domestic, and less often female when compared to non-verifying students in the same course.

In brief, completion rates in MOOCs have highly been researched in the literature using MOOC from varios MOOC providers. Completion rates have been reported low by many research studies as mentioned above, and these studies as well as the media have critized the low completion rates. Then other research studies have begun to appear in the literature, which approached completion rates from different perspectives using different measures in addition to the traditional metrics. Completion rates when calculated based on these different perspectives, such as considering active learners in the completion rate calculation instead of all enrolled learners etc., provided higher completion rates than the traditional completion rates.

2.6.2 Predictors of Completion and Dropout

The factors affecting or predicting course completion have been the interest of many researchers and many inspiring results were obtained from these studies. Some research studies have looked at the factors affecting MOOC completion/dropout over a single MOOC or a wider sample of MOOCs. In edX's first MOOC called Circuits and Electronics (6.002x), Breslow et al. (2013) reported no relationship between age, gender, and achievement. There was only a slight relationship between highest degree earned and achievement. Cisel (2014) examined the completion rates in the first French xMOOC offered on Canvas. When background influence on completion was checked, it was found that there is no association between gender and achivement. However, they revealed that women tend to underestimate their ability when compared to men, who tend to overestimate their ability. When the effect of employment status on completion was checked, it was found that unemployed learners tend to have higher achievements than students. Schulze's (2014) results provided a significant relationship between MOOC completion percentages and self-directed learning. That is, the adults who were stronger in self-directed learning were likely to complete more percentage of the MOOC. Furthermore, there were demographics differences between adult learners who completed the MOOCs and who did not.

In their study, Wang and Baker (2015) examined why students complete MOOCs, and they compared course completers and non-completers in a MOOC delivered on Coursera. They found out that course completers are more likely to be more interested in the course content whereas non-completers are more likely to see MOOCs as a type of learning experience. Greene et al. (2015) investigated the predictors of retention and achievement in a MOOC based on student characteristics, relevance, prior experience with MOOCs, self-reported commitment to the MOOC, and implicit theory of intelligence. The MOOC was offered in 2013 on Coursera platform and included 33,938 learners from 183 different countries. It was found that there is a decreased likelihood of dropout, which also means greater likelihood of retention, with increased age and level of schooling. Also, work experience in the MOOC topic was significantly related to a decreased likelihood of dropout. The study also reported that MOOC participants with no prior experience with MOOCs tend to drop out when compared to MOOC participants with prior experience with MOOCs. Yet, it was surprising that prior experience with Courera MOOCs was related to an increased likelihood of dropout. Morris et al. (2015) tried to understand which learner characteristics might influence MOOC completion using the data from five MOOCs provided by the University of Leeds in 2014. The results showed that four characteristics of learners were significantly related to the degree of MOOC completion. In particular, learners' age was significantly associated with the degree of completion, where older learners completed more of their course. Learners' prior online learning experience was also significantly associated with the degree of completion. Learners' prior educational attainment also showed significant association with the degree of completion, where learners with the higher prior educational attainment were more likely to complete the MOOC. Moreover, learners' employment status and the degree of MOOC completion were found to be significantly related, yet the association was opposite meaning that learners who are not working were more likely to complete more of their MOOC. However, learners' gender did not have an effect on the degree of completion.

Pursel et al. (2016) tried to understand MOOC students from the point of motivations and behaviors which are indicative of MOOC completion. They examined MOOC student demographics, their intended behaviors, and course interactions in order to better understand the factors which are indicative of MOOC completion using a course on Coursera platform. The overall sample included 94,711 students, and the surveyed sample was 9266 students. The results showed that more videos watched per week, more posts per week, and more comments per week were positively related to the completion rate. Regarding individual characteristics, the results showed that the association between age and completion rate was nonlinear, meaning that the completion rate increased with age initially and then tapered off when age went up further. Prior educational attainment was found to be positively associated with the completion rate. Lastly, student expectations and plans for the MOOC predicted the MOOC completion. In other words, MOOC students who planned to watch all MOOC lectures, and who agreed that they would obtain a statement of accomplishment, and who intended to be active in the course had higher course completion probability than others who indicated otherwise. However, the results showed no difference between male and female students in MOOC completion rate. Also, previous online learning experience, including past MOOC experiences, did not have any influence on the completion rate. Tseng et al. (2016) reported that active MOOC learners submitting their assignments on times and frequently watching lecture videos had a higher course completion rates as well as better grades in the course.

Bonafini, Chae, Park, and Jablokow (2017) examined students' probability of achievement in a MOOC, including student engagement with videos and forum posts, participation behaviors, and student intention to receive the course certification, based on voluntary participation of 222 students. Regarding the effect of the intention to certify on the number of videos students watched, intention to certify acted as a moderator between the number of videos students watched and student achievement, and as a result, it had an amplifying influence on students' achievement. In other words, an increase in engaging with videos is positively associated with an increase in MOOC achievement for the ones intended to receive a certificate.

Zhang et al. (2019) identified factors with regard to MOOC completion. The results showed that working in groups did not affect the likelihood of MOOC completion in spite of working groups were created based on students' preferences. Moreover, age, the institution providing the MOOC, academic program alignment with students' needs, and students' intention to complete the course variables influenced the probability of MOOC completion. Kruchinin (2019) reported that the assessment with auto grading in MOOCs led to higher completion rates than other assessment formats as peer and peer plus auto assessments. Courses have been more difficult and taken more time with peer and peer plus auto assessments, which in turn decreased students' actual involvement.

Ho et al. (2014) reported in the the first year of HarvardX and MITx courses that certified registrants had a higher average educational level when compared to noncertified registrants. In each course, the median age of all registrants was below 30, but certificate earners had the median age higher than 30 in all courses. Jordan (2014) examined the initial trends in enrolment and completion of MOOCs by focusing on 91 MOOCs for enrolment numbers and 42 MOOCs for completion from three main MOOC portals (Coursera, EdX, and Udacity). Being positively correlated with course length, the number of enrolment decreases over time. Furthermore, being consistent across time university rank, and total enrollment, completion rates (as a percentage of total enrollment) are correlated negatively with course length. That is, longer courses are completed by a lower proportion of students. However, there were no significant relationships between date, university ranking, total enrollment, and course completion rates (as a percentage of active users). When the completion rates are considered based on active users, students who engaged in the course material to some extent, this time there were no significant relationships between completion rates and date, university ranking, total enrollment, and course length. This situation can indicate that enrolled students might be putting off starting the longer courses, but clearly, this was not an issue for active users becoming actively engaged in the course. In conclusion, the wider range of completion rates is observed when completion rates are calculated based on active learners. Jordan (2015) revisited the MOOC completion rates with respect to assessment type, course length, and attrition extending her previous work. The dataset of the study included 221 MOOCs from different MOOC providers, mostly from Coursera (120 MOOCS) and Open2Study (43 MOOCs) and independent MOOCs; however, in this sample, 220 MOOCs provided the enrolment figures, and 129 MOOCs provided the completion figures. Start date, course length, and assessment type of the courses were found to predict the completion rate significantly. In detail, start date of the courses predicted the completion rate positively as courses offered more recently had higher completion rates. Additionally, she reported that the MOOCs which are longer and use peer-grading have significantly lower completion rates when compared to the shorter or auto-graded MOOCs (Jordan, 2015). In their survey study on exploring the factors affecting MOOC retention, Hone and El Said (2016) reported that completion rates did not differ by gender, level of study (including undergraduate or postgraduate), and the MOOC platform participants registered for. The perceptions of students revealed that MOOC course content significantly predicted MOOC retention, and this relationship was mediated by the influence of content on the perceived effectiveness of the course. Furthermore, interaction with the MOOC instructor significantly predicted MOOC retention.

In order to predict course completion or drop out, research studies looked at the factors affecting MOOC completion/dropout over a single MOOC or a wider sample of MOOCs. Based on these studies, when the predıctors of course completion are summarized, it is cleary seen that there are some inconsistencies among the results.

Briefly, the results of Hone and El Said's (2016) study showed no influence of learner demographics (gender, level of study) on retention, and Breslow et al. (2013) reported no relationship between age, gender, and achievement. Similarly, Cisel (2014) found that there is no association between gender and achievement. In addition, Pursel et al. (2016) showed that the association between age and completion rate was nonlinear, and prior educational attainment was found to be positively associated with the completion rate. Zhang et al. (2019) found that age influenced the probability of MOOC completion. Similarly, Greene et al. (2015) explored that age and level of schooling, and prior experience regarding MOOCs predicted retention. Another study results showed that age, prior online learning experience, and prior educational attainment had a significant positive relationship with degree of completion (Morris et al., 2015). Additionally, completion rates were correlated negatively with course length; however, there was no significant relationship between completion rates and course length when the completion rates are considered based on active users (Jordan, 2014). Jordan (2015) also reported that the

MOOCs which are longer and use peer-grading had significantly lower completion rates when compared to the shorter or auto-graded MOOCs.

2.6.3 Reasons for Dropout

MOOCs may face negative evaluations and unnecessary interventions because of insufficient insight into the reasons behind completion and dropout rates in MOOCs (Henderikx et al., 2017b). Based on these, researchers have also interested in why drop out occurs in MOOC in addition to studying course completion in MOOCs. Khalil and Ebner (2014) revaled the factors behind the high drop out rates in MOOCs. They reported that lack of time, lack of learners' motivation, feelings of isolation, learners having insufficient background and skills to succeed in MOOCs, lack of interactivity in MOOCs, and hidden costs of MOOCs were the factors caused learners to drop out from MOOCs. Onah et al. (2014) identified the possible contributing factors to drop out in MOOCs as no real intention to complete, lack of time, course difficulty and lack of support, lack of digital skills or learning skills, bad experiences, expectations, starting late, and peer review. Furthermore, Eriksson et al. (2017) carried out a qualitative case study focusing on why learners drop out of MOOCs. Their results were grouped under four themes influencing learners' decisions to droup out of MOOCs as learner's perception of the course content, learner's perception of the course design, learner's social situation and characteristics, and learner's time allocation and effective time management. In this study, one factor as a reason for MOOC dropout was more prominent than the others, which was lack of time. More than half of the interviewees mentioned lack of time as their drop out reasons. Time spared for family life, work life, and other studies severely competed with the time learners spent for learning in MOOCs. In the end, lack of time is something that course designers are not able to control. El Said (2017) conducted a qualitative study which investigated how learners use MOOCs and why they dropout from MOOCs in a developing country context. The results indicated that many interviewees dropped of the MOOCs they were taking because of boredom caused by low course interactivity. MOOC learners also frequently switched between watching the course video and checking their social media or emails or both of them due to low interactivity of courses. In addition, most of the interviewees mentioned that course videos in many of the courses occasionally included an hour-long videotaped lectures instead of small chunks or categorization based on topics.

In their study examining attitudes, motivations, and barriers to understand MOOC student experience, Shapiro et al. (2017) reported the barriers for learning in MOOCs. The barrier stated by the majority of students was lack of time. This was followed by having past bad experiences in the subject or topic, insufficient background in the topic, difficulties emerged from the online format of the course, such as not being able to ask the teacher a question, and lack of required resources, including money, infrastructure, and Internet access. Ma and Lee (2019) investigated the barriers underlying the use of MOOCs in the developing country context based on innovation resistance perspective. The usage barriers included lack of Internet access. Students were not able to use MOOCs because of not having Internet or Wifi connection in the students' dorms, and mobile connection being expensive as well as not efficient as broadband Internet connection. Moreover, the students saw lack of interaction and lack of instruction with the lecturer as the obstacles preventing them from using MOOCs as this situation would make the learning process difficult to follow.

Reasons of dropout in MOOCs were also studied using different methods other than employing quantitative and qualitative methods. Aldowah et al. (2019) used a cause and effect decision-making model in order to reveal the factors affecting student dropout in MOOCs. Their study tried to identify the core factors and possible causal relationships which might be responsible for high drop out rate in MOOCs with the help of 17 experienced instructors having teaching experience in MOOCs. These instructors assessed the level of influence of the factors on each other. The results showed that six core factors, which are academic skills and abilities, prior experience, course design, feedback, social presence, and social support, directly impact student dropout in MOOCs. Moreover, the results indicated other factors, which are interaction, course difficulty and time, commitment, motivation, and family/work circumstances, playing a secondary role with regard to student dropout in MOOCs.

It is good to compare the barriers in online learning and the ones in MOOCs. Previous research studies verified that the barriers to learning in MOOCs are similar to the findings in the context of online learning and distance education (Henderikx, Kreijns, & Kalz, 2018b). For example, in their factor analytic study, Muilenburg and Berge (2005) found eight factors for student barriers to online learning, namely (1) administrative issues, (2) social interaction, (3) academic skills, (4) technical skills, (5) learner motivation, (6) time and support for studies, (7) cost and access to the Internet, and (8) technical problems.

2.6.4 Intention and Completion

Massive number of learners in the massive online courses have led to the problem of completion rates in these environments. As mentioned earlier in this chapter, completion rates have been used to measure the success of a MOOC. However, Reich (2014) criticized how completion rates were calculated and evaluated. He asked whether the participants in MOOCs who dropped out from the course had really wanted to complete the course before starting. Moreover, Koller et al. (2013) argued that retention should be examined carefully considering the intentions of learners as learners, who choose to enroll in MOOCs, have varied backgrounds and motivations. Studying completion rates among learners who actually start the courses with an intention to complete them is important due to the variation/variability in student intent (Koller et al., 2013). These gave importance to the intentions of MOOC learners before starting the MOOC, and therefore it is important to assess their intentions before reporting completion rates. Intention is simply defined as "something that people want and plan to do" (Cambridge Dictionary, 2020b). Intentions are "indications of how hard people are willing to try, of how much of an effort they are planning to exert, in order to perform the behavior"

(Ajzen, 1991, p. 181). In several social psychological models of behavior, intention is “the key index of a person’s mental readiness for action” (Sheeran, 2002, p. 29).

Accordingly, several research studies focused on learner intent and completion in MOOCs. Reich (2014) investigated completion and retention in the context of student intent. He obtained data from nine HarvardX courses registered by 290,606 registrants, of whom provided 79,525 survey responses. The number of students in these nine courses ranged from 11,000 to 92,000. Following an unweighted course average (the number of registrants in each MOOC was ignored), 65% of MOOC students attempted at least one action while 35% never entered the courses, and 6% of MOOC students earned a certificate. In detail, the certification rates (the percentage of all students who obtained a certificate) in these nine HarvardX courses was found to range from 2% to 11.2% with an average of 5.9%. The results also showed that the certification rates varied significantly among students who reported different intentions. The percentages of earning a certificate changed between 9.1% and 35.7% among students who stated their intention to earn a certificate. The average of certificate earners in this way was 22.1%. Although certification rates were higher among students who intended to complete the course when compared to the ones with other intentions, the majority of these students were not successful in completing the courses, and their behaviors were not parallel with their intentions. Moreover, Reich (2014) used three logistic regression models to predict the certification rate based on self-report intentions, controlling for student characteristics and the fixed effects of the course. The first model, including only the student intention as the predictors, revealed a strong positive relationship between the intention to complete a course and course completion. In the subsequent logistic regression models, adding and controlling for demographic characteristics and the fixed effects of courses, the relationship between the intention to complete a course and course completion still persisted. When students’ intentions towards completing the course are evaluated, it was found that students (intented-completers) are 4.5 times more likely to obtain a certificate when compared to students (intended-browsers) whose intentions are towards browsing the course, controlling the effect of demographic characteristics. In addition, these intended-completers are 3.5 times more likely to obtain a certificate when compared to students (intended-auditors) whose intentions are towards auditing the course. Greene et al. (2015) revealed that self-reported commitment category variables had strong relations with dropout. Most learners intended to get a certificate in the pre-course survey. It was found that learners' intention to obtain a certificate contributed to retention likelihood. Students whose intention was not to obtain a certificate or unsure had more likelihood of drop out than the ones whose intention was to obtain a certificate of completion. Briefly, the likelihood of MOOC dropout decreased with the increase in students' degree of commitment to earn the certificate of completion and students' intended number of hours spent on the MOOC.

In another study, Engle et al. (2015) investigated the factors characterizing successful completion of a Coursera's introductory human physiology MOOC. The pre-course survey asked students about their intentions for the course, especially how many of the course activities students intend to complete. Of 15,219 students, 44.8% selected all, 35.4% selected most, 18.2% answered few, and 1.6% answered none. When students who completed either some or all course exams were compared to students who did not take any exams, it was found that students self-reporting intention to complete all course activities were more likely to complete either some or all course exams. This shows intention is likely to impact students' course activity completion in the courses. Konstan et al. (2015) presented their evaluations and lessons learnerd from a hybrid MOOC on Recommender Systems. Approximately 4,844 MOOC students completed the precourse survey measuring their background and intentions with regard to the MOOC they enrolled. Their results showed that the majority of students (72.5%) who responded to the precourse survey stated that they intended to complete the entire course. However, the actual course performance of MOOC students did not consistently match their intentions. The researchers also found out that the main predictor of course completion was intention to complete the course. That is, the stronger intention to complete the course students had, the more likely that they would complete the writing assignments and exams in the course.

Pursel et al. (2016) examined MOOC students' intended behaviors in order to better understand the factors which are indicative of MOOC completion using a course on Coursera platform. In their study, 66% of the MOOC students in the pre-course survey either agreed or strongly agreed with the intention that they would earn a statement of accomplishment. They found out that student expectations and plans for the MOOC predicted the MOOC completion. In other words, MOOC students who planned to watch all MOOC lectures, and who agreed that they would obtain a statement of accomplishment, and who intended to be active in the course (i.e,,'not just visiting') had higher course completion probability than others who indicated otherwise.

Henderikx et al. (2017a) reported the completion rates using the traditional approach for two MOOCs as 6.5% and 5.6%, respectively. The completion rates from the perspectives of the MOOC-takers based on their intentions were 59% and 70%, respectively. Gil-Jaurena et al. (2017) reported the evaluation of the Spanish National University of Distance Education (UNED) MOOCs implementation based on 17 MOOCs offered via UNED's own platform. Their evaluation included learner expectations. The majority of learners' answers were on obtaining the credential. Particularly, among 24,412 learners, 78.3% stated that they expected to complete the coırse and request the credential and/or certificate, and 18.2% stated that they expected to finish the entire course, but they did not intend to request any certificate. This shows that four out of five learners' objective for taking the courses was the credential in this credentialist society. Despite these high expectations for completing the courses and obtaining the corresponding certificates, the traditional course completion rate of 17 MOOCs were 13.71%, and 19.31% of learners who complete the courses requested certificates. This gap between expectations and completion rates in MOOCs was previously reported in the literature. Bonafini et al. (2017) examined students' probability of achievement in a MOOC, including student engagement with videos and forum posts, participation behaviors, and student intention to receive the course certification, based on voluntary participation of 222 students. Student intentions were measured using a likert scale from strongly disagree to strongly agree. For the statement “intent to complete the course”, the distribution of responses was as the following: strongly disagree (3.15%), disagree (6.70%), neutral (54.30%), agree (29.40%), and strongly agree (6.45%). This shows that more than one third of the pre-course survey participants had an intention to complete the entire course. Regarding the effect of the intention to certify on student achievement in MOOCs, it was found that when compared to students who did not indicate an intention to receive a certificate, the probability of MOOC achievement increases by a factor of 1.71 for the ones who indicated an intention to obtain a certificate. In particular, one-point increase in the intention to obtain a certificate is associated with the likelihood of MOOC achievement by 1.71 odds ratio. Regarding the effect of the intention to certify on the number of videos students watched, intention to certify acted as a moderator between the number of videos students watched and student achievement, and as a result, it had an amplifying influence on students’ achievement. In other words, an increase in engaging with videos is positively associated with an increase in MOOC achievement for the ones intended to receive a certificate.

Zhang et al. (2019) explored the predictors of MOOC completion. Their results showed that learners’ intention to complete the course influenced the probability of their MOOC completion. In detail, the odds of completing the MOOC for learners who strongly agreed with the statement of intention to complete is higher than the odds of learners who stated no intention to complete. That is, the probability of completing the MOOC increases by factor of 4.08 for learners who committed with the intention to complete the MOOC. Guajardo Leal, Valenzuela González, and Scott (2019) reported that the vast majority of MOOC participants (approximately 98%) provided their intentions or plans to complete the entire course with or without interest in receiving a certificate.

Koller et al. (2013) explained that willing to pay a fee for a MOOC to earn a credential can be a clear statement indicating that students intend to complete the course. For example, enrolling in Signature Track provided students with an identity-verified, university-branded credential if they complete the course. In a Coursera course, the completion rate was 74% among paying Signature Track students while it was 9% in the non-Signature Track population. In addition, Cross and Whitelock (2017) reported differences in time commitment between fee-paying and non-fee-paying students. That is, fee-paying students were planning to spend more time on the MOOC than no-fee students. This situation might have impacted how and what MOOC students studied. Both of these cases can indicate students' intention to complete the courses.

The relevant literature indicated that MOOC learners are more likely to have positive intentions. That is to say, they mostly wanted to complete the MOOCs and obtain certificates. However, MOOC learners failed to do so, and their intentions changed. Then this situation resulted in intention-behavior gap. When completion rates are calculated taking into account MOOC learners intentions, the rates are mostly higher than the traditional completion rates. This makes intention an important valuable construct in MOOC environments. When the effect of learners' intention on MOOC completion was evaluated, the relevant literature showed that learners' intention to complete the course significantly influenced the probability of their MOOC completion.

2.6.4.1 Intention, Behavior, and Intention-Behavior Gap

The relationship between intention and behavior has been researched over the years in different fields, and the gap between intention and action has been emphasized in many research studies because a formed intention does not always translate into the actual behavior (Fishbein & Ajzen, 2011). However, it has received attention in MOOC research recently although MOOC researchers have mostly interested in learner intention to obtain a certificate as the predictor of MOOC completion. The following paragraphs provide the basis for the relations between intention and behavior.

Several social psychological models, such as the theory of planned behavior, support the proposal that the most substantial predictor of a person's behavior is higher intention to perform that behavior based on the assumption that "people do what they intend to do and do not do what they do not intend" (Sheeran, 2002, p.1). Individual's intention to perform a behavior is a central factor in the theory of planned behavior, and they are considered to capture the motivational factors which impact a behavior (Ajzen, 1991). As a general assumption, the stronger the intention to perform a behavior, the more likely should be its exhibition. This behavioral intention depends on the volitional control whether a person can decide at will to engage in or not to engage in the behavior in question. However, the performance sometimes depends on non-motivational factors, such as the availability of required opportunities and resources including time, money, skills, etc., at least to some degree. These factors indicate actual control of people over their behaviors. Briefly, as long as a person possesses the required opportunities and resources, and intends to engage in the behavior, they should succeed in doing so (Ajzen, 1991). In general, intentions have noticeable predictive validity. In particular, without controlling for any potential moderators, the meta-analyses of intention-behavior literature found that intentions have about .50 correlation with behavior (Fishbein & Ajzen, 2010). Sheeran's (2002) metaanalysis of meta-analyses results in the context of health science showed that on average 28% of the variance in future behavior is explained by intentions.

The classification of the gap between intention and behavior dates back to McBroom and Reed's (1992) study which put forward a reconceptualization of attitude-behavior consistency under four categories. These categories were created based on the following. Instead of attaching "positive" and "negative" modifiers to attitude, the terms "inclined" and "disinclined" were used in place of positive and negative attitudes. In addition, "actor" and "abstainer" were used to characterize behavior, where "actor" denotes behavior is present, and "abstainer" denotes behavior is not present. As a result, the four categories included inclined actors, inclined abstainers, disinclined actors, and disinclined abstainers. Inclined actors are the ones performing a behavior consistently with their inclination. Inclined abstainers are the ones not performing a behavior consistently with their inclination. Disinclined abstainers are the ones not inclined to perform a behavior and not performing in accordance with this inclination. Disinclined actors are the ones performing a behavior although they were not inclined to perform a behavior (McBroom & Reed, 1992; Orbell & Sheeran, 1998). Among these intention-behavior categories, the behaviors of inclined actors and disinclined abstainers denote consistency while the behaviors of inclined abstainers and disinclined actors denote inconsistency (Sheeran, 2002).

Most intention-behavior research studies indicated a significant gap between (mainly) positive intentions and actual behavior (Henderikx et al., 2017b). Sheeran (2002) revealed the responsible group for intention-behavior gap in the study on a conceptual and empirical review of intention-behavior relations in the context of health science. Two groups of participants do not act according to their intentions. That is, inclined abstainers who have positive intentions fail to act, and disinclined actors perform the behavior despite their negative intentions. However, the inconsistency between intention and behavior is mostly caused by inclined abstainers rather than disinclined actors as the median percentage of non-intenders (disinclined actors) who subsequently exhibited the behavior was 7% while the same percentage for intenders (inclined abstainers) who failed to act according to their intentions was 47%. In other words, inclined abstainers are mainly responsible for intention-behavior gap for failing to act upon their positive intentions. Sheeran and Webb (2016) synthesized research on intention behavior relations. Based on current evidence, the intention-behavior gap is still substantial. This large gap showed that intentions result in action approximately one-half of the time. The rated of intention realization is affected by the nature of the focal goal, the basis of intention, and properties of intention. As a summary, people might encounter self-regulatory problems during their goal pursuit. These include problems while getting started for their goals, problems while keeping ongoing goal pursuit on track, and problems while bringing goal pursuit to a successful close. The analysis of the problems encountered during intention realization suggested that three tasks can be accomplished to enact intention realization. That is, people should initiate, maintain, and close goal pursuit (Sheeran & Webb, 2016).

In the MOOC context, Reich (2014) provided intention classification as browse, audit, complete, and unsure. Based on this classification, Reich (2014) reported that many students not intending to complete a MOOC do so, and those intending to complete a MOOC do not complete. That was one of the signs of intention-behavior gap; however, this concept was not studied properly in this study. Henderikx et al. (2017a) studied intention-behavior gap properly in their study of refining success and dropout in two MOOCs. They collected intention of the individual MOOC-takers using self-constructed set of items appropriate for the design of the respective MOOCs in the study in the pre-course questionnaire. Intention items focused on browsing, partial participation in one or more course modules, participation in all learning activities, and obtaining a certificate. They also collected behavior of MOOC-takers using the same set of items in the post-course questionnaire considering the metholological issues about the compatibility between intention and behavior. Both questionnaires in the first MOOC were filled by 65 MOOC-takers, and by 101 MOOC-takers in the second MOOC. Then the researchers identified three types of MOOC-takers based on whether the MOOC-taker achieved more, less, or other goals than initially they intended as (1) Inclined actors, (2) Inclined abstainers, and (3) Disinclined actors. In both of the MOOCs, most MOOC-takers were inclined actors, 42% and 49% respectively, and they achieved what they intended to do in the MOOC, including completing some modules, watching all the videos, and earning a certificate etc. The next group of MOOC-takers in both of the MOOCs was inclined abstainers, 41% and 30% respectively. Their intentions did not transform into actual behavior, and intention-behavior gap occurred. The last group of MOOC-takers in both of the MOOCs was disinclined actors, 17% and 21% respectively, and they exceeded their intentions. The authors did not include disinclined absstainers, who are the ones with no intentions and not acting accordingly, in the context of MOOCs for assuming that these individuals will never start a MOOC (Henderikx et al., 2017b). However, it might be useful to evaluate the consistency of learners' intention and their subsequent behaviors.

2.6.4.2 Reasons Behind Intention-Behavior Gap

People may indicate an intention to perform a given behavior on a questionnaire, yet their perceptions might change when they face the real situation, which produces a different intention (Fishbein & Ajzen, 2010). In addition to factors causing intention-behavior gap such as the nature of the focal goal, the basis of intention, properties of intention or not having enough volitional control over the behavior, barriers can also cause the gap between intention and behavior. These barriers can be MOOC-related, such as lack of interaction and non MOOC-related, such as workplace issues. Together, these barriers might lead MOOC-takers to change their intention or even stop proceeding in MOOCs (Henderikx et al., 2017b). As not all intentions translate into actual behavior, and there might be many reasons behind this, such as a person may not have some prior knowledge of the topic demanded by the MOOC (Kalz et al., 2015). Also, MOOCmakers obtain a richer knowledge base from the insights into individual intentions of MOOC-takers and the types of barriers they experienced for deciding whether redesign of MOOCs is necessary (Henderikx et al., 2017b). Based on these, researchers explored the reasons behind intention-behavior gap and the barriers caused this gap; however, the number of these studies is very scarce in the literature.

Gütl, Rizzardini, Chang, and Morales (2014) reported that only 22% of MOOC students had intention to complete the MOOC, but they failed to do so due to diverse factors including academic and personal reasons. The majority of the students stated that changes in their job, having insufficient time, difficutly of the subject matter, and unchallenging activities in the course were some of the reasons for their drop out from the course. Henderikx et al.'s (2017b) explorative study examined MOOC success from the perspective of the MOOC-taker and the barriers which could stand in the way of MOOC-takers' success. The data from two MOOCs were used to demonstrate MOOC-success from two perspectives and the barriers encountered by MOOC-takers. For MOOC I, 50 MOOC-takers answered the question on which type of barriers learners encountered during the runtime of MOOCs, and for MOOC II, 76 MOOC-takers answered. 75% of the barriers learners encountered in MOOC I and 66% in MOOC II were non-MOOC related barriers whereas 25% of the barriers learners encountered in MOOC I and 34% in MOOC II were MOOC related barriers. Non-MOOC related indicated barriers were general barriers, which included workplace issues, lack of time, family issues, lack of workplace support, and lack of family support. MOOC related indicated barriers were design barriers, which included problems with the website, lack of interaction, lack of instant feedback, lack of instructor presence, and lack of useful feedback and expectation management barriers, which included course being too easy, course not meeting expectations, and course being too difficult. In another study, Henderikx et al. (2018a) also investigated intention-behavior dynamics in MOOC learning and explored what happened to good intentions along MOOC learners learning path. The collected data using a questionnaire, including open and close ended questions from 84 learners. The questions covered learners the most recent MOOC experience within two years. The results put forth that most of the MOOC learners start a MOOC having specific intentions in their minds, yet almost one third of these learners reformulate their initial intention at least once at some point in their MOOC experience because of the barriers they face which prevent them from fulfilling their individual intentions. The reasons behind the change of intention by learners whose intention changed once or more often were specified as getting busy with other things, giving high priority to other commitments, changes in life or work demands, not having enough time, unsatisfying interaction with the instructors, having poor Internet collection, underestimating the amount of time required for the MOOC, and time contraints and commitments. As clearly seen, these barriers were mostly related to the individual learner. As the intention-behavior gap in MOOCs mainly occur due to non-MOOC related reasons, this can be a valuable input for further research and for guiding the development interventions which can support MOOC learners in reaching their personal learning intentions (Henderikx et al., 2018a).

2.7 Readiness for Online Learning and MOOCs

Readiness is defined as “the state of being prepared for something” (Cambridge Dictionary, 2020c). Warner, Christie, and Choy proposed the concept of online learning readiness earlier in the literature covering three aspects as the preference for the form of delivery as opposed to face to face instruction, confidence in using electronic communication for learning purposes, and ability to maintain autonomous learning (as cited in Hung et al. 2010). Online learning readiness can be defined as “Cognitive awareness and maturity that a student develops for successful learning in a web-based environment” (Liu & Kaye, 2016, p. 242). As it was mentioned before, online learning and MOOC environments are expanding at a tremendous rate. However, this raises a concern: Are learners ready for online learning in MOOCs? Understanding readiness helps to determine whether learners are prepared enough to take an online course or program. Assessment of readiness leads to designing better online courses, to guide learners to experience successful and fruitful online learning, and to enhance learners’ online learning experience (Hung et al., 2010). Readiness comes with some questions whether students are well prepared for using the computer technology, competent in using the web for accessing and navigating through course content easily, well equipped for self-assessment and adapting new directions in learning, and most importantly ready for a change in the old studying techniques to the new ones (Arif, 2001). Online readiness self-assessment tools come with the advantages to predict whether students are ready to take online classes, and to provide instant feedback regarding the potential student success in online learning environments. (Farid, 2014). Student readiness which focuses on learning from the web should not be taken as a given. Readiness is a crucial variable and it should be considered before the diffusion of web applications for learning (Arif, 2001).

2.7.1 Conceptualization of Online Learning Readiness

Online learning readiness, also was referred as e-learning readiness, has been conceptualised using different dimensions by different researchers. Several digital-learning readiness instruments have been developed, validated, and applied by researchers since at least 2000 (Blayone, 2018). Existing online readiness assessment tools are very diverse regarding the type and number of dimensions they include (Farid, 2014). Smith, Murphy, and Mahoney (2003) identified factors underlying readiness for online learning in their exploratory study. The instrument yielded a two-factor structure as comfort with e-learning and self-management of learning. Bernard, Brauer, Abrami, and Surkes (2004) studies the development and predictive validation of an instrument to examine the achievement outcomes of distance education/online learning success. The instrument had a coherent four-factor structure as beliefs about distance edition, confidence about basic prerequisite skills, self-direction and initiative, and desire for interaction with the instructor and other students. Watkins, Leigh, and Triner (2004) included technology access, online skills and relationships, motivation, online audio/video, Internet discussions, and importance to your success dimensions in their revised instrument measuring learners' readiness for e-learning. Hung et al.'s (2010) conceptualization included computer/Internet self-efficacy, self-directed learning, learner control, motivation for learning, and online communication self-efficacy. Demir and Yurdugül (2015) explored the models of e-learning readiness and provided reference model suggestions for students, teachers, and institutions. The reference model suggestion for students included competency of technology usage, self-directed learning, acccess to technology, confidence in prerequisite skills and oneself, motivation, and time management. Yurdugül and Demir (2017) developed an instrument to measure e-learning readiness of university students including the dimensions of computer self-efficacy, Internet self-efficacy, online communication self-efficacy, self-directed learning, learner control and motivation towards e-learning dimensions considering the instrument of Hung et al. (2010) and the suggesions of Demir and Yurdugül (2015).

In summary, Farid (2014) carried out a systematic study on student online readiness assessment tools. The review revealed that e-learning readiness is a multidimensional construct, and it generally refers to the dimensions of computer Internet self-efficacy, self-direction, motivation, interaction, and attitude. Online readiness construct has varied from one study to another as the composition of this construct has been questioned greatly. The common argument behind the different conceptualizations of online learning readiness was that researchers supported the notion that the measures assessing online learning readiness are not comprehensive enough to cover other dimensions which are essential for online learning, including technical skills and learning control (Hung et al., 2010).

2.7.2 Online Learner Characteristics

Before online learning, students should possess some necessary characteristics and skills (Yukselturk, Ozekes, & Türel, 2014), and online learners should possess some certain skills to be successful in MOOCs (Gameel & Wilkins, 2019). Various online readiness instruments have been likely to include two broad categories as technical skills and learner characteristics. Moreover, many of the readiness scales tend to describe what online students have to be, such as self-directed, self-aware, or motivated, instead of describing what online students need to do. The focus on what students have to be generally results in describing and assessing the traits and characteristics instead of observable and measurable behaviors. When the focus is shifted to behaviors which are observable and measurable, the evaluation would be easier (Parkes et al., 2015).

Online learners should be aware of the dynamics in an online context, namely how online learning works, how interactions occur, and what the roles of learners and instructors are etc. (Vonderwell & Savery, 2004). For successful online learning experience, some level of ICT competency (e.g. basic computer and Internet skills) is required, and some level of experience with online learning environments is considered important (Menchaca & Bekele, 2008). The results of Wang, Shannon, and Ross (2013) suggested that students who would like to succeed in online learning environments should have confidence in using online learning platforms in addition to confidence in general computer skills. According to Castaño-Muñoz, Kreijns, Kalz, and Punie (2017), workers having high levels of digital interaction skills prefer to participate in MOOCs more often while workers with lower levels opt for traditional training.

Learners who are new to MOOCs and not familiar with self-directed learning generally have hard times to find their place within a MOOC. The majority of MOOCs require learners to be self-directed and proactive in their learning process (Koutropoulos & Hogue, 2012). Learners are required to have a more active role while learning in the online learning contexts which are not highly teacher centered (Hung et al., 2010). Pursel et al. (2016) found that students who completed the MOOC showed a high degree of self-directed learning. Measures of readiness aims to measure the dimensions required for a successful online learning experience, and students' level of readiness presents a concern for learning successfully in MOOCs (T Subramaniam et al., 2019). Student readiness for online learning instruments enable learners to self-assess their readiness of preparedness for online learning, and informed decisions on how to improve outcomes for online learners can be made using these assessments (Dray, Lowenthal, Miszkiewicz, Ruiz-Primo, & Marczynski, 2011). For these reasons, it is essential to understand learners' readiness for online learning.

2.7.3 Related Studies on Online Learning Readiness

Online learning readiness has been shown to be related with variables influencing the effectivess, efficacy, and satisfaction of online learning. Bernard et al. (2004) found that beliefs about distance education and self-direction and initiative significantly predicted achievement measured by course grades. Online readiness has been found to effect successful course performance and e-learning satisfaction (Holsapple & Lee-Post, 2006). Holsapple and Lee-Post (2006)'s study on defining, assessing, and promoting e-learning success from an information systems perspective indicated that the online readiness of the students is a critical factor of e-learning success. Demir-Kaymak and Horzum (2013) showed that students' online learning readiness was positively associated with their interactions in the learning environments. In their study on predicting student dropout using data mining methods in an online education program, Yukselturk et al. (2014) found that online technologies self-efficacy beliefs, readiness for online learning, and prior knowledge about course content were predictive factors related to student dropouts using Genetic Algorithm (GA) based feature selection method. Horzum, Kaymak, and Gungoren (2015) revealed that students' online learning readiness levels directly predicted academic motivations and indirectly predicted perceived learning. It was also revealed that student academic motivations directly predicted perceived learning. The model they obtained from their research suggested that academic motivation is useful in increasing perceived learning in online learning environments, and increasing readiness is useful in increasing academic motivation.

Regarding online learning readiness for MOOCs, the research studies are very limited. For example, the studies on ICTs readiness among MOOC learners based on a cross-national analysis (Gameel, 2016) and self-determined learning readiness of language MOOC learners (Agonács et al., 2020) were carried out; however, they did not focus on the overall online learning readiness of MOOC learners. Recently, T Subramaniam et al. (2019) investigated the MOOC readiness levels of adult students from Malaysian higher education institutions with a sample of 413 respondents. The measurement instrument used in the study focused on technical competencies, communication competencies, social competencies, self-efficacy, self-directedness, and MOOC readiness. The results showed that survey respondents were moderately ready for MOOCs. The respondents believed that they have the necessary competencies, and they are self-directed. MOOC readiness was found to be significantly correlated with self-efficacy, followed by socio-communication competency, self-directedness, and technical competencies. The results also showed that socio-communication competency and technical competency were significantly higher for students took blended and fully online courses before. Self-efficacy and self-directedness were higher for students who took fully online courses before. In addition, MOOC readiness was significantly higher for students who took fully online and face-to-face courses than the ones who took blended courses.

2.7.4 Concerns about Online Learning Readiness Measurements

Some concerns have been raised regarding online readiness measurements. Farid (2014) stated that online readiness self-assessment tools provide subjective results rather than objective ones, and therefore, they might not provide the most accurate results. Wladis and Samuels (2016) noted that currently implemented online readiness surveys might have no predictive validity. Therefore, one should be careful while using the online readiness surveys. Self-reported measures of confidence and skills sometimes can be unreliable predictors of performance although assessing both attitudes and behaviors are important (Blayone, 2018). Considering these and the number of various online learning readiness measures, one should be careful while using the online learning readiness measures.

Relevant literature is quite rich about readiness in online environments as well as the factors affecting the MOOC outcomes including completion, drop out or learning; however, the quality research studies focusing on readiness for MOOCs or the effects of MOOC readiness on MOOC outcomes are very scarce. That is, it has been highly overlooked that whether these diverse audience of MOOCs has had required abilities, competencies or skills to succeed in MOOCs. In other words, the readiness of this diverse MOOC audience, whether with previous online experience or not, for learning in MOOCs has not been assessed properly. To achieve successful and effective online learning experiences in MOOCs, learners' readiness towards learning in MOOCs should be examined as the nature and open format of the MOOCs are novel to majority of these diverse learners.

2.8 Course Behaviors in Online Learning and MOOCs

The Internet, computers, mobile devices, and learning management systems provide explicit data as a byproduct. While listening to classroom lecture or reading a book leave limited trails, or a hallway conversation vaporizes right after it is concluded, every click, every social media update, every social interaction or every page read online can leave a captured digital footprint. Currently, rich data trails and activity streams are captured by means of online learning, digital student records, mobile devices, and sensors (Siemens & Long, 2011). Learning analytics takes place in the MOOCs behind the scenes through gathering data from several sources ranging from simple log files to locating how often course videos are watched or forum posts are read (Lackner et al., 2015). Long before the proliferation of online learning and teaching, Moore (1989) offered three types of interaction in distance education as learner-content interaction, learner-instructor interaction, and learner-learner interaction in a well-structured way. Learner-content interaction is the interaction between the learner and the content or subject of study. Particularly, it is “the process of intellectually interacting with content that results in changes in the learner's understanding, the learner's perspective, or the cognitive structures of the learner's mind” (Moore, 1989, p. 2). Online learners engage in several educational components, such as course videos, quizzes, exams, projects, discussion forums etc., with varying levels in online learning environments as well as MOOCs under the umbrella of learner-content interaction.

Since the MOOCs are offered by different MOOC providers and focus on different fields, each MOOC has its own structure and content. Although several research studies explored course behaviour patterns while learning in the MOOCs, there is still need for more exploration due to MOOCs aforementioned nature, and current research revealed a limited understanding of learner progress in a MOOC except for the first and last events which are registration to a MOOC and completion of a MOOC (Perna et al., 2014). When thousands of learners enroll in an xMOOC, huge amount of data arises, and this situation requires new techniques and automated processes (Lackner et al., 2015). Investigating course behaviour patterns of the participants provide valuable information regarding the MOOCs and the participants because learner-produced data trails give detailed information about what is actually going on in the learning process and help educators make improvements (Siemens & Long, 2011), and learners' demographics might strongly influence learning activities in MOOCs (Shi & Cristea, 2018). For example, Rieber (2016) examined participation patterns in a MOOC about statistics and concluded that when people show commitment to participate early, they have a high level of commitment to complete the MOOC. If videos are viewed repeatedly by students, this might be the indication of the fact that the video content might require further clarification or more resources (Coffrin, Corrin, de Barba, & Kennedy, 2014). In other words, course behaviour patterns of learners such as interaction with the course materials, how they progress, or how much time they spend on the course could provide useful information and be useful in providing greater insights into student activity in MOOCs.

Relevant learning analytics and educational research have documented that students perform better when they engage with activities more (de Barba, Kennedy, and Ainley, 2016). How online courses are designed and how their efficacy is evaluated are affected by the ways student interact with MOOCs; and therefore, it is crucial to understand the ways student interact with MOOCs (Anderson, Huttenlocher, Kleinberg, & Leskovec, 2014). Making sense of MOOC participants' behaviors and characteristics can help to adapt the courses to diverse learners' needs, and in this way, their impact in delivering lifelong learning on a large-scale can be maximized (Kahan et al., 2017).

At a large scale, studies on understanding students' MOOC activities have been relatively few. Without understanding the different ways students might be engaging with MOOCs, it is hard to properly evaluate the optimistic claims made regarding student experience in MOOCs and the concerns expressed for the low completion rates (Anderson et al., 2014). Understanding of learner behavior during early stages can help to determine learning outcomes. Specifying different patterns of learner participation might contribute to designing MOOCS in a way that they support not only students' but also other types of learners' diverse participation styles, and they encourage transitions to more engaged behavior patterns (Poellhuber, Roy, & Bouchoucha, 2019).

2.8.1 Course Behaviors as a Proxy for Engagement

Without direct observation and questioning, it is impossible to measure true engagement, and they are also infeasible at scale (Guo, Kim, & Rubin, 2014). Therefore, various proxies are used for engagement. Previous research studies frequently used behavioral and social engagement in order to measure engagement in MOOCs as they are explicit and easily identifiable (Deng, Benckendorff, & Gannaway, 2020). Previous research studies also used the clickstream data obtained from MOOC platforms as a proxy for learners' behavioral engagement in MOOCs (Deng, Benckendorff, & Gannaway, 2019b). Clickstream data are used to infer measures of learner interaction with course components including but not limited to videos, discussion forums, and assignments (Wang, Baker, and Paquette, 2017). Learners actions in online learning environments are particularly stored in designated log files, and these can offer valuable information for engagement detection (Dewan, Murshed, & Lin, 2019). The availability of clickstream data allows to process numerous variables which help to reflect finer-grained learner engagement and to reveal the insights which would otherwise have stayed covert (Wang et al., 2017).

Guo et al. (2014) used two proxies for engagement as engagement time and problem attempt. Engagement time was the main proxy for engagement, and it is the length of time, such as video watching session length, a student spending on a course video. Nevertheless, it fails to capture whether a learner actively pays attention to the video or just keeping the video playing in the background somewhere while being busy with other tasks. The second proxy was the problem attempt. Some course videos (32% of the videos in four courses) were immediately followed by an assessment problem usually in the form of a multiple choice question, and these were used to check students' understanding of the course video content. Hew (2016) loosely grouped the studies conducted to examine student engagement in MOOCs into three categories corresponding to registration, activity, and completion phase of the MOOCs. Studies in the activity phase examined student behavioral engagement types or patterns such as student video views, assignment submissions or participation in discussion forums etc., during the progress of the MOOCs. Dewan et al. (2019) reviewed the engagement detection in the context of online learning and provided the classification of existing methods into three categories as automatic, semi-automatic, and manual based on their dependency on learner participation. The categories included subcategories based on data types they use for engagement detection such as audio, video, texts from learner log data etc. The methods in automatic category extract features automatically without interrupting learners during engagement detection process. Being one of the methods in automatic category, log-file analysis extracts features by using learners' activity traces preserved in log files in the learning environments such as total time spent on studying, forum post numbers, average time used to solve a problem or submission numbers etc., and these are analyzed for engagement detection. Similarly, Guajardo et al. (2019) systematically explored the existing literature on the construct of academic engagement in MOOCs covering the period of 2015-2018. They revealed that the main source of data collection in the field was learning analytics which is followed by questionnaires, interviews, surveys, and forums. Simply behavioral engagement can be summarized as the learners' interactions in the learning environments.

Aforementioned proxies come with their inherent limitations. The measure of time spent in online courses is problematic as what takes one student 10 minutes to complete may take another student's twenty minutes of time (Grandzol & Grandzol, 2010).

2.8.2 Related Studies on Course Behaviors

Several attempts made to understand how students engage in these courses (Anderson et al., 2014), and various research studies focusing on learners' engagement detection is available in the literature (Dewan et al., 2019). Anderson et al. (2014) investigated behavioral patterns of high- and low-achieving students in a number of Stanford University courses offered on Coursera. They explored that high-achievers consumed many lecture videos, and most of them exhibited some re-watching behavior. The number of quiz attempts of high-achievers showed bimodal distribution, and they had several quiz attempts. Concerning students' final grade and their engagement with the course, the grade was generally proportional with students' activities overall. In their case study on using MOOCs for conventional college coursework, Firmin et al. (2014) showed that students were much likely to pass when they had the mean number of weeks of active online participation exceeding 30 minutes per week. Students had a significantly higher pass rate when they spent as much as time logged into the course as the corresponding face to face course they were expected to spend in the physical classroom. Moreover, problem sets done, and time students viewed course videos (video time) were two significant positive predictors. They created the variable student effort across courses based on course units multiplied by class-time weeks of the corresponding face to face course. In brief, there were strong positive relationships between student effort, its amount, its persistence over the course duration, and passing.

de Barba et al. (2016) examined how students' performance in a MOOC influenced by motivation and participation. They used learning analytics provided by the Coursera system to obtain students' participation metrics in the online course. Two types of learning behavior, which are video hits and quiz attempts, were measured. Video hits was the measure of the total number of clicks on lecture videos, and number of quiz attempts was the measure of the number of times quiz responses submitted by each participant. The behaviors were used as the indicator of course participation because they are commonly used components of a MOOC. The results showed that MOOC performance is affected by motivation both directly and indirectly. Also, performance is affected by participation both directly and indirectly. In other words, video hits and the number of quiz attempts significantly predicted the final grade positively. Tseng et al. (2016) classified learning behaviors among 1489 students enrolled in three MOOCs on Yuan Ze University (YZU) MOOC platform. They found out that active learners submitting assignments on time and frequently watching the lecture videos indicated a higher completion rate as well as a better grade in the course. Additionally, learners participating in online discussion forum showed a higher degree of passing the course as well as a better score than their inactive counterparts.

Almeda et al. (2018) compared the factors predicting course completion and grades in a MOOC in which for-credit and open/MOOC students enrolled. J48 decision trees were created to predict whether students pass the course or not. Across both of student groups, the J48 models mutually included the number of comments, replies, forum views, and video views features predicting whether students pass the course. In addition, linear regression models were used to understand how the features correlate with student grades. For both of the student groups, number of times a student viewed readings, number of times a student viewed a forum, number of times a student viewed videos, number of comments a student created features were found to predict students' final average grades significantly and positively. In his study, Khalil (2018) investigated learning analytics in two Austrian MOOCs (Gratis Online Lernen and Lernen im Netz MOOCs). The available variables for the analyses were quiz attempts, forum readings, forum writings, and login frequency. The total interactions and their averages were calculated for students who completed the MOOCs successfully and for students who dropped out from the MOOCs. The results showed that the average of MOOC interactions of completed students, which are quiz attempts, forum readings, forum writings, and login frequency, were higher than dropout students in both of the MOOCs.

The results of Hsiao et al.'s (2019) study indicated that students' online learning behavior has a substantial positive effect on long-term learning outcomes while this behavior does not have a substantial effect on short-term learning outcomes. Mubarak et al. (2020) found that resource view, forum view, course view, and assignments had substantial effects on student performance in the study on prediction of students' early dropout based on interaction logs in the online learning environment. Performance is mostly positively correlated with student activity logs which denotes that the higher the number of activities the students carry out, the better performance they exhibit. In other words, the better performance students have when they interact with the course activities more (Mubarak et al., 2020). The review results of Deng et al.'s (2019a) review showed that higher retention rates and better academic performance are associated with that more active behavioral engagement.

2.9 Outcomes in Online Learning and MOOCs

In open online learning environments, it is more difficult to explore and analyze students' learning outcomes when compared to campus environments because of the difficulty, discrepancy, and the large amount of data in open online learning environments (Pilli & Admiraal, 2017). MOOCs focused on different learning outcomes and measures, and a limited number of learning outcomes have been the focal point of diverse research studies. Pilli and Admiraal (2017) explored the literature regarding students' learning outcomes in MOOCs based on a critical analysis with the main components of 3P (presage-process-product) model of teaching and learning of Biggs. The product factors, which are the outcomes, included engagement, achievement, and attrition. According to Deng et al. (2019a) literature review study results with regard to landscape of learning and teaching in MOOCs, learning outcomes were mostly examined from retention and academic performance perspectives. They also revealed that learning outcomes generally focused on single variables such as grades, and therefore, they lack sophistication. Reeves, Tawfik, Msilu, and Şimşek (2017) used course persistence (completion) and perceived learning as evidence of outcomes. Even overall lecture coverage, which refers to the proportion of lecture accessed by a participant among all the lectures available, was used as a learning outcome (e.g., Li & Baker, 2018).

Briefly, Deng et al. (2019a) identified that a single variable as a proxy for learning outcomes is adopted by many MOOC researchers. When assessing learning outcomes, combining two or more variables would be useful (Deng et al., 2019a). More research studies going beyond counting "clicks" are needed to fully comprehend the factors which are related to MOOC learning outcomes (Pilli & Admiraal, 2017). There is a need to assess other product variables reflecting the diverse range of outcomes in MOOCs (Hood & Littlejohn, 2016b).

2.9.1 Course Satisfaction in Online Learning and MOOCs

In this study, in order to measure learner reactions to self-directed instructional materials, one of the sub-dimensions of situational motivation which is satisfaction was used. In other words, course instructional material satisfaction from the view of motivation and motivational aspects of instructional events was used. Being a complex aspect of human behavior, motivation has a powerful influence on performance. Broadly, motivation refers to "what people desire, what they choose to do, and what they commit to do" (Keller, 2010, p. 3), and it explains "the direction and magnitude of behavior, or in other words, it explains what goals people choose to pursue and how actively or intensely they pursue them" (Keller, 2010, p. 4). Learner motivation is an important factor related to learner success in distance education (Moore & Kearsley, 2011). In online contexts, motivation is a key factor for developing and sustaining a sense of community in addition to learning and achievement (Hartnett, 2016).

Based on ARCS model, four general requirements (Attention, Relevance, Confidence, and Satisfaction) should be satisfied to motivate people for learning as they are the factors that influence the motivation to learn (Keller, 1987a). Instruction should include Attention, Relevance, Confidence, and Satisfaction aspects in order to make students motivated as well as making them stay motivated (Keller, 1987b). Learners will be motivated to learn if they are attentive, interested in the content, and challenged moderately; nevertheless, the fourth condition of motivation, satisfaction, is required to sustain this motivation (Keller, 2017). Satisfaction leads to continuing motivation (Keller, 2008).

Among the attitudinal constructs, student satisfaction is the student perceptions of learning experiences (Kuo, Walker, Belland, & Schroder, 2013). Satisfaction refers to the positive feelings learners feel about their accomplishments and learning experiences after completing the learning activities successfully (Keller, 2017). Satisfaction is a post-task component as it comes after the completion of a task. It is important for any future task because satisfaction with the outcome of instruction maintains student motivation to learn (Jokelova, 2013). A learner should have a sense of satisfaction with the learning process or with the results of the learning experience in order to have a continuing desire to learn. This sense of satisfaction can result from extrinsic factors such as opportunities for advancement, grades certificates or other material rewards, and intrinsic factors such as the feelings of self-esteem, achievement, accomplishments or competence (Keller, 1987a; Keller, 2010). The consequences of one’s achievement whether it would result in the expected outcome are determined by their performance which is combined with the way in which reinforcement contingencies are applied. In parallel to this, levels of satisfaction with the process and outcomes are determined by the consequences of one’s achievement combined with one’s cognitive evaluations and reflections (Keller, 2008).

In online learning contexts, satisfaction is an important dimension because of being used as an outcome, its positive associations with other constructs as well as its effects on another constructs. Bray, Aoki, and Dlugosh (2008) reported that online distance learners were generally satisfied with their learning. Particularly, learning satisfaction was found to be higher for learners who could endure the challenges posed by distance learning. There is also an association between student satisfaction and their tendency to stay enrolled in and complete online learning; for this reason, student satisfaction should be monitored regularly so that it would be determined whether students' expectations are met and which areas need improvements (Adkins & Bryant, 2011). Students having higher levels of technology self-efficacy and course satisfaction obtained better final grades (Wang et al., 2013). When the predictors for the intention to continue using MOOCs were investigated, satisfaction was the third strongest predictor. Moreover, confirmation (an indicator showing participants' expectations were met) was a strong determinant of satisfaction (Alraimi et al., 2015). Kizilcec and Halawa (2015) revealed that MOOC participants that reported they stopped participating in the course were 12% less satisfied than the participants who reported not to have stopped. For MOOC completers, there are strong associations among motivation, previous knowledge, and perceived satisfaction factors (Valdivia Vázquez, Ramírez-Montoya, & Valenzuela González, 2018).

2.9.1.1 Related Studies on Course Satisfaction

In online adult learner context, the results of Morgan's (2007) study suggested that adult learners' awareness of the features of the online environment, readiness, and course relevance have a significant influence on the overall satisfaction reported for the web-based training event. Sun, Tsai, Finger, Chen, and Yeh (2008) investigated the critical factors influencing learner satisfaction. The critical factors affecting learners' perceived satisfaction were found to be computer anxiety, instructor attitude toward e-learning, course flexibility, course quality, perceived usefulness, perceived ease of use, and diversity in assessments. In a predictive study of student satisfaction in online education programs, Kuo et al. (2013) explored that student satisfaction was significantly predicted by that learner-instructor interaction, learner-content interaction, and Internet self-efficacy. Among the significant predictors, the largest unique variance in student satisfaction was explained by learner-content interaction. Ilgaz and Gülbahar (2015) investigated online learners' e-Readiness, e-Satisfaction, and expectations. Instructional content, communication and usability, and teaching process were found to influence participants' satisfaction levels after the online learning experience. Moreover, using different kinds of evaluation methods was seen as one of the most important factors affecting the participants' satisfaction. In addition to quantitative data, qualitative data on the factors affecting participants' perceptions on e-Satisfaction obtained from open-ended questions revealed the areas where participants were dissatisfied. Participants experienced technical problems, originating from both themselves and the system, during asynchronous online lessons due to virtual classroom software issues or slow Internet connection. These influenced their satisfaction. In another study, Korkmaz, Çakır, and Tan (2015) found a significant positive relationship between achievement and satisfaction factors (communication, usability, instructional process, content, interaction, and assessment). Another study carried out by Kuo and Belland (2016) found out that there is a significant positive correlation between adult learners' satisfaction and performance within an online course. When they were more satisfied, they showed better academic performance. Learner- content interaction was reported as the strongest predictor of satisfaction. Joosten and Cusatis (2019) examined the quality in online courses based on instructional characteristics and its relationship with student outcomes in online courses. When students' perceptions of instructional characteristics and perceptions of their satisfaction were examined, the regression analysis result showed that student satisfaction is significantly predicted by design and organization and learner support. When the overall effect of the instructional characteristics on student outcomes was examined, student academic performance, learning, and satisfaction are significantly predicted by the entire instructional characteristic factor positively.

The results of Gameel's (2016) doctoral dissertation showed that learner perceived usefulness, teaching and learning aspects of the MOOC, and learner-content interaction are considered as important satisfaction factors. In Spanish context, Gil-

Jaurena et al. (2017) reported learners' evaluation and satisfaction of the MOOC learners at Spanish National University of Distance Education (UNED) focusing on 17 MOOCs offered via UNED's own platform. The majority of satisfaction ratings (94%) were obtained from learners who completed the courses. Learners' evaluation and satisfaction showed that MOOC learners were highly satisfied with proper operation of virtual platform, well organized structure of the course, and adequate course length. They were also satisfied with course meeting their expectations, appropriate and motivating course methodology, and adequate and sufficient course content. In general, the general experience of learners was quite satisfactory and they seemed to have a high level of satisfaction. Furthermore, satisfaction with the general aspects of the course, including recommending the course to others, well organized structure of the course, appropriate and motivating course methodology, course meeting learners' expectations, and suitable and sufficient course content, has been found to be significantly related with fostering an interest in taking other courses at the UNED. Li and Moore (2018) carried out a design-based research study with integrating ARCS motivational design model in two MOOCs. IMMS instrument was used to obtain learner perceptions and their reactions to the course components. 163 and 266 responses to the IMMS instrument were obtained from course 1 and course 2 respectively. The means of satisfaction scores were found 4.27 (*SD*=.669) and 4.14 (*SD*=.728) respectively. The interview results also showed that most of the interviewees felt satisfied. In particular, they felt a sense of achievement, pride, and happy after taking the MOOCs. They had the satisfied feeling because of the knowledge they learned in the courses. The results also showed that knowledge learned, learners' capabilities of learning and completing a course, and the statement of accomplishment might have led to satisfaction. Joo, So, and Kim (2018) examined university students' motivation to use K-MOOCs and how these variables influence students' continuance intention to use K-MOOCs in a context where students receive credits after completion of MOOCs. The results showed that perceived ease of use and usefulness had a significant positive effect on satisfaction, and satisfaction had a significant positive effect on continuance intention to use K-MOOCs. Hew, Hu, Qiao, and Tang (2020) used a gradient boosting trees supervised machine learning and sentiment analysis approach to investigate what predicts student satisfaction with MOOCs with regard to learner-level and course-level factors. Randomly sampled 249 MOOCs with 6393 students were examined. It was found that course instructor, content, assessment, and schedule significantly predicted student satisfaction whereas course major, duration, perceived workload, and perceived difficulty had no significant roles in predicting student satisfaction.

In summary, predictors of satisfaction in online learning environments were widely researched. Also, satisfaction variable was used to predict other variables as well.

2.9.2 Perceived Learning in Online Learning and MOOCs

MOOCs are considered non-formal or informal learning environments as they rarely provide formal qualifications. In informal environments, learning is carried out primarily by the learner with a non-structured curriculum and does not end with summative evaluation, there is no way to directly assess informal learning other than assessing the perception of learning when compared to examining learner achievement in formal learning settings (Levenberg & Caspi, 2010). Similarly, unlike formal online learning, it not always possible to assess learning in MOOCs using objective measures due to their nature such as multiple attempts being allowed for quizzes or assignments, perceived learning has been extensively used to estimate learning in MOOCs. Also, predicting knowledge gains in MOOCs is even harder (Konstan et al., 2015). Perceived learning was used in online learning as well as in MOOCs to assess learning in these contexts. According to Caspi and Blau, perceived learning is a retrospective evaluation of the learning experience, and according to Batista ve Cornachione, perceived learning is an evaluation of the knowledge and skills gained during the learning process by the participant (as cited in Albayrak, Güngören, & Horzum, 2014). Although perceived learning has been used as one dimension itself, perceived learning outcomes also have included other dimensions in some research studies. For example, regarding the perceived learning outcomes of e-learning, Haverila (2011) used e-learning effectiveness, e-learning productivity, and amount of learning variables.

2.9.2.1 Related Studies on Learning and Perceived Learning

Students participated higher in online classes reported higher levels of perceived learning (Fredericksen, Pickett, Shea, Pelz, & Swan, 2000). The results of Haverila (2011) suggested that a priori e-learning experience is significantly correlated with perceived learning outcomes. In another study, Watson, Kim, and Watson (2016) examined the case of a MOOC on Animal Behavior and Welfare which targeted attitudinal change. The results indicated that MOOC learners perceived positive attitudinal learning across general, cognitive, affective, and behavioral learning. Another study showed that learners participated in the MOOC reported perceived learning gains regardless of the instructional strategy used in the MOOC (Kim, Watson, & Watson, 2016). Joosten and Cusatis (2019) examined the quality in online courses based on instructional characteristics and its relationship with student outcomes in online courses. When students' perceptions of instructional characteristics and perceptions of their learning (perceived learning) were examined, the regression analysis result showed that perceived learning is significantly predicted by design and organization, content, and interactivity with instructor positively. In their study on identifying the factors affecting learner retention within MOOCs retention using a survey of 379 learners, Hone and El Said (2016) reported course content has a significant influence on retention, where this influence is mediated by the effect of course content on perceived effectiveness as perceived effectiveness affects retention. Perceived effectiveness partly included perceived learning as it focused on recommending the course to friends/colleagues, learning a lot in the course, and enjoying taking the course items. Reeves et al. (2017) investigated incentives, learning, and completion in MOOCs using the analytic sample consisting of 779 MOOC participants from 78 countries. They took 303 different MOOCs from at least 12 providers. The regression analysis aiming at explaining perceived learning outcomes showed that age, the Asian race dummy variable, prior knowledge, intrinsic motivation, and two of the incentives variables, which are intended receipt of a course completion certificate for no fee and for a fee, are associated with perceived learning.

2.10 Usability in Online Learning and MOOCs

Technological systems have become integral part of education, and user satisfaction of these systems are crucial for users to continue using these systems. Developers work hard to create easy and straightforward to use e-systems. These characteristics are the part of the overall technical term usability, which does not have an absolute definition. It is relative to users, goals and contexts of use which are bounded by particular set of circumstances (Petrie & Bevan, 2009). Usability is one of the key system features of web-based educational systems, and its primary aim is to make a system easy to learn as well as easy to use (Granić, Glavinić, & Stankov, 2004), and usability depends on the interactions among products, tasks, environments, and users (Lewis, 2012). Usability, as the quality of use, is defined by ISO 9241-11 as "the effectiveness, efficiency and satisfaction with which specified users achieve specified goals in particular environments" (as cited in Bevan & Macleod, 1994, p. 5). According to Interaction Design Foundation (2020), usability is seen as the part of the broader term user experience, and it refers to ease of access and/or ease of use of a website or product. Positive user experience and better usability play a vital role for the acceptance, satisfaction, and efficacy of academic institutions, and therefore, they have prime importance for educational-based learning systems (Harrati, Bouchrika, Tari, & Ladjailia, 2016).

Usability is normally measured under the umbrella of five product attributes as learnability, efficiency, memorability, errors, and satisfaction. Learnability is concerned with systems' being easy to learn by users. Efficiency is concerned with productivity on the users' side. Memorability is concerned with systems' being easy to use and remember. Errors is concerned with systems' having a low error rate.

Lastly, satisfaction is concerned with systems' being pleasant to use. Satisfaction is typically measured through obtaining users' subjective ratings of satisfaction with the system such as product quality etc. (Nielsen, 1996). Usability, accessibility and UX evaluation methods can be grouped in the categories as follows: (1) Automated checking for conforming to guidelines and standards, (2) Evaluations carried out by experts, (3) Evaluations based on models and simulations, (4) Evaluations with end users or potential users, and (5) Evaluation based on collecting data during system usage (Petrie & Bevan, 2009). One of the widely used methods for evaluating usability of interactive systems is questionnaires, which are advantageous for providing feedback from the viewpoint of the users through quick and cost-effective administration and scoring (Zaharias & Poylymenakou, 2009). Regarding the actual use of the systems, the user-based methods are more sensitive to usability problems while the heuristic evaluation methods are more appropriate for identifying the logical inconsistencies; however, the negative influences of these logical inconsistencies on user performance cannot be taken for granted with the heuristic evaluation methods (Parlangeli et al., 1999).

According to the updated D&M IS Success Model, information quality, system quality and service quality have a direct influence on user satisfaction and user satisfaction has a direct influence on intention to use information systems. The direction (whether positive or negative) of this influence depends on the system being evaluated (DeLone & McLean, 2003). For this reason, assessment of system related features such as system usefulness, information quality, and interface quality are required to evaluate system usability which eventually leads to user satisfaction with the system (Lewis, 1995). Hsiu-Fen (2007) investigated the determinants for successful online learning systems. The study results showed significant influences of system quality, information quality, and service quality on actual online learning systems use through user satisfaction and behavioral intention to use online learning systems. Similar to online learning systems context, in a MOOC context, well-designed user experience can lead to increased completion rates and student satisfaction, reduced hours answering the help forums, enhanced learning, and minimized revision on the course (Sanchez, 2013). In a research study on factors leading to an effective MOOC from participants' perspective showed that usability is considered to be one of the dimensions affecting an effective MOOC (Gamage, Fernando, & Perera, 2015). Examination of learners' perspectives of taking a MOOC showed that course design is found important by MOOC learners since participants' learning experience and perception of the course were negatively affected by navigations and not-so-intuitive interface (Liu et al., 2015).

2.10.1 Related Studies on Usability

Usability in online learning environments have been studied using different methods, including success on tasks, quantitative scales or questionnaires or qualitative interviews. Yousef, Chatti, Schroeder, and Wosnitza (2015) conducted a study to design, implement, and evaluate a bMOOC course on Teaching Methodologies. The usability evaluation and effectiveness of the blended MOOC environment was conducted based on Conole's 12 dimensions rubrics, ISONORM 9241/110-S, and an effectiveness questionnaire revealing the perspectives of different MOOC stakeholders. The results showed a general satisfaction with the bMOOC with respect to usability and effectiveness. Tsironis et al. (2016) carried out a comparative usability evaluation of three popular MOOC platforms, which are edX, Coursera and Udacity, using experimental and inquiry usability evaluation methods with a sample of thirty-one participants. Participants were requested to carry out five tasks in these platforms. Participants' task success rate was rather high (>=90%) in all of the evaluated platforms, and there was no significant cross-platform difference on participants' task success. However, participants completed the assigned tasks on Coursera significantly faster than Udacity. Users perceived Coursera significantly more usable than edX and Udacity. Moreover, Coursera had significantly higher interaction efficiency than Udacity. Coursera had significantly higher SUS score than edX and Udacity, but there was no significance difference between the SUS scores of edX and Udacity. Based on SUS scores, perceived usability of edx and

Udacity was found to be “OK to Good”, and perceived usability of Coursera was found to be “Good to Excellent”. The observer’s notes yielded that users had serious problems while they were taking quizzes on the Udacity platform. That is, participants could not locate where they were supposed to answer the questions, particularly in multiple choice questions because of the fact that quizzed were presented inside the video, and their control buttons, such as radio buttons or textboxes, were not perceived as clickable. Moreover, the mouse cursor did not change when it was moved onto the quiz controls, and this resulted in failing to communicate the interactivity of the quizzes. On the edX platform, participants could not easily find a specific resource or subsection of the course. Lastly, on the Coursera platform, some participants experienced issues in finding a specific thread in the forum when they were using the embedded search bar. In their study, Korableva et al. (2019) identified user interface problems through usability testing of Coursera and Open Education MOOC platforms with a sample of 60 people. The data were collected based on questionnaires (UMUX-Lite, SUS questionnaires, the Testbirds Company’s approach, and the ISO) focusing on satisfaction from user interface design. Users did not find any of the platforms difficult, yet Coursera was rated as less complicated than Open Education MOOC platforms. Generally, both of the platforms appeared to have good design, and users highly rated the platforms with respect to simplicity and accessibility, amenity, and creativity. Apart from these, some users noted that the interface of Coursera platform was unpleasant and outdated.

Moreover, the relationship between usability and other variables have been researched. Meiselwitz and Sadera (2008) investigated the associations between usability factors and learning outcomes in an online learning context. The results indicated a significant strong positive correlation between usability and learning outcomes. That is, when overall system usability increases, student learning outcomes tend to increase as well or vice versa. Moreover, system usefulness, interface quality, and information quality were used to predict learning outcomes. The regression results showed that system usefulness, interface quality, and information quality as usability factors accounted for nearly 68% of the variance in student learning outcomes. These results show the importance of focusing on usability factors when evaluating learning outcomes in online learning environments. Deshpande and Chukhlomin (2017) empirically investigated the factors affecting student motivation to learn in a MOOC. The findings showed that student motivation to learn was significantly impacted by content, accessibility, and interactivity. Also, student motivation to learn was marginally impacted by navigation and learning and support. However, visual design and self-assessment and learnability did not have any significant effect on student motivation to learn. Tao, Fu, Wang, Zhang, and Qu (2019) examined the key characteristics in designing MOOCs for user acceptance. The path analysis showed that students' behavioral intention to use MOOCs were significantly affected by perceived ease of use, perceived usefulness and perceived enjoyment. Perceived usefulness and behavioral intention exerted significant effect on perceived effective use of MOOCs. The path analysis also showed that usability and perceived quality had a significant indirect influence on behavioral intention and perceived effective use through three mediators which were perceived ease of use, perceived usefulness and perceived enjoyment. In the study on an empirical investigation of the antecedents of learner-centered outcome measures in MOOCs, Rabin, Kalman, and Kalz (2019) found that the importance of the MOOC's benefits, goal setting dimension of online self-regulated learning, number of video lectures accessed, and perceived course usability directly affected learner satisfaction. Gender, the importance of the MOOC's benefits, goal setting dimension of online self-regulated learning, the number of quizzes accessed, the duration of participation, and perceived course usability directly affected intention-fulfillment. Intention-fulfillment was indirectly affected previous experience with MOOCs and the importance of MOOC's benefits through the number of quizzes accessed and perceived course usability.

2.11 Learner Perceptions of MOOCs

In online learning environments, students valued the convenience and availability of online course material. They also valued the asynchronous nature of online learning which provides flexibility of time and space so that they could attend the class and complete the course assignments anytime with the increased independence provided by the online learning environment (Meiselwitz & Sadera, 2008). Barbera, Clara, and Linder-Vanberschot (2013) reported that learning content and course design aspects had influence on satisfaction and perceived learning in online courses. Being one of the online learning environments, xMOOCs are mostly based on interactive materials, videos, and multiple choice quizzes. The courses on Udacity, Coursera, and edX mainly consists of lecture videos, course materials, quizzes, and assignments. Some of the courses include wikis and discussion forums (Conole, 2014). The fundamental learning resources in MOOCs include video lectures, discussion forums, and assessments (Kahan et al., 2017). In a self-paced and fixed-schedule format of the same MOOC, course videos were identified as the most impactful instructional component (Watson, Yu, & Watson, 2018). In another study, videos were identified as the most impactful instructional strategy (Watson et al., 2016). Learners considered readings and video lectures the most useful among the various types of learning materials provided in the MOOC whereas discussions and quizzes were considered less helpful (Liu et al., 2013).

For understanding retention and engagement attributes in MOOCs, student perceptions are critical (Paton, Fluck, & Scanlan, 2018). Zutshi, O'Hare, and Rodafinos (2013) reported experiences in MOOCs based on the perspectives of students. Video lectures have been a prominent aspect of students' learning materials, and quizzes have been identified as a tool to support student learning. Interactive course videos were found pretty interesting and engaging. The quizzes embedded into course videos required students to answer them correctly to move on. This technique has ensured that students pay attention and understand the fundamentals of the content covered in the course video. Liu et al. (2014) provided the perspectives of students for understanding MOOCs as an emerging online learning tool. The positive aspects of the MOOC included self-pace and flexibility by learning anytime/anywhere by oneself, diverse background of participants, peer learning, usefulness and quality of the course materials, including readings, videos, and assignments, expertise of the course instructor, and the characteristics of the MOOCs as free and convenient, hands-on experience, and engaging assignments as they kept students moving forward. The negative aspects of the MOOC included not useful feedback or lack of feedback, lack of peer instruction, unorganized course structure leading to confusion, and too many people. The MOOC provided learners with several types of learning materials including readings, video lectures, tutorials, and external resources. Among these educational materials, readings were considered the most helpful, followed by videos, discussion forums, and quizzes. In their survey study on the factors affecting MOOC retention, Hone and El Said (2016), participants provided short open text comments regarding their completion and non-completion of the courses. The comments on participants' course completion included the broad category concerning the course content. They included that course content was in the format that participants were interested to learn; the material was not available elsewhere; content included tips about soft skills; content was based on real cases/examples and practice (e.g., programming skills). On the other hand, the comments on participants' course non-completion included that courses were too sophisticated/technical/in-depth/complex; the language used in the courses was too complex; courses had too many modules; and courses were boring. In Spanish context, Gil-Jaurena et al. (2017) reported perception of the degree of usefulness of tools implemented in the courses of the MOOC learners at Spanish National University of Distance Education (UNED) focusing on 17 MOOCs offered via UNED's own platform. Learners' perception of the degree of usefulness of tools implemented in the course showed that videos, complementary material, tests and exams, and self-assessments were considered very useful for learning. Hew, Qiao, and Tang (2018) used a machine learning classifier for analyzing 24,612 reflective sentences posted by 5,884 students from 18 highly rated MOOCs as they are the examples of good practices or teaching strategies. These students participated in one or more of these courses. Student responses revealed that integrating real-world examples or problems into the content and resources made the course material very relevant. This made students enjoy the course content and resources, and this attached tangible meaning to the concepts or principles taught in the MOOCs; in this way, it sustained student interest, and helped them learn the material more easily because of the fact that students were exposed to real-life application of the principles or theories learned. Regarding assignments, students like moderately challenging assignments which give them opportunity to apply the contents learned. Students disliked easy assignments or questions which solely focus on testing factual recall. Assignments including fun and enjoyable aspects such as building simple games make students engage more in the tasks. Regarding lecture videos, student preference is short lecture videos whose length ranges from five to ten minutes. Embedding quizzes into videos help maintain student attention to lecture content. Lim and Kim (2018) explored the factors affecting learning satisfaction in the K-MOOC context. The results showed that perceived usefulness was significantly affected by the content quality and perceived ease of use. Moreover, learners' satisfaction was significantly affected by the content quality and perceived usefulness. Examination of learners' perspectives of taking a MOOC showed that the flexibility of the course schedule, credibility of the instructor, and quality of the materials were found important by MOOC learners. Also, the importance of good pedagogies was highlighted, and learners found the hands-on nature of the MOOC as the most helpful aspect (Liu et al., 2015). Learners viewed MOOCs positively for providing learning opportunities where learners are from all over the world, and MOOCs are provided by prestigious universities or organizations worldwide (Li & Canelas, 2019).

2.12 Perceived Benefits

Learners are more concerned with their own learning benefits in online courses (Gómez-Rey, Barbera, & Fernández-Navarro, 2016), and MOOCs can bring considerable benefits to individuals. It is essential to understand what benefits MOOC provide for participating in MOOCs; for example, what contributions MOOCs provide for continuing professional development (Petronzi & Hadi, 2016). MOOCs are effective in helping learners understand a specific topic and apply this in real life, and comprehensive study materials provided by MOOCs are beneficial for learners as future reference (Goh, Wong, & Ayub, 2018). Liu et al. (2014) provided the perspectives of students for understanding MOOCs as an emerging online learning tool. The majority of MOOC participants had a positive experience in the course, and they learned new knowledge and skills about a topic. Sablina, Kapliy, Trusevich, and Kostikova (2018) investigated retrospective reflection of perceived benefits. Learners obtained tangible and intangible benefits, generally justifying their expectations after completing MOOCs. When summarized, the perceived benefits revealed by this study were MOOC completion as feeling sense of accomplishment, free or paid certificate for completing a course, new knowledge and practical skills, positive outlook helping in real-life crisis situations, and accumulation of social capital in the form of new social connections. Zhenghao et al. (2015) put forth that MOOCs have a real impact as career and educational benefits were commonly reported by the overwhelming majority of MOOC learners who complete the courses. These benefits contained as getting a new job, starting a business, or satisfying prerequisites for an academic program. People from developing countries are more likely to report both career and educational benefits, and people with lower levels of education and lower socioeconomic status from developing countries are most likely to report tangible career benefits. MOOCs have the potential to change the educational landscape. MOOCs reach massive numbers of people and disadvantaged learners tend to report tangible benefits. However, they are not a cure for the myriad problems of global education. Indeed, the are a step flowing in the right direction as they provide open access to a valuable learning experience that is useful for furthering learners' education and careers (Zhenghao et al., 2015). Participating in a MOOC exemplifies a popular mechanism for professionals regarding their current and future learning needs as MOOC helped professionals for preparing them for new roles and career progression. Moreover, the course helped students to complement their other learning (Milligan & Littlejohn, 2017). Petronzi and Hadi (2016) explored the wider benefits provided for MOOC learners and reported that the benefits mostly centered around professional development and improving work practices. In the study of MOOCs as an enabler for competent employees and innovation in industry, Karnouskos (2017) reported that some respondents had positive views about the corporate MOOCs they participated in. Respondents pointed out that corporate MOOCs contributed to their professional life because such training is not available due to the specific technology being too new and potentially being too costly as well. It was also clearly highlighted that a key benefit of MOOCs included the timely delivery covering cutting-edge needs which is not possible in such a flexible or rapid way with traditional approaches.

CHAPTER 3

METHODOLOGY

This chapter presents the methodology used in the study, including research questions, research method, population, sampling, and participants, data collection instruments, context of the study, data collection procedures, data preparation and data analysis, role of the researcher, assumptions and limitations.

3.1 Research Questions

This study provides overall understanding of presage, process, and product variables and the relationships between these variables using a variety of data sources in four pdMOOCs based on Biggs' 3P model of teaching and learning, and intention-behavior gap in pdMOOCs as well as building on quantitative results following qualitative research. In particular, the purpose of this study is four folds. The first is to examine the motivations for enrolling in the pdMOOCs, pdMOOC completion rates based on different perspectives, and the relationship between relevant variables and pdMOOC completion. The second is to examine learner intentions with subsequent behaviors (intention-behavior gap) and the reasons behind intention-behavior gap. The third is to examine course satisfaction and perceived learning in MOOCs with respect to online learning readiness and perceived usability variables. The last is to explore the reasons for not starting, not completing, and completing the pdMOOCs, online learning readiness, course satisfaction, factors affecting learning, portal usability, and perceived benefits obtained from the course. Research questions of this study are as follows:

1. What are the learner motivations for enrolling in the pdMOOCs and reasons for not starting, not completing, and completing the pdMOOCs?

2. What are completion rates based on traditional and alternative approaches in pdMOOCs?

3. What are learners' behaviors based on their intentions and what are the reasons behind intention-behavior gap?

4. What are the relationships between learners' characteristics, online learning readiness, learners' intent, learners' course behaviors, and pdMOOC completion?

5. What are the predictors of course satisfaction and perceived learning in pdMOOCs?

6. What do learners think about their online learning readiness, course satisfaction, factors affecting learning, portal usability, and perceived benefits obtained from the courses?

3.2 Research Method

The purpose of the study was to provide overall understanding of presage, process, and product variables and the relationships between these variables using a variety of data sources from four courses of the Bilgeİş Learning Portal based on Biggs' 3P model of teaching and learning, and of intention-behavior gap in pdMOOCs as well as building on quantitative results following qualitative research.

In order to provide a comprehensive understanding, explanation and answer for the research questions of the study, the mixed methods research was used in this study. As a method, mixed methods research "focuses on collecting, analyzing, and mixing both quantitative and qualitative data in a single study or series of studies" (Creswell & Clark, 2007, p. 5). The main purpose of a research study carried out with a mixed methods approach is "to better understand the complexity of the social phenomena being studied" (Greene, 2007, p. 20). Moreover, the core premise of mixed methods research is combining the use of quantitative and qualitative approaches as this combination leads to a better understanding of research problems than using the approaches alone (Bryman, 2012; Creswell & Clark, 2007). The value of mixed methods is maintained with combining quan and qual methods in a way that complementing one another since the strengths of both methods cancel out the weaknesses of the other (Fraenkel, Wallen, & Hyun, 2012). Also, mixed methods research allows researchers to answer confirmatory and exploratory questions simultaneously (Teddlie & Tashakkori, 2003).

Johnson and Christensen (2016) conceptualized mixed methods research designs as a function of two core dimensions as time sequence of the qual and quan components (concurrent/sequential) and paradigm/research approach emphasis (equal/dominant status). The major types of mixed methods designs can be summarized as the exploratory design, explanatory design, and triangulation design (Fraenkel et al., 2012).

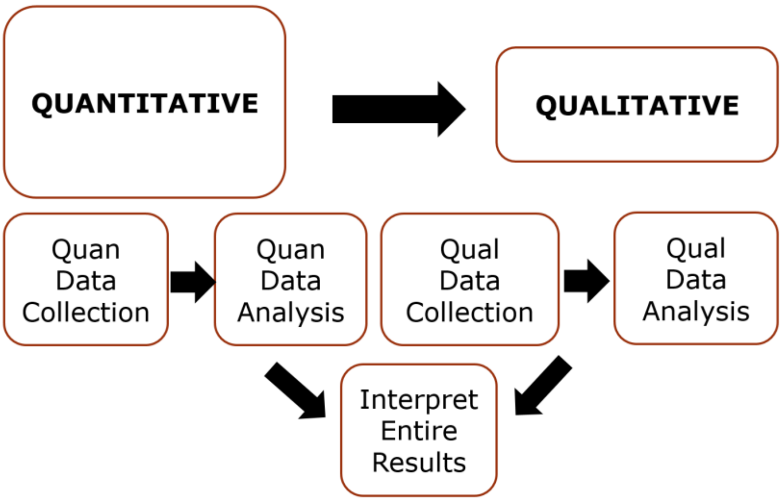


Figure 3.1. The Explanatory Sequential Mixed Methods Design Process

Some research questions and the research problem of this study require another method to provide answers to these questions and to approach the research problem of this study with a holistic view. In this way, stronger explanations and inferences can be made with a greater diversity of data. Therefore, in this study, the explanatory sequential mixed methods design (Creswell & Clark, 2007; Creswell, 2014) was implemented in order to obtain data from quantitative and qualitative methods for the purpose of building a complete understanding, explanation, and answer for the research questions and the research problem. In sequential explanatory designs, first of all, quantitative data are collected and then qualitative data are collected; however, quantitative data are given more weight than qualitative data.

The quantitative (the first) stage of this study includes descriptive research and correlational research methods. This stage aims to investigate learner characteristics, online learning readiness, learner intentios to enroll in the pdMOOCs, learner course behaviour patterns while learning in the pdMOOCS, course completion rates, usability perceptions, perceived learning and course satisfaction in pdMOOCs and to examine relationships between these variables. In this stage, the quantitative data were collected using web-based questionnaires (placed on the portal and created via university survey service) and portal logs. The qualitative (the second) stage of this study includes basic qualitative research method to broaden the results obtained in the quantitative stage. This stage aims to build on quantitative results and explore the reasons behind non-start, completion, and intention-behavior gap. Also, course completion, benefits obtained from the course, course satisfaction, factors affecting learning, online learning readiness, and perceived usability.

In this study, the dominant component is the quantitative part, and the supplemental component is the qualitative part. The data obtained by quantitative and qualitative stage were analysed independent of each other. After the analyses, the results were integrated and mixed for the purpose of complementarity (Greene, 2007) in the discussion section.

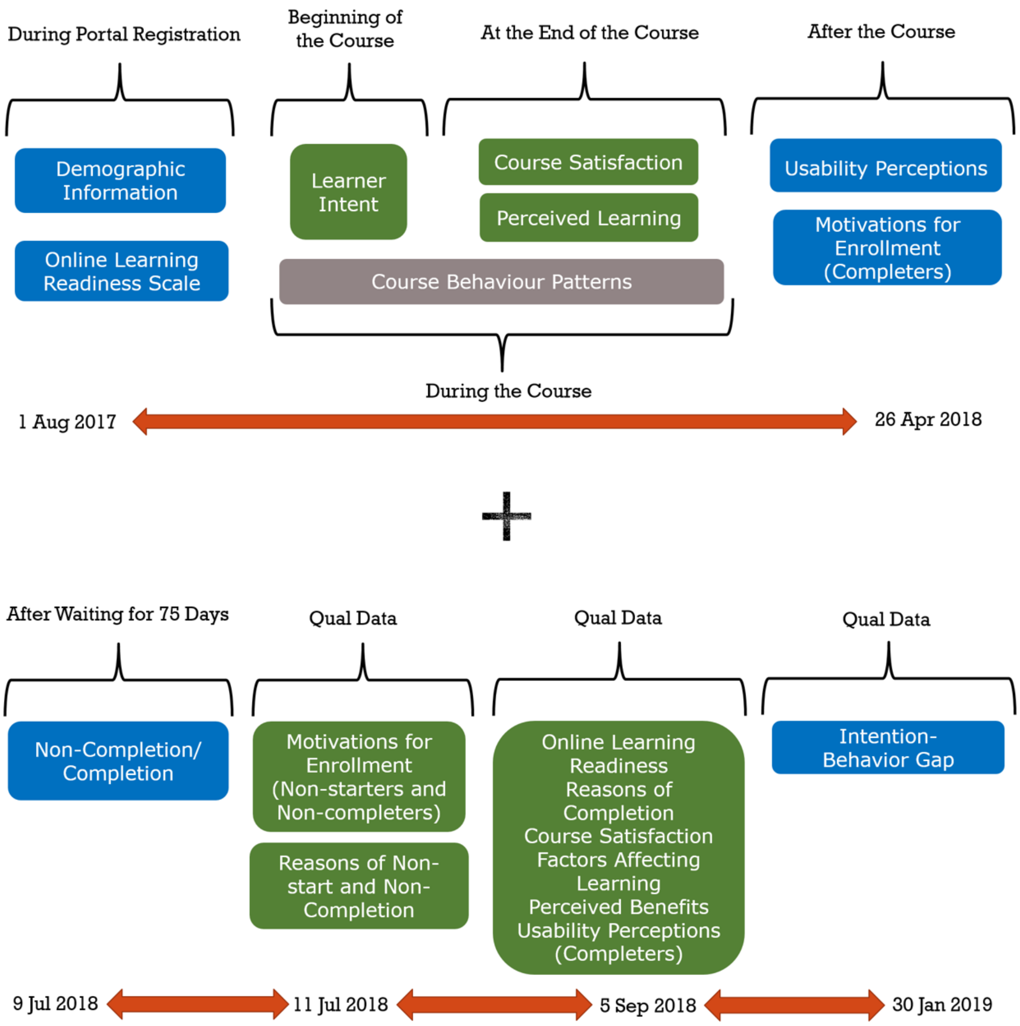


Figure 3.2. Timeline of Data Collection

3.3 Population, Sampling, and Participants

The population of this study is all of the learners enrolled in bilgeis.net learning portal. Three stage sampling strategy for selecting pdMOOCs, quantitative stage, and qualitative stage participants was employed in the study. First of all, the pdMOOCs were selected followed by the sampling for quantitative and qualitative parts of this study.

On Bilgeİş Learning Portal, there are 100 pdMOOCs. This study focused on four (two soft skills and two technical skills) of the 100 pdMOOCs. These four pdMOOCs were selected based on stratified purposive sampling, which is one of the well-known basic mixed methods sampling satrategies (Teddlie & Yu, 2007), in order to reflect the properties of the population. A hundred pdMOOCs were classified as the most registered, moderately registered, and the least registered based on registration numbers. Two pdMOOCs were selected from the most registered classification, and two pdMOOCs were selected from the moderately registered classification. No pdMOOCs were selected from the least registered classification as the number of learners in these courses were quite low. Hence, it was not possible to conduct quantitative analyses. Particularly, one technical and one soft skill pdMOOCs were selected from the most registered pdMOOCs; that is, the most registered pdMOOCs by the learners. Moreover, one technical and one soft skill pdMOOCs were selected from the moderately registered pdMOOCs. The selection of four pdMOOCs was done purposefully to represent the population of learners on the portal. These pdMOOCs are: Dealing with Problematic People, Phyton Programming I, Visual Design Principles, and Database Management with MS Access. Table 3.1 presents the pdMOOCs, their types, and classifications based on course registration rates.

Table 3.1. pdMOOCs, Types, and Classifications based on Course Registration Rates

#	pdMOOC	Type	Classification
1	Dealing with Problematic People (DPP)	Soft Skill	Most Registered
2	Phyton Programming I (PP-I)	Technical Skill	Most Registered
3	Visual Design Principles (VDP)	Soft Skill	Moderately Registered
4	Database Management with MS Access (DMMA)	Technical Skill	Moderately Registered

After selecting the pdMOOCs, quantitative stage, and qualitative stage participants were selected following sequential mixed methods sampling. The learners enrolled in the pdMOOCs were selected as the participants of the quantitative stage, and convenience sampling strategy was applied. The data of the participants who gave consent were used in this study. Volunteer participants were selected as the participants of the qualitative stage since it was not possible to apply purposive sampling in the qualitative stage due to the nature of MOOCs. That is to say, it was hard to reach the MOOC learners as they were not within the reach of the researcher, and they were from different cities of Turkey. The participants of the qualitative stage were the subsample of the participants in the quantitative stage (Teddlie & Yu, 2007).

The overall participants of this study consisted of the learners who registered for the pdMOOCs on bilgeis.net portal from any part of Turkey. Participants are allowed to register for any pdMOOCs on the portal without any restrictions. The total number of MOOC participants is 15805 learners at the time of the study. Of these learners, 7176 registered for Dealing with Problematic People (DPP) pdMOOC, 5666 registered for Python Programming I (PP-I) pdMOOC, 1561 registered for Visual Design Principles (VDP) pdMOOC, and 1402 registered for Database Management with MS Access (DMMA) pdMOOC. The unique number of participants is 13961. However, some of the participant data (n=82, .59%) were not available due to system related reasons. During registration to the portal, participants were asked for consent regarding the use of their data in research studies and evaluations. Of 13879 (99.41%) participants, 12666 (91.3%) of them gave their consent while 1213 (8.7%) did not give their consent regarding the use of data they provide. For this reason, the data of 12666 (91.3%) participants have been used. Table 3.2 shows the distribution of total participants, available data, consent given by participants, and consent not given by participants.

Table 3.2. Distribution of Participants in Four pdMOOCs (n=13961)

Available Data		Consent Given		Consent not Given	
n	%	n	%	n	%
13879	99.41	12666	91.3	1213	8.7

The age of the participants ranged between 13 and 70 with a mean of 26.42 and standard deviation of 8.99. Table 3.3 shows the descriptive statistics for the age category of the participants.

Table 3.3. Descriptive Statistics for the Age Category of the Participants (n=12666)

Age	n	%
<18	1753	13.8
18-25	5594	44.2
26-35	3314	26.2
36-45	1460	11.5
46-55	453	3.6
56-65	88	.7
>66	4	.0
Total	12666	100

The number of female participants is 5709 (45.1%), and the number of male participants is 6957 (54.9%). Table 3.4 shows the gender distribution.

Table 3.4. Gender Distribution (n=12666)

Gender			
Female		Male	
n	%	n	%
5709	45.1	6957	54.9

The participants come from different educational backgrounds. When the education levels of the participants are examined, it was seen that the majority 71.2% (n=9012) of the participants are either university students or university graduates. Only .4% (n=46) of the participants have no formal education degree. Table 3.5 below shows education level distribution of the participants.

Table 3.5. Education Level Distribution (n=12662)

Education Background											
No Education		Primary School		Middle School		High School		University		Graduate	
n	%	n	%	n	%	n	%	n	%	n	%
46	.4	22	.2	224	1.8	1728	13.6	9012	71.2	1630	12.9

When the employment status of the participants is examined, it was seen that more than half of the participants (56.3%, n=7134) are currently not working. Table 3.6 shows employment status of the participants.

Table 3.6. Employment Status of the Participants (n=12666)

Position					
Not working		Employee		Employer	
n	%	n	%	n	%
7134	56.3	5116	40.4	416	3.3

The majority of the participants (65.9%, n=4325) did not have previous online learning experience. Only very few participants (1.3%, n=162) have disability. Table 3.7 presents previous online learning experience and disability status of the participants.

Table 3.7. Previous Online Learning Experience and Disability Status of the Participants (n=12666)

Previous OL Experience				Disability Status			
Yes		No		Yes		No	
n	%	n	%	n	%	n	%
4325	34.1	8341	65.9	162	1.3	12504	98.7

More than half of the participants (58.35%, n= 7391) are from the top 5 metropolitan cities of Turkey, which are İstanbul, Ankara, İzmir, Bursa, and Antalya. Table 3.8 below presents the city distribution of the participants.

Table 3.8. City Distribution of the Participants (n=12666)

City	n	%
İstanbul	2979	23.52
Ankara	2517	19.87
İzmir	1215	9.59
Bursa	395	3.12
Antalya	285	2.25
Rest	5275	41.65
Total	12,666	100

This study also had four sets of qualitative participants. The participants of the qualitative part of this study consisted of the learners who did not start the pdMOOCs, learners who did not complete the pdMOOCs, and learners who completed the pdMOOCs. Moreover, learners who caused intention-behavior gap, which is the gap between learners' course participation intentions and their subsequent behaviors in the course. Table 3.9 shows the demographics of the qualitative participants.

Table 3.9. Demographics of the Qualitative Participants

	Number of Learners	Gender		Age	
		Female	Male	M	SD
Non-Starters	215	96(44.7%)	119(55.3%)	29.79	10.12
Non-Completers	188	61(32.4%)	127 (67.6%)	28.96	10.53
Completers	141	59 (41.8%)	82 (58.2)	33.35	12.14
Intention-Behavior Gap	160	67 (41.9%)	93 (58.1)	30.47	12.06

3.4 Data Collection Instruments

The data of this study was collected through quantitative and qualitative data collection instruments. They are explained in detail in the following sections.

3.4.1 Quantitative Stage

In the quantitative stage, five instruments were administered to the participants. These instruments are Online Learning Readiness Scale, Intention Survey, Perceived Learning Scale, Computer System Usability Questionnaire Short Version (T-CSUQ-SV), and Instructional Materials Motivation Survey's (IMMS) Satisfaction Dimension. These instruments can be found in Appendix A.

3.4.1.1 Demographic Information

The demographics of the participants were collected by an online form including age, gender, education level, disability status, previous online learning experience, working status, city, and country.

3.4.1.2 Online Learning Readiness Scale

The Scale of Online Learning Readiness was developed for measuring college students' readiness for online learning by Hung et al. (2010). The scale has 18 items in the 5-point Likert scale format which includes five categories as Strongly Disagree, Disagree, Neutral, Agree, and Strongly Agree. The instrument consists of 5 dimensions: (1) Computer/Internet self-efficacy (3 items), (2) Self-directed learning (5 items), (3) Learner control (3 items), (4) Motivation for Learning (4 items), and (5) Online communication self-efficacy (3 items). The minimum score can be gotten from the scale is 18 whereas the maximum score is 90. The scale was adapted into Turkish language by Yurdugül and Sırakaya (2013), and they carried out a study of validity and reliability for the Online Learning Readiness Scale. The adapted scale has the same factor and item structure with the original one. The scale is provided in Appendix A. This readiness scale has been used because there was no online readiness scale developed particularly for MOOCs. Moreover, this scale was more current at the time and relatively short for assessing dimensions of online learning (Demir-Kaymak & Horzum, 2013). Long measurement instruments could damage the nature of MOOCs as they could create entry barriers for MOOCs when learners feel tired of filling in the instruments. Several instruments have been developed to measure readiness with different dimensions in the literature. However, they did not include all necessary dimensions of online learning. Therefore, within the scope of this study, readiness will be measured through 5 dimensions which are critical to online learning.

The confirmatory factor analysis (CFA) was done with 8974 learners to assess the model fit and factor structure of Online Learning Readiness Scale in the current study. Before conducting CFA, its assumptions were checked. CFA requires sample size and missing data, normality and linearity, and outliers assumptions (Tabachnick & Fidell, 2013). The data of this study include a large number of observations so that the sample size assumption was met. The data did not include any missing data. Univariate normality was assessed checking skewness and kurtosis values, and the related histograms. Skewness values were between -.444 and -1.504, and kurtosis values were between .336 and 4.991. These values do not indicate a severe non-normal distribution (Kline, 2016). Multivariate normality was evaluated using Mardia's test. The result was significant ($p < .05$), and this assumption was not met. Multivariate outliers were assessed using Mahalanobis and Cook's distances. Based on the results, 14 observations showing serious evidence of being outliers were excluded from the data. As a result of not meeting the multivariate normality assumption, CFA was conducted using two estimation methods which are ML (Maximum Likelihood) and MLR (Robust Maximum Likelihood). Although Maximum Likelihood Estimation (ML) produces more efficient and unbiased results when the multivariate normality assumption is satisfied, it is fairly robust to deviations from normality (Hair et al., 2014). However, the results of two estimations were reported. Both estimations produced a significant Chi-square result (□*2* (125) =4574.86, $p < .001$ and (□*2* (125)= 3526.03, $p < .001$). Chi-square values are sensitive to sample size as they are often significant in models with large samples. As a solution to this issue, different fit indices, which are independent of the influence of sample size, were developed (Tabachnick & Fidell, 2007). In addition to Chi-square, the model fit indices which are RMSEA (Root Mean Square Error of Approximation), CFI (Comparative Fit Index), GFI (Goodness of Fit Index), TLI (Tucker Lewis Index), and SRMR (Standardized Root Mean Square Residual) were checked.

In CFA with maximum likelihood estimation, the item factor loadings, which are also standardized regression weights, were found between 0.421 and 0.815, and all of them were significant ($p < .05$). In CFA with robust maximum likelihood estimation, the item factor loadings were found between .421 and .815, and all of them were significant ($p < .05$). Overall, the model fit indices obtained from ML and MLR estimations indicated acceptable model fits. Table 3.10 presents the model fit indices obtained in the original study, the adaptation study, and in the current study.

Table 3.10. Model Fit Indices of Online Learning Readiness Scale

Model Fit Indices	Original Study	Turkish Adaptation	Current Study	
			ML	MLR
RMSEA	0.050	0.074	.063	.055
CFI	0.99	0.94	.925	.924
GFI	0.95	0.94	.944	-
TLI	-	-	.908	.907
SRMR	0.043	-	.044	.043

In order to provide more validity evidence, an Independent Samples t-Test was conducted to compare online learning readiness scores of learners who have previous online learning experience and who do not. The results of the analysis showed that there was a significant mean difference between Computer/Internet self-efficacy ($t(8972)= -26.35$, $p < .05$, Cohen's $d= .58$), Self-directed learning ($t(6485.35)=-9.99$, $p< .05$, Cohen's $d= .22$), Learner control ($t(8972)=-11.96$, $p < .05$, Cohen's $d= .26$), Motivation for learning ($t(5951.45)= -14.99$, $p < .05$, Cohen's $d= .33$), and Online communication self-efficacy ($t(6372.03)= -13.25$, $p < .05$, Cohen's $d= .29$) scores of the learners who have previous online learning experience and who do not.

The internal consistency of the dimensions of the Online Learning Readiness Scale was checked via Cronbach's alpha. In the current study, Cronbach's alpha values were found between .589 and .786, which shows enough evidence of internal consistency except for the Learner control dimension. The dimension Learner control has the lowest Cronbach's alpha value (.589). This can be because of the number of items Learner control dimension includes. Table 3.11 shows Cronbach's alpha values.

Table 3.11. Reliability of Online Learning Readiness Scale

Dimensions	Item Number	Original Study	Turkish Adaptation		Current Study
		Composite Reliability	Composite Reliability	Cronbach's alpha	Cronbach's alpha
Computer/Internet self-efficacy	3	.736	.92	.92	.773
Self-directed learning	5	.871	.84	.84	.749
Learner control	3	.727	.85	.85	.595
Motivation for learning	4	.843	.81	.80	.738
Online communication self-efficacy	3	.867	.91	.91	.785

3.4.1.3 Intention Survey

Participant intent of course participation was obtained by a survey including 4 items provided by Reich (2014). The items include "Here to browse the materials, but not planning on completing any course activities.", "Planning on completing some course activities, but not planning on earning a certificate.", "Planning on completing enough course activities to earn a certificate.", and "Have not decided whether I will complete any course activities.". The items were translated into Turkish by the researcher, and they were checked by an expert from English Language Teaching Department. Intention survey is provided in Appendix A.

3.4.1.4 Instructional Materials Motivation Survey (IMMS)

Instructional Materials Motivation Survey (IMMS) was developed by John Keller for the purpose of measuring learner reactions to self-directed instructional materials, and the current version was published by Keller (2010). The IMMS consists of 36 items in the 5-point Likert scale format which includes five categories as Not true, Slightly true, Moderately true, Mostly true, and Very true. The instrument has 4 dimensions: (1) Attention (12 items), (2) Relevance (9 items), (3) Confidence (9 items), and (4) Satisfaction (6 items). The instrument was adapted into Turkish language by Kutu and Sözbilir (2011); however, their adaptation omitted many items from the instrument, and the items of the instrument were gathered under two factors instead of four factors. Therefore, the instrument adapted into Turkish language by Dinçer and Doğanay (2016) was used in this study. The adapted instrument has the same factor structure, but three items were omitted from the adapted instrument. However, satisfaction dimension was the same as the original instrument. As the IMMS allows to use and score each subscale independently (Keller, 2010), only satisfaction dimension was used in this study. The minimum score can be gotten from the satisfaction dimension is 6 whereas the maximum score is 30. The survey is provided in Appendix A. Briefly, IMMS is a situation-specific instrument, and it is not a trait- or construct-type measure. Moreover, it does not intend to measure generalized levels of motivation (overall trait motivation) toward school learning. The goal of the instrument is to measure how motivated students are in a particular course and to measure reactions to self-directed instructional materials with respect to learners' motivational attitudes in the context of virtually any delivery system based on the four components of ARCS (Attention, Relevance, Confidence, Satisfaction) model. This instrument can be used with learners studying in different educational levels and adults in non-collegiate settings (Keller, 2010). One of the sub-dimensions of situational motivation which is satisfaction, particularly course instructional material satisfaction from the view of motivation and motivational aspects of instructional events, was used in this study not to cause participant fatigue while filling in the instruments, and it was appropriate to measure learners' satisfaction regarding course instructional materials.

The confirmatory factor analysis (CFA) was conducted with 5145 learners to assess the model fit and factor structure of Satisfaction dimension in the current study. Before conducting CFA, its assumptions were checked. The data of this study include a large number of observations so that the sample size assumption was met. The data did not include any missing data. Univariate normality was assessed checking skewness and kurtosis values, and the related histograms. Skewness values were between -1.200 and -1.540, and kurtosis values were between 1.260 and 2.717. These values do not indicate a severe non-normal distribution. Multivariate normality was evaluated using Mardia's test. The result was significant ($p < .05$), and this assumption was not met. Multivariate outliers were assessed using Mahalanobis and Cook's distances. Based on the results, there was no observations which can be considered serious outliers. As a result of not meeting the multivariate normality assumption, CFA was conducted using two estimation methods which are ML (Maximum Likelihood) and MLR (Robust Maximum Likelihood). The results of two estimations were reported. Both estimations produced a significant Chi-square result (χ^2 (8) = 228.637, $p < .001$ and (χ^2 (8)= 96.675, $p < .001$) . In addition to Chi-square, the model fit indices which are RMSEA (Root Mean Square Error of Approximation), CFI (Comparative Fit Index), GFI (Goodness of Fit Index), TLI (Tucker Lewis Index), and SRMR (Standardized Root Mean Square Residual) were checked.

In CFA with ML estimation, the item factor loadings, which are also standardized regression weights, were found between .833 and .873, and all of them were significant ($p < .05$). In CFA with MLR estimation, the item factor loadings were found between .515 and .873, and all of them were significant ($p < .05$). After checking the modification indices, the error terms of item2 and item3 were covaried. Overall, the model fit indices obtained from ML and MLR estimations yielded satisfactory model fits. Table 3.12 presents the model fit indices obtained in the adaptation study and in the current study.

Table 3.12. Model Fit Indices of the IMMS and Satisfaction Dimension

Model Fit Indices	Original Study*	Turkish Adaptation	Current Study (Satisfaction Dimension)	
			ML	MLR
RMSEA	-	.067	.073	.046
CFI	-	.98	.992	.992
GFI	-	.81	.985	-
TLI	-	-	.985	.985
SRMR	-	.04	.013	.012

*Keller (2010) reported that the validity of the IMMS was checked through two sets of instructional materials on behavioral objectives.

The internal consistency of the satisfaction dimension was checked via Cronbach's alpha. In the original study, Cronbach's alpha value was .92. In the Turkish adaptation, Cronbach's alpha value was .88, and it was .94 in the current study. All values indicated enough evidence of reliability. Table 3.13 shows Cronbach's alpha values.

Table 3.13. Reliability of the IMMs and Satisfaction Dimension

Dimensions	Item Number	Original Study (Cronbach alpha)	Turkish Adaptation (Cronbach alpha)	Current Study (Cronbach alpha)
Satisfaction	6	.92	.88	.94

3.4.1.5 Perceived Learning Instrument

In order to measure learners' perceived cognitive learning after taking the MOOCs, perceived learning instrument, which is a one self-report question of participants' learning, first used by Richmond, Gorham, and McCroskey (1987) was used in this study. Learners were asked to answer one question "On a scale of 0 to 9, how much did you learn in this course, with 0 meaning you learned nothing and 9 meaning you learned more than in any other class you've had?'' (Richmond et al., 1987, p. 581). In this study, the item was revised as the following: "When you evaluate on a scale of 0 to 9, how much do you think you learned in this course? (0 meaning I think I learned nothing - 9= I think I learned a lot)''. Rovai (2002) stated that it is not possible to calculate the internal consistency reliability estimates for perceived cognitive learning instrument because the instrument is a single-item scale. However, the test-retest reliability after a 5-day period was reported by McCroskey, Sallinen, Fayer, Richmond, and Barraclough as .85 in a study conducted with 162 adult learners (as cited in Rovai, 2002). In this study, perceived learning instrument was sent to learners using the online survey service MetuSurvey in order to evaluate the test-retest reliability. The Pearson's correlation coefficient with 102 learners was found as .806, which indicates good reliability.

In practice, the constructs are measured using multi-item scales; however, using single items has some advantages. Multi-item scales capturing single phenomena might lead to respondent fatigue, and the use of multi-item scales might be sensitive to common method variance, where intercorrelations among items occur because of the format instead of the underlying psychological construct (Gardner, Cummings, Dunham, & Pierce as cited in Greene et al., 2015). Especially in online contexts like MOOCs, multi-item scales might increase the likelihood of respondent fatique, and in some cases, a well-written single-item instrument can measure psychological phenomena as multi-item instruments do especially when the construct is obvious to participants (Greene et al., 2015). Moreover, Cronan, Léger, Robert, Babin, and Charland (2012) showed that self-assessed learning measure results did not differ from objective measures of learning.

In a variety of subjects, there are available standardized tests, yet they are limited to a single subject area. Therefore, these tests are not useful across disciplines. Moreover, grades have been used as an indicator of cognitive learning by some researchers, yet those grades are subject to be influenced by some factors such as attendance, participation or writing skills in addition to cognitive learning (Richmond et al., 1987). Regarding validity issue, none of the cognitive learning measurements is inherently superior to each other. Each of the methods approaches cognitive learning in a distinct way, and they might capture unique information about cognitive learning (Richmond et al., 1987). As there was the absence of objective measure of cognitive learning in this study, a subjective measure was used being aware of that any subjective measure can be confounded (Richmond et al., 1987), and also it is logical to expect learners to estimate the amount they learn in a course with acceptable accuracy.

3.4.1.6 Computer System Usability Questionnaire Short Version (T-CSUQ-SV)

The Computer System Usability Questionnaire (CSUQ) was originally developed for measuring perceived user satisfaction with computer systems by Lewis (1995). The CSUQ was adapted adapted into Turkish language by Erdinç and Lewis (2013), and they carried out a study on psychometric evaluation of the T-CSUQ. The adaptation has the same factor structure with fewer items. The adapted questionnaire T-CSUQ-SV assesses the usability of computer systems. While the CSUQ has 19 items, the T-CSUQ has 13 items in the Likert scale format which includes seven categories from Strongly Agree to Strongly Disagree. The original instrument was coded from 1 (Strongly Agree) to 7 (Strongly Disagree), but it was coded as 1 (Strongly Disagree) to 7 (Strongly Agree) in this study in order to make the questionnaire parallel with other measurement instruments used in this study. The questionnaire consists of 3 dimensions: (1) System usefulness (7 items), (2) Information quality (3 items), and (3) Interface quality (3 items). Furthermore, the questionnaire has one item for overall satisfaction. The questionnaire is provided in Appendix A.

The confirmatory factor analysis (CFA) was conducted with 864 learners to assess the model fit and factor structure of T-CSUQ-SV in the current study. Before conducting CFA, its assumptions were checked. The data of this study include a large number of observations so that the sample size assumption was met. The data did not include any missing data. Univariate normality was assessed checking skewness and kurtosis values, and the related histograms. Skewness values were between -.725 and -2.203, and kurtosis values were between -.027 and 5.596. These values do not indicate a severe non-normal distribution. Multivariate normality was evaluated using Mardia's test. The result was significant ($p < .05$), and this assumption was not met. Multivariate outliers were assessed using Mahalanobis and Cook's distances. Based on the results, 3 observations which can be considered serious outliers were omitted from the data. As a result of not meeting the multivariate normality assumption, CFA was conducted using two estimation methods which are ML (Maximum Likelihood) and MLR (Robust Maximum Likelihood). The results of two estimations were reported. Both estimations produced a significant Chi-square result (□*2* (49) = 377.265, $p < .001$ and (□*2* (49)= 287.397, $p < .001$) . In addition to Chi-square, the model fit indices which are RMSEA (Root Mean Square Error of Approximation), CFI (Comparative Fit Index), GFI (Goodness of Fit Index), TLI (Tucker Lewis Index), and SRMR (Standardized Root Mean Square Residual) were checked.

In CFA with ML estimation, the item factor loadings, which are also standardized regression weights, were found between .513 and .944, and all of them were significant ($p < .05$). In CFA with MLR estimation, the item factor loadings were found between .509 and .944, and all of them were significant ($p < .05$). After checking the modification indices, the error terms of item3 and item6 under the same factor were covaried. Overall, the model fit indices obtained from ML and MLR estimations yielded acceptable model fits. Table 3.14 presents the model fit indices obtained in the adaptation study and in the current study.

Table 3.14. Model Fit Indices of the T-CSUQ-SV

Model Fit Indices	Original Study*	Turkish Adaptation*	Current Study	
			ML	MLR
RMSEA	-	-	.088	.074
CFI	-	-	.958	.947
GFI	-	-	.934	-
TLI	-	-	.944	.930
SRMR	-	-	.065	.063

* In the original study and Turkish adaptation, Exploratory Factor Analysis was conducted. The factor structure was not validated with Confirmatory Factor Analysis.

The internal consistency of the dimensions of the T-CSUQ-SV) was checked via Cronbach's alpha coefficient. In the original study, Cronbach's alpha coefficient values were found as .93, .91, and .89 for the dimensions, and .95 for the overall questionnaire. In the Turkish adaptation, Cronbach's alpha coefficient values were found as .88, .71, and .73 for the dimensions, and .85 for the overall questionnaire. In the current study, Cronbach's alpha coefficient values were found as .90, .80, and .88 for the dimensions, and .94 for the overall questionnaire. In brief, the scores obtained from the CSUQ and T-CSUQ-SV show enough evidence of internal consistency. Table 3.15 shows Cronbach's alpha values.

Table 3.15. Reliability of the CSUQ and T-CSUQ-SV

Dimensions	Item Number	Original Study (CSUQ)	Turkish Adaptation (T-CSUQ-SV)	Current Study (T-CSUQ-SV)
System usefulness	6	.93	.88	.90
Information quality	3	.91	.71	.80
Interface quality	3	.89	.73	.88
Overall	13	.95	.85	.94

3.4.1.7 Learner Motivation for Enrollment

Learner motivation for enrollment was assessed by the Online Learning Enrollment Intentions (OLEI) scale developed by Kizilcec and Schneider (2015), the items adapted from Egloffstein and Ifenthaler's (2017) study, and the items written for this study. The items were translated into Turkish language and checked by a language expert.

OLEI scale aims to describe learner motivations about learners' enrollment intentions to MOOCs. In this study, learners were asked about their motivations after they completed a MOOC to explore their motivations for completion. OLEI scale has 13 items; however, five items such as "take with others", "meet new people", or "improve English" were not used in this study, and they were excluded for not being related to the nature of the MOOCs investigated in this study. In total, eight items from this scale were used and the item "fun and challenge" were splitted into two separate items in order to make these items clear for the learners. The items are in the form of dichotomous scale with options “Applies” and “Does not apply”.

One item was (on the job learning purpose) adapted from Egloffstein and Ifenthaler’s (2017) study on employee perspectives on MOOCs for workplace learning as the learner cohort in Bilgeİş MOOCs includes employees. The item format was kept as dichotomous scale with options “Applies” and “Does not apply”. Furthermore, four items were written for this study, which are learning a new topic, increasing my current knowledge, socializing, and curiosity as the MOOC format was a novel learning approach for the learners. The item format was used as dichotomous scale with options “Applies” and “Does not apply” in order to make all the answer options parallel to each other.

3.4.1.8 System Logs

The following system logs were obtained from Bilgeİş’s Moodle system and its database:

-The number and list of learners enrolled in each pdMOOC

-The number and list of learners who completed the pdMOOCs

-The number of all activities done in the courses

-The number of course views (access frequency) for each leaner

-The number of clicks in each pdMOOC

-Total time spent on the pdMOOCs for each learner

-Days stayed on the course as day difference between the first login and last login for each course

-The number of quiz attempts

3.4.2 Qualitative Stage

Four sets of open ended questions were prepared for non-starters, non-completers, completers, and learners causing intention-behavior gap by the researcher based on relevant literature to gather qualitative data from the participants. Since it was very difficult to reach pdMOOC learners in person or via telephone, open ended questions were sent to the participants to explore their enrollment motivations, reasons of non-start, reasons of non-completion, reasons of completion, online learning readiness, course satisfaction, factors affecting learning, portal usability, and perceived benefits obtained from the course, and the reasons behind intention-behavior gap. Open-ended questions were also used because of clearness, simplicity, and understandability.

For non-starters, two open-ended questions focusing on their enrollment motivation and the reason why they did not start the course were prepared. For non-completers, two open-ended questions focusing on their enrollment motivation and the reason why they did not complete the course. For completers, six open-ended questions focusing on course completion, online learning readiness, course satisfaction, factors affecting learning, portal usability, and perceived benefits obtained from the course were prepared. For intention-behavior gap, four questions focusing on the gap between learner intentions and their subsequent behaviors were prepared for inclined actors, inclined abstainers, disinclined actors, and disinclined abstainers. The format and the content of the qualitative instruments were reviewed by a subject matter expert and PhD candidates in the field Instructional Technology. The open ended questions are given in Appendix B.

3.4.3 Instruments Summary

Table 3.16 below shows the variables used in this study and the instruments used for data collection.

Table 3.16. Variables and Instrument Association

Variables	**Instrument**
Participant Demographics	Demographics Questions
Online Learning Readiness	The Scale of Online Learning Readiness (Hung et al., 2010) Turkish adaptation (Yurdugül & Sırakaya, 2013) Dimensions: Computer/Internet self-efficacy (3 items), Self-directed learning (5 items), Learner control (3 items), Motivation for learning (4 items), and Online communication self-efficacy (3 items)
Intention	Intention Survey by Reich (2014)
Course Satisfaction	Instructional Materials Motivation Survey (IMMS) (Keller, 2010) Turkish adaptation (Dinçer & Doğanay, 2016) Dimensions: Attention, Relevance, Confidence, and Satisfaction Satisfaction Dimension (6 items)
Perceived learning	One self-report question of participants' learning (Richmond et al., 1987)
Enrollment Motivations of Course Completers	Online Learning Enrollment Intentions (OLEI) scale (Kizilcec & Schneider, 2015) – Eight items One item (Egloffstein & Ifenthaler, 2017) Four additional items written by the researcher
System Usability Perceptions	Computer System Usability Questionnaire (Lewis, 1995) Turkish-Computer System Usability Questionnaire Short Version (T-CSUQ-SV) (Erdinç & Lewis, 2013) Dimensions: Systems usefulness, Information quality, Interface quality, Overall satisfaction
Course Behaviour Patterns and Course Completion	Participant Logs on the pdMOOCs recorded by Bilgeiş Portal
Enrollment Motivations of Non-starters and Non-completers Reasons of Non-start, Non-Completion, and Completion Intention-behavior Gap Online Learning Readiness Course Satisfaction Factors Affecting Learning Portal Usability Perceived Benefits from Courses	Open-ended questions developed by the researcher

3.5 Context of the Study

3.5.1 Bilgeİş Project

Bilgeiş Project ("Capacity Development of Employees and Employers via Information and Communication Technologies") is a project supported by European Union and Turkish government which aims to encourage the adaptability of small medium enterprise (SME) employers and employees through the use of ICT tools and services. The purpose of the project is to establish an online learning infrastructure including ICT and soft skill related subjects, to develop different methods for teaching software and program development according to the different needs and sector/segments of the labour market, and to develop an online learning portal which provides massive online open course infrastructure for anyone to follow interactive courses in order to improve their capacities in e-business, graphic design, web site development, application development etc. The objectives of the project are to create an open, accessible and user-friendly online learning platform, designed with sophisticated tools to support adaptability of workers and employers to the new social and economic structure, and to improve the adaptability of employees and employers through investing with ICT services and tools in human capital more. Courses are provided for SME employers and employees in the form of online courses on the portal to increase their capacity, professional competence, job competencies, and the chances of employability after gaining technical and social skills. The total duration of the project was between December, 2015 and August, 2017 covering 20 months. In order to support employers' and employees' participation in online courses, protocol agreements have been signed with selected stakeholders to establish a useful network with companies from different sectors. By participating in these online courses, SME employers and employees will gain new knowledge, skills, and expertise for their personal and professional (vocational) development. Also, these online courses will help to increase the capacity and innovation potential of the current SME employees or future ones.

3.5.2 BilgeİŞ Learning Portal

Bilgeİş Learning Portal was developed within the scope of Bilgeİş Project mentioned above as an online learning environment which is simply a platform independent learning management system (Moodle), accessible from any device with any capability, free of charge, and open for anyone. Anyone who is interested in taking online courses and has Internet access can use Bilgeİş Learning portal and benefit from the open courses.

Figure 3.3. Bilgeİş Learning Portal Main Page

The portal hosts 100 massive open online courses (MOOCs) which were determined based on the need analysis focused on the ICT needs of SME employees and employers, best practice, and SWOT analyses (Cagiltay & Esfer, 2016; Esfer & Cagiltay, 2018). As the courses focus on professional development, they were called as pdMOOCs (MOOCs for Professional Development). Of the courses, 80 are ICT related, and 20 are soft skill related courses. The portal and the courses were developed based on accessibility, where learners can view the subtitles of the course lectures.

3.5.3 General Properties of Bilgeİş Courses

All pdMOOCs on bilgeis.net portal focus on development of ICT-related skills or soft skills of the learners. Therefore, they aim to help employees, employers and anyone who would like to improve their ICT competencies and capacities as well as their soft skills. Particularly, the courses were divided into two categories: technical and social skills. During design and development of courses, all of the courses were reviewed and approved by the experts in Instructional Technology and ICT after evaluating all dimensions (pedagogical and technical) to ensure the quality of the courses.

The language of the courses is in Turkish unlike other famous and favourite MOOCs provided by prestigious universities. In this way, the language barrier is removed to provide access to the courses.

The design and development of the courses were based on adult learning theory, informal learning, procedural learning, and minimalist learning. In the ICT courses, participants are provided with the steps of the procedures and then they have a chance to try and practice the steps through interactive screens. In this way, they are able to improve their competence. Since the target group of Bilgeİş Project are employees and employers who do not have time for formal education, informal learning is more likely to meet their needs.

The nature of MOOCs requires active learners and relies heavily on interaction between content and learners. However, there is no presence of instructors in Bilgeiş MOOCs, but the course environment supports learner-content and learner-learner interaction. Also, there are online course assistants assigned to the courses, and learners can ask any questions related to the course content and the portal. These course assistants also grade the assignments, if any required in the course, submitted by learners.

All of the courses are provided free of charge including the certificates and in this way, they are completely open. The courses are self-paced courses, meaning that learners can take the courses anytime and anywhere they want, and they can always proceed to the next section in the course lectures. Due to the fact that, adults have limited time for participating in training, the course durations and requirements (workload, assignments etc.) were designed accordingly covering shoert course length (approx. 3 weeks).

Briefly, pdMOOCs on bilgeis.net portal are:

- Free of charge including the certificates
- In Turkish language
- Auto-graded exams
- Course assistant-graded assignments and/or projects
- Short length (approx. 3 weeks)

3.5.4 General Structure of Bilgeİş Courses

As mentioned before, there are 100 courses on Bilgeİş Learning portal. Majority of the courses are in the form of a single course, but some courses have follow-up courses with increasing difficulty and content coverage. For example, basics of web design course has follow-up courses as HTML5&CSS3- 1, HTML5&CSS3-2, and HTML5&CSS3-3 proceeding from beginner to advanced level. However, the course structure is mostly similar for all courses. These are explained below.

Course Introduction Page: The necessary information regarding the course content as a summary, and a short motivating video if available for some courses are provided for learners to inform them about the course on the course introduction page. When they click “Go to the course” button, they are directed to the course registration page.

Figure 3.4. Course Introduction Page

Course Registration Page: On course registration page, learners can click "Enroll me in this course" button and can enroll in the course. After enrolment, they receive an email automatically sent in the name of the course assistant including welcome message from the portal.

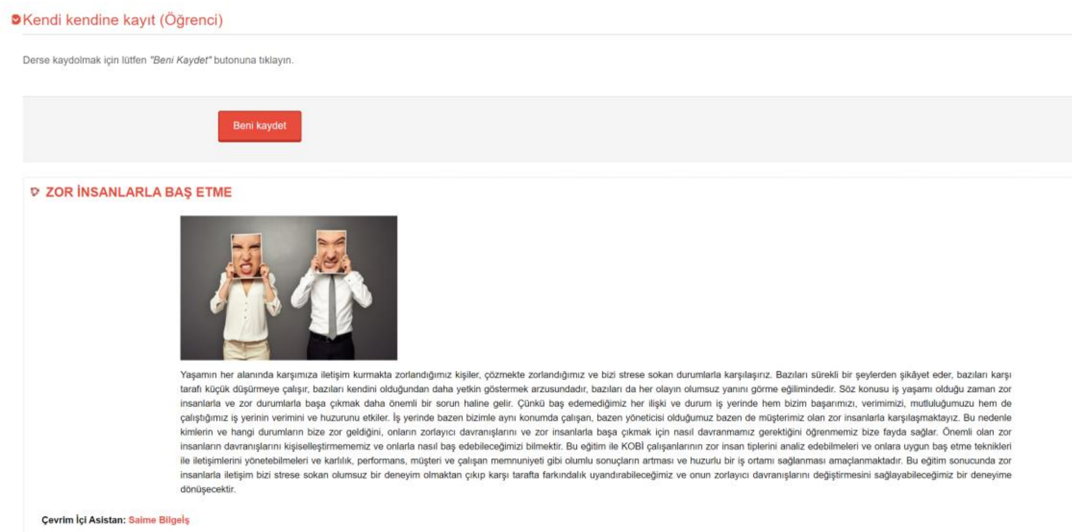


Figure 3.5. Course Registration Page

Course Page: Course page consists of course entrance page, weekly contents in the form of course video lectures, exams, assignments, and project assignments, and course forum.

Course Entrance Page: On the course entrance page, learners see course definition and summary, course syllabus, and course dictionary. Course syllabus includes the information regarding learning outcomes, course content topics, assessment policy, requirements for statement of accomplishment, estimated required time to finish the course, software used in the course if any exists, and prerequisites if any exist, etc.

Figure 3.6. Course Entrance Page

Figure 3.7. Course Entrance Page (Continued)

Weekly Contents: The course content is divided into three, four or five parts in the form of weekly contents which includes course lectures, exams, assignments, and project assignments. In order to help learners achieve the learning objectives of the course, course lectures are divided into meaningful parts and presented through multimedia (video, interactive video, animation, simulation, video with human narrator, screen recordings etc.) from easy to more difficult in a way that they will be suitable for all learners with different characteristics and skill levels. In order to promote and maintain accessibility, all audio-visual materials have subtitles and the transcripts are provided for learners. Although the course content is presented in the form of weekly contents, learners can finish the courses anytime. Learners are free to proceed from one screen to another as all screen designs are based on self-paced learning. Course behavior patterns of learners are tracked and kept by the portal. Parallel to this, the percentage of completion is shown to learners on course lectures.

Figure 3.8. Weekly Contents

All of the courses include assessments in the form of formative and summative assessments. Learners have formative assessments throughout the course lectures in the form of pop-up questions, multiple choice questions or matching questions which are distributed over the course lectures. After their responses to the questions, learners are provided with immediate feedback.

At the end of each weekly content, learners have summative assessments to assess their understanding in the form of exams including close ended questions such as multiple choice and true/false question types. After their responses to close ended questions, learners are graded and receive immediate feedback automatically. There is no limit for learners to answer the exams as they are allowed to attempt to answer exams as many times as they want. Moreover, based on their nature, some technical courses include summative assessments in the form of assignments and/or project assignments requiring learners to demonstrate their understanding, competences, and skills. Assignments and project assignments require learners to upload a file. These assignments are graded by course assistants, and course assistants provide the necessary feedback for learners. There is a limit for learners to upload the assignments, which is twice.

Course Forum: The portal provides learners with a discussion forum environment in each course for the purpose of asking questions, sharing ideas, socializing, communicating, and learning from other learners.

Figure 3.9. Forum Page

Certificate (Statement of Accomplishment): Learners can see their progress in the courses using the progress bar and grades sections. In order to receive a certificate in the form of a statement of accomplishment, learners are required to succeed in 70% of the course summative assessments; that is, their grade average must be 70 or more over 100. A statement of accomplishment is created by the portal automatically when learners meet the requirements and they can download it in pdf format or they can add it to their LinkedIn accounts using the interface on the portal.

3.5.5 Current Numbers about the Portal

By 18.08.2020, the current numbers about the portal are as follows:

Table 3.17. Current Numbers

Categories	n
Total Registration	215,100
Total Certificate	137,280
Registration to more than one course	88,282
Receiving more than one certificate	25,912
Average course completion time	25 days 9 hours 30 minutes
Employee learners	75,198
Employer learners	8,038
Rest of the learners	131,864

The most popular 5 courses are Personal Stress Management, Leadership, Dealing with Problematic People, Python Programming I followed by General Occupational Health and Safety, all of which have more than 15,000 learners registered. Table 3.18 below presents the most popular five courses and the number of registrations.

Table 3.18. Most Popular Five Courses and Registration Numbers

The most popular 5 courses	Number of registrations
Personal Stress Management	22,627
Leadership	20,350
Dealing with Problematic People	19,527
Python Programming I	19,369
General Occupational Health and Safety	15,007

3.5.6 Course Structure and Content of the pdMOOCs Used in the Study

Dealing with Problematic People, Phyton Programming I, Visual Design Principles, and Database Managament with MS Access pdMOOCs were designed and developed in the same way. The courses were structured to include course introduction page with course explanation, course syllabus, and course dictionary, video lectures, exams, and/or assignments and project assignments.

The aim of Dealing with Problematic People course is to enable SME employees to recognize problematic people they encounter everyday inside and outside their work places and to enable them to deal with these problematic people more effectively using the correct methods. This pdMOOC includes course introduction, video lectures, and exams. Table 3.19 below explains the course structure of Dealing with Problematic People pdMOOC.

Table 3.19. DPP pdMOOC Course Structure

Structure	Details
Course Introduction	Course explanation – Course syllabus – Course dictionary
Video Lectures	Video1= 23 screens, Video2=16 screens
Exams	Exam1=10 MC questions, Exam2=10 MC questions (All with 4 answer options)
Assignments	No assignment
Project Assignments	No project assignment

The aim of Python Programming I course is to provide the learners with general knowledge on Python Programming features, versions of Python Programming Language, and installation of development environment on Windows and Linux operating systems as well as writing some code portions in Python. This pdMOOC includes course introduction, video lectures, exams, assignment, and project assignment. Table 3.20 below explains the course structure of Python Programming I pdMOOC.

Table 3.20. . PP-I pdMOOC Course Structure

Structure	Details
Course Introduction	Course explanation – Course syllabus – Course dictionary
Video Lectures	Video1= 8 screens, Video2= 14 screens, Video3= 16 screens, Video4= 14 screens
Exams	Exam1=8 MC questions, Exam2=8 MC questions, Exam3=8 MC questions (All with 4 answer options)
Assignments	Assignment1= Setting up Python IDE and uploading the proof of installment
Project Assignments	One project assignment on writing an introductory level code and uploading the codes

The aim of Visual Design Principles course is to provide the learners with the basic knowledge of fundamentals of visual design principles in order to create the most appropriate visual design for a website or a poster. The knowledge obtained will enable learners to have detailed knowledge about the transfer of content to design's target audience by appropriate color use, color harmony, text, and typography. This pdMOOC includes course introduction, video lectures, exams, and assignment. Table 3.21 below explains the course structure of Visual Design Principles pdMOOC.

Table 3.21. VDP pdMOOC Course Structure

Structure	Details
Course Introduction	Course explanation – Course syllabus – Course dictionary
Video Lectures	Video1= 21 screens, Video2= 19 screens, Video3= 21 screens, Video4= 14 screens
Exams	Exam1=10 MC questions, Exam2=10 MC questions, Exam3=10 MC questions (All with 4 answer options)
Assignments	Assignment1= Finding 3 improper designs and uploading them and the explanations of the improper designs Assignment2= Finding 4 different designs based on different color usage and uploading them and the explanations of color usage Assignment3= Finding 3 improper designs which do not obey the use of text and typography principles and uploading them and the explanations of why they do not obey aforementioned principles
Project Assignments	No project assignment

The aim of Database Management with MS Access course is to provide information about how to use Ms Access for creating databases and entity-relationship model. This pdMOOC includes course introduction, video lectures, exams, assignment, and project assignment. Table 3.22 below explains the course structure of Database Management with MS Access pdMOOC.

Table 3.22. DMMA pdMOOC Course Structure

Structure	Details
Course Introduction	Course explanation – Course syllabus – Course dictionary
Video Lectures	Video1= 18 screens, Video2= 36 screens, Video3= 35 screens
Exams	Exam1=4 MC questions + 2 T/F questions, Exam2=6 MC questions + 4 T/F questions, Exam3=5 MC questions + 6 T/F questions (All MC questions include 4 answer options)
Assignments	Assignment1= Creating a database and tables and connecting these tables together and uploading the screenshot of the result Assignment2= Creating two tables with related fields, adding records to this table, creating queries, forms and reports and uploading the screenshot of the result
Project Assignments	One project assignment on creating tables, queries, forms, and reports in MS Access

The syllabi of the courses are provided in Appendix C.

3.5.7 Course Assessment

Course assessment varies from one course to another. Multiple choice exams, assignments, and project assignments were used for assessment in the courses. Table 3.23 presents the course assessment criteria for four courses below.

Table 3.23. Details of Course Assessment

pdMOOCs	Exams			Assignments			Project Assignment
	E1	E2	E3	A1	A2	A3	
DPP (SS)	50%	50%	-	-	-	-	-
PP-I (TS)	20%	20%	20%	10%	-	-	30%
VDP (SS)	20%	20%	20%	10%	15%	15%	-
DMMA (TS)	15%	15%	15%	10%	15%	-	30%

Note: E: Exam, A: Assignment, SS: Soft Skill, TS: Technical Skill

3.6 Data Collection Procedures

Before starting this study, the necessary permission was obtained from Middle East Technical University Human Subjects Ethics Committee. The approval document is provided in Appendix E. This study covered the dates between August 2017 and

January 2019. The data collection process started with quantitative data and then finished with qualitative data collection.

Before applying the measurement instruments, a narrow pilot study was conducted with possible MOOC learners who were university students or graduates. The researcher read the measurement items to these individuals and asked them whether there was anything they did not understand or not clear to them. Also, the researcher requested some learners from different levels (an undergraduate student, graduate student, unemployed person, and employed person) to register for a course on the Bilgeİş Learning Portal and try the course although usability tests were conducted after the development of Bilgeİş Learning Portal and the courses provided by the portal. After ensuring there was no problems based on the responses of these learners, the measurement instruments were placed on the portal and also on the survey service. These were explained in the following paragraphs.

The data of this study were gathered from multiple sources at different times, and the measurement instruments were filled by the participants at different times (see Figure 3.2 in Research Method section). During registration for the MOOC portal, demographics and online learning readiness data were collected as well as the consent for the use of user data was taken during registration for Bilgeİş Learning Portal. In the beginning of each course, learner intention data were collected before participants started their enrolled courses. After finishing the course, course satisfaction and perceived learning data were collected from the course pages.

Learner motivations for enrolling in the pdMOOCs and reasons for not starting, not completing, and completing the pdMOOCs, the reasons behind intention-behavior gap, perceived usability, and qualitative data on online learning readiness, course satisfaction, perceived learning, portal usability, and perceived benefits obtained from the course were eollected using the survey service (METUSurvey http://metusurvey.metu.edu.tr) provided by the researcher's university. The researcher created survey forms on this service and e-mailed the form to course participants.

The system logs were obtained from the portal's database. These logs were used to calculate completion rates based on traditional and alternative approaches in pdMOOCs, to examine learners' behaviors based on their intentions, and the relationships between learners' behaviors and their course completion.

In brief, demographic information, online learning readiness, learner intent, course satisfaction, and perceived learning data were collected using the forms on the Bilgeİş Learning Portal, and the system logs were obtained from the portal's database. The rest of the data were collected using the survey service provided by the researcher's university. As a summary, Table 3.24 below shows the distribution of variables used in this study classified into Biggs 3P framework.

Table 3.24. Distribution of Variables based on Biggs 3P Framework

3P	Variables in this Study
Presage	Demographics as Entry Characteristics
	Learner Intention
	Readiness for Online Learning
Process	Patterns of Engagement
Product	Perceived Learning
	Course Satisfaction
	Completion/Noncompletion
	Perceived Usability

3.7 Data Preparation

The data for this study were downloaded from the Bilgeİş Learning Portal and from the university's survey service. First of all, the downloaded data were merged by using participants' usernames and e-mail addresses on the portal. In this way, the data files were constructed, and all of the data were combined for the necessary statistical analyses. Then the data were transferred into SPSS, and SPSS data files were created.

Next, data were checked against false numbers, and necessary numerical coding was done for the quantitative data separately as the portal and survey service saved the data in the form of strings. For example, the quantitative data for online learning readiness were saved as strongly disagree, disagree, neutral, agree, and strongly agree. These were converted to 1, 2, 3, 4, and 5 for as strongly disagree, disagree, neutral, agree, and strongly agree, respectively. As volunteer participation was required to fill in the instruments, learners had a chance not to give consent for the use of their data and leave the measurement instruments blank. For this reason, the data of learners who did not give consent were removed from the data. Then the missing information in the data was identified, and these learners were deleted from the data using listwise deletion. After this, the data were checked again for the patterns such as learners gave the same option to all the questions in the measurement instruments. These were inspected in detail, and the responses which seemed not valid were removed from the data. Before the analyses, all of the personal identifiers, such as firstname, lastname, email, and username, were removed from the datasets for anonymizing the data in order to ensure the confidentiality of learners and their responses. Overall, 8974 valid repsonses for online learning readiness scale, 5145 valid responses for course satisfaction and perceived learning, and 861 valid responses for perceived usability were obtained.

In addition, using the system logs, the participants were grouped into 3 distinct categories based on their behaviors on pdMOOCs: non-starters, non-completers, and completers. Non-starters are the participants who registered to a MOOC, but never carried out any activity on the MOOC. Non-starters were also double checked whether they filled in the intention survey or not. Non-completers are the participants who started to carry out some activity on a MOOC, but failed to satisfy the required criteria, and therefore, did not finish the MOOC. Completers are the participants who successfully completed a MOOC after satisfying the required criteria. Completion rates have been calculated based on traditional and alternative approaches, including based on starters and learner intentions. The analyses were explained in detail in the next heading, the Quantitative Data Analysis section. In addition, learner intention was measured using four categories as unsure, browse, audit, and complete. Correspondingly, using the system logs, learner behaviors were classified into four categories as no activity (learners never started the course, never carried out any activity on the course, and never received a certificate from the course), browsed (learners started the course, checked one activity, and did not receive a certificate), audited (learners started the course, completed more than one activity, and did not receive a certificate), and completed (learners started the course, completed necessary activities for course completion, and obtained a certificate). The analyses were explained in detail in the next heading, the Quantitative Data Analysis section.

The qualitative data obtained from the open-ended questions were downloaded from MetuSurvey, and they were converted to MS Excel files. As the data were collected using open-ended questions, there was no need to transcribe the data. The open ended responses were read for accuracy and completeness.

3.8 Data Analysis

3.8.1 Quantitative Data Analysis

In order to analyze quantitative data, descriptive, inferential, and non-parametric statistics were used. Particularly, mean, standard deviation, frequency, and percentage were used among the descriptive statistics. Multiple linear regression, binary logistic regression, and point biserial correlation analyses were used among the inferential statistics. Pearson's chi square test for independence were used among the non-parametric statistics. These quantitative statistical analyses were conducted using IBM SPSS version 20. Moreover, confirmatory factor analyses for the measurement instruments were conducted using AMOS Version 21 (for Maximum Likelihood Estimation) and Mplus Version 7.3 (for Robust Maximum Likelihood Estimation). The level of significance was taken as .05 in all of the statistical analyses. In order to ensure reliability of the scores obtained from the measurement instruments, Cronbach's alpha coefficient was calculated for the internal consistency of the scores. In the statistical analyses, sample size was not evaluated as there are enough data to satisfy the necessary sample size for the statistical analyses.

Completion rates based on traditional and alternative approaches in pdMOOCs were analyzed as the following. The number of participants was recorded on 26th April 2018. Since all of the courses are self-paced, the participants can enroll in, start, and complete the course anytime. Moreover, there are different definitions and measurements of drop out in the relevant literature. Open enrollment periods and use of course resources with no restrictions leads to challenges with regard to analysis and design in MOOCs. For this reason, the relevant time or times is required in these courses for longitudinal research with the constraint that the analysis results tend to rely on the specification of time/times (Ho et al., 2014). Perna et al. (2014) used a 2-month cutoff date for standardizing the length of time to count registrants as the majority of MOOCs are open for registration even if they run between specific dates. Halawa et al. (2014) located drop out as absence times exceeding 3 weeks due to the drops on multiple performance metrics. Wang et al. (2017) obtained the clickstream log data 3 months after the course was officially concluded. For these reasons, the completion and non-completion rates were calculated on 9th July 2018 after waiting for 75 days. In the literature, there are different time indicators for calculating these rates. Traditional completion rates based on enrolled participants were calculated via dividing the number of completers by the number of total registration. As an alternative to the traditional approach, completion rates based on starters were calculated via dividing the number of completers by the number of starters. As the second alternative to the traditional approach, learner intent was used. In the beginning of the courses, the participants were asked to answer an intention survey including four distinct participant intent categories: unsure, browse, audit, and complete. In order to calculate the completion rates based on intention, the number of completers was divided by the number of participants who stated their intention as complete. These were reported using descriptive statistics in the form of frequencies and percentages.

Learners’ behaviors based on their intentions were examined in order to reveal whether intention-behavior gap occurs in these pdMOOCs. Learner intention were collected using the intention survey. Learner behaviors were obtained from the system logs. After matching these intention and behavior data, learners were identified as inclined actors, whose consecutive behaviors were equal to their intention accordingly; inclined abstainers, whose consecutive behaviors were not equal to their intention; disinclined actors, who formed no intentions, but acted anyway; and disinclined abstainers, who formed no intentions, and did not act accordingly, based on their intentions and behaviors. Then the descriptive statistics in the form of frequencies and percentages were constructed. This was also explained in detail in the Results Section 4.3.

The predictors of course satisfaction and perceived learning in pdMOOCs were analyzed using multiple linear regression. To be more specific, online learning readiness dimensions and course satisfaction were used to predict perceived learning in Bilgeİş pdMOOCs conducting a hierarchical multiple regression analysis in order to reveal the effect of online learning readiness dimensions and course satisfaction seperately. Perceived usability dimensions were used to predict perceived learning in Bilgeİş pdMOOCs conducting a multiple regression analysis. Furthermore, online learning readiness dimensions were also used to predict course satisfaction in Bilgeİş pdMOOCs conducting a multiple regression analysis. According to Tabachnick and Fidell (2007), multiple linear regression analysis requires no outliers between the predictor variables and on the outcome variable, normality and homoscedasticity of the residuals, no multicollinearity between the predıctor variables, and independence of errors assumptions. Before MLR analysis, its assumptions were tested. The residuals were almost completely normally distributed as there were small but not very serious deviations in the data. The homoscedasticity of residuals was tested by looking at the scatterplot of the residuals, and there were no obvious patterns on the scatterplots. Normality and homoscedasticity of the residuals assumptions were provided in Appendix D. Variance inflation factor (VIF) values were used to examine whether there was muticollinearity between the predictor variables. All VIF values were less than 3, meaning that no multicollinearity were present between the predictor variables. The independence of errors was checked through checking Durbin-Watson values, and there was no problem regarding the independence of errors as well.

The relationships between learners' characteristics, online learning readiness, learners' intent, learners' course behaviors, and pdMOOC completion were analyzed using Pearson's Chi Square Test for Independence, Binary Logistic Regression, and Point Biserial Correlation analyses.

Pearson's chi square test for independence was conducted to examine the relatioships between learner characteristics (age, gender, education level, employment status, previous online learning experience), learners' intent, and pdMOOC completion. Pearson's chi square test requires variables to be measured at nominal or ordinal level. In order to conduct this test, data must include independent observations. That is, data from one subject should not be influencing the data obtained from another subject. Also, any cell of the data should include the lowest expected frequency to be 5 or more (Pallant, 2016). These were ensured in this study.

Binary logistic regression was conducted to examine whether online learning readiness dimensions predict course completion. Logistic regression is used to predict categorical outcomes using two or more categories, and predictor variables can be categorical or continuous, or they can be both present at the same time in the analysis (Pallant, 2016). Logistic regression requires linearity in the logit assumption (Field, 2009). The interaction of online learning readiness dimensions, which are the continuous variables, with their logarithmic transformations was checked for the linearity in the logit assumption. There was no significant interaction between online learning readiness dimensions and their logarithmic transformations ($p > .05$). The assumption of linearity in the logit was not violated for online learning readiness variable.

The relationships between learners' course behaviors, and pdMOOC completion was analyzed using point biserial correlation analysis. Point biserial analysis requires at least two sets of data, one of which is masured in interval or ratio scale and the other is measured in nominal scale. Its assumptions include normality and no outliers. For this reason, all the outliers removed from learners course behaviors data based on z values of the variables. In this way, no outlier assumption was met; however, the data did not distribute normally due to the fact that learners' course behavior data were so diverse and for this reason, the results should be interpreted in the light of this issue.

3.8.2 Qualitative Data Analysis

The qualitative analyses were done manually using MS Excel since the volume of qualitative data was not as comprehensive as the qualitative data obtained from structured or semi-structured interviews. In particular, the qualitative data were analyzed via employing content analysis. In order to analyze the data, the steps recommended by Creswell (2009) were taken into account as the following:

> Step1. Organize and prepare the data for analysis
> Step2. Read through all the data
> Step3. Begin detailed analysis with a coding process
> Step4. Use the coding process to generate categories or themes for analysis
> Step5. Advance how the themes will be represented in the qualitative narrative
> Step6. Making an interpretation or meaning of the data (Creswell, 2009, pp. 185-190)

As mentioned before, the qualitative data obtained from the open-ended questions were downloaded from Metu Survey, and they were converted to MS Excel files. As the data were collected using open-ended questions, there was no need to transcribe the data. The data were checked in order to ensure that there was no data loss. Then the open ended responses were read for accuracy and completeness. Qualitative data analysis progressed as the following. First of all, the researcher created the codes based on participant responses to learner motivations for enrolling in the pdMOOCs, reasons for not starting, not completing, and completing the pdMOOCs, online learning readiness, course satisfaction, factors affecting learning in pdMOOCs, portal usability, perceived benefits obtained from the course, and the reasons behind intention-behavior gap. After coding process, sufficient inter- coder agreement was achieved, which was explained in the following section. Then the codes were combined under a theme. Themes and codes were reported in the form of qualitative narrative in the results chapter of this dissertation, and codes were also provided in the tables. Finally, the themes and codes were interpreted.

3.8.2.1 Quality of Research

When compared to quantitative research, there is no direct method to assess reliability. The quality, trustworthiness and credibility of the qualitative results was ensured through the following ways. There was no need to transcribe the qualitative data as the data were collected using open-ended questions. In this way, any mistakes causing from transcription were prevented. In order to triangulate the data, diverse data sources were used, and it was ensured that these data confirm or explain each other (Creswell, 2009). During coding process, the codes were cross checked all the time, and it was ensured that the meaning and definition of the themes and the related codes mean the same thing throughout the study. The context of the study was reported in detail for the purpose of enhancing the validity of the results. A peer debriefing was requested from a colleague, who has information about the study, to increase the credibility and prevent the bias of the researcher. She checked the open ended responses and the analyses made. While analyzing the data, sufficient inter-coder agreement was achieved. This is explained in the following section below. Unfortunately, the researcher was not able to do member checking as it is very hard to reach pdMOOC learners after they are done with Bilgeİş Learning Portal. Last but not least, the results of this study always can be confirmed by the raw qualitative data.

Inter-Coder Agreement: All qualitative data were coded by the researcher. After the coding, 30% of the codes for each variable was randomly selected. Then another researcher experienced in online learning did the coding for 30% of the codes. Next, two researchers came together and discussed on the codes. After this discussion, necessary revision was done on the codes, and inter-coder agreement was calculated for each variable based on mutual agreement of two researchers. Table 3.25 below shows the percentage of agreement for each variable used in the qualitative section of this study.

Table 3.25. Percentage of Agreement

	Variables	Percentage of Agreement
Non-Starters	Course enrollment reasons	77.8%
	Reasons for not starting	93.3%
Non-Completers	Course enrollment reasons	87.5%
	Reasons for not completing	82.5%
Completers	Reasons for completion	90%
	Readiness for online learning	90.6%
	Course satisfaction	83.9%
	Perceived learning	86.2%
	Perceived contribution/benefits	93.3%
	Perceived usability	86.7%
Intention-Behavior Gap	Inclined abstainers	94.12%
	Disinclined actors	83.33%

3.9 Role of the Researcher

In the current study, the researcher partly has an insider status. He has taken responsibilities during the design and development of the MOOCs and the MOOC portal. He participated in Bilgeİş project as an instructional designer. He still continues to work voluntarily and provide logistic support for Bilgeİş Learning Portal.

3.10 Assumptions

The assumptions of this study are as the following:

- Learners filled in the measurement instruments accurately, and they provided honest responses to the measurement instruments.
- System logs were recorded accurately.
- In order to operationalize non-completion, 75-day time period is thought to be sufficient.

3.11 Limitations

This study has a set of limitations. First of all, this study focused on four bilgeis MOOCs out of 100 MOOCs. Although this study includes a large number of learners, the sample consisted of learners who enrolled in these four MOOCs, which are Dealing with Problematic People, Python Programming-I, Visual Design Principles, and Database Management with MS Access. Secondly, the data of the participants who gave consent were used in this study. Thirdly, the data of learners who replied to measurement instruments were analyzed in this study. There is always a possibility that learners who replied to measurement instruments might be different than the non-respondents, and this might influence the results. For these reasons, the generalization of this study is limited to bilgeis.net MOOC learners who replied to the measurement instruments. Fifthly, three stage sampling strategy for selecting pdMOOCs, quantitative stage, and qualitative stage participants was employed in the study. In the quantitative phase of the study, stratified purposive sampling was used to select four pdMOOCs, and the learners enrolled in these pdMOOCs were selected as the participants of the quantitative stage, and convenience sampling strategy was applied. Still, this sampling may not represent the population since only four MOOCs and the learners enrolled in these were examined in this study. In the qualitative phase of the study, volunteer participants were selected as the participants of the qualitative stage since it was not possible to apply purposive sampling in the qualitative stage due to the nature of MOOCs. Data were gathered from these volunteer learners using open-ended questions. Open-ended questions might not have provided the rich data as the qualitative research aims for. Also, it is not always possible to triangulate the qualitative data with other data sources. Lastly, the majority of the data of this study except for the system logs were collected based self-report data. Therefore, there is always a risk for social desirability in the responses.

CHAPTER 4

RESULTS

This chapter presents the results of six research questions that guided this study. Each subsection helps to answer the research questions in detail.

4.1 RQ1: What are the learner motivations for enrolling in the pdMOOCs and reasons for not starting, not completing, and completing the pdMOOCs?

The participants were grouped into 3 distinct categories based on their behaviors in pdMOOCs: non-starters, non-completers, and completers. Learner motivations for enrolling in the pdMOOCs were obtained in the form of qualitative data for non-starters and non-completers, and in the form of quantitative data for completers. The reasons for not starting, not completing, and completing were also obtained in the form of qualitative data. Non-starters are the participants who registered to the pdMOOC, but never carried out any activity in the pdMOOC. Non-completers are the participants who started to carry out some activity in the pdMOOC, but failed to satisfy the required criteria, and therefore, did not finish the pdMOOC. Completers are the participants who successfully completed the pdMOOC after satisfying the required criteria and got a certificate of completion.

4.1.1 pdMOOC Enrollment Motivations of Non-starters

Non-starters' responses to open-ended questions revealed their motivations for enrolling in the pdMOOCs. After the analysis, 23 codes emerged, all of which indicate the variety in non-starters' motivations. The majority of the non-starters enrolled in the pdMOOCs for learning a new topic (f=79), personal development (f=32), solving their work life problems (f=19), professional development (f=18), increasing their current knowledge (f=18), solving their daily life problems (f=17), job relevance (f=16), and their interest in the topic (f=16). However, obtaining a certificate (f=4), trusting the portal for learning (f=3), looking at/reviewing the course content (f=3), preparing for university courses (f=3), supporting courses one teaches (f=2), and testing current knowledge (f=1) were the motivations non-starters' stated the least among other motivations. Table 4.1 shows non-starters' motivations for enrolling in the pdMOOCs.

Table 4.1. Non-starters' Enrollment Motivations

Codes	f
Learning a new topic	79
Personal development	32
Solving work life problems	19
Professional development	18
Increasing current knowledge	18
Solving daily life problems	17
Job relevance	16
Interest in the topic	16
Perceiving the course useful for work	15
Having different point of views/perspectives	9
Developing projects	9
Curiosity	8
Perceiving the course useful for future work	6
Future (job) planning	6
Perceiving the course useful for daily life	5
Just wanted to get registered for the course	4
Supporting courses being taken elsewhere	4
Obtaining a certificate	4
Trusting the portal for learning	3
Looking at/Reviewing the course content	3
Preparing for university courses	3
Supporting courses one teaches	2
Testing current knowledge	1

Learning a new topic (f=79):

The majority of non-starters enrolled in the pdMOOCs to satisfy their learning needs because the most stated motivation of non-starters for enrolling in the pdMOOCs was learning a new topic. Non-starters wanted to learn about the content of the pdMOOCs, which are about problematic people, programming, visual design, and databases. One learner stated:

"Learning the correct strategies to deal with problematic people." [L-NS 13]

Another learner stated:

"I preferred Python language to get started with programming languages. In this way, I plan to be able to produce programs by learning the logic of Python language and general coding." [L-NS 97]

Personal development (f=32):

Non-starters enrolled in the pdMOOCs for their personal development regarding their soft skills and their programing skills. One learner explained this as:

"To establish healthy communication by strengthening my coping mechanisms with people." [L-NS 48]

Another learner explained this as:

"I signed up to learn Python, which is described as basic and somewhat easy programming language and to improve myself." [L-NS 94]

Solving work life problems (f=19):

Non-starters enrolled in the pdMOOCs for solving the problems they face in their work lives. This was explained by learners as:

"In my business life, I want to reach a better level in communication with people and also to cope with people I find problematic. I want to take this course in the hope that it will be useful for this." [L-NS 40]

"I think especially female managers are problematic people in business life. I registered because I thought it was a course that offered a solution on this issue." [L-NS 57]

"I aim to overcome my communication difficulties. We have deal with all kinds of people all over Turkey because we are civil servants. When there are also cultural differences, it is very possible to experience communication problems." [L-NS 64]

Professional development (f=18):

Non-starters enrolled in the pdMOOCs for their professional development. This was explained by learners as:

“I am a pre-school teacher so I thought it would contribute to my professional development.” [L-NS 55]

“As an Interior Architect, I enrolled in this course thinking that I should master the principles of visual design. I enrolled in this course thinking to use design principles confidently while using it in my own designs.” [L-NS 164]

“To improve myself in my work field.” [L-NS 209]

“To contribute myself in terms of work and career.” [L-NS 218]

Increasing current knowledge (f=18):

Non-starters enrolled in the pdMOOCs for increasing their current knowledge. This was explained by learners as:

“I'm doing a master's degree in graphic design education, and I took the course to be more proficient in the field.” [L-NS 188]

“…I enrolled in this course to expand my knowledge base” [L-NS 195]

“…I am a web designer; I think I have inadequate knowledge in this regard. I also want to get a certificate.” [L-NS 199]

Solving daily life problems (f=17):

Non-starters enrolled in the pdMOOCs for solving the problems they face in their daily lives. This was explained by learners as:

“Dealing with problematic people both in work life and daily life is a very demanding. I enrolled in this course to minimize the effort in dealing with problematic people and direct my remaining effort into my life.” [L-NS 5]

“I took this course because I believed it would make my daily life easier. I expect to learn how to behave when facing problematic people in my daily life.” [L-NS 33]

"I wanted to learn how to do transactions safely in the contexts such as computers and the Internet, how not to encounter any troubles in virtual environments, or what I can do if I encounter these troubles." [L-NS 200]

Job relevance (f=16):

Non-starters considered the courses relevant to their jobs, and therefore, they enrolled in the courses. Learners mentioned:

"I am a manager of a private kindergarten, I am in dialogue with the employees and parents, I sometimes encounter problematic people. I want to learn the solution suggestions." [L-NS 15]

"I am an HR professional and I have to deal with a lot of problematic people." [L-NS 31]

"As part of my job, I was asked to design posters and brochures. I signed up because I thought the course would help." [L-NS 168]

"I work in the computer related field…" [L-NS 177]

Interest in the topic (f=16):

Non-starters had interest in the course topics, and therefore, they enrolled in the courses. Learners mentioned:

"I wanted to take the Python programming 1 course because I am interested in cybersecurity." [L-NS 78]

"I registered because I am interested in programming. My expectation from this course is to be able to use Python effectively in business branches." [L-NS 139]

"I have a programming background in Python. I registered because of my interest and expertise." [L-NS 161]

Perceiving the course useful for work (f=15):

Non-starters perceived the courses useful for their work, and they enrolled in the courses because of this. Learners explained:

“My work environment is very stressful and there are people with problems. I think the course would be useful for me.” [L-NS 17]

“Since I am in the sales and marketing business, I thought it would be beneficial for my job.” [L-NS 26]

“I am a technology and design teacher. Because I thought it would be useful for my lesson” [L-NS 174]

Briefly, pdMOOC enrollment motivations of non-starters are mostly based on learning a new topic and personal development. Their motivations are mostly intrinsic.

4.1.2 pdMOOC Enrollment Motivations of Non-completers

Non-completers’ responses to open-ended questions revealed their motivations for enrolling in the pdMOOCs. After the analysis, 21 codes emerged, all of which indicate the diversity in non-completers’ motivations. The majority of the non-completers enrolled in pdMOOCs for learning a new topic (f=98), increasing their current knowledge (f=18), their interest in the topic (f=17), personal development (f=16), curiosity (f=14), job relevance (f=10), and perceiving the course useful for work (f=9). However, obtaining a certificate (f=5), trusting the portal for learning (f=3), looking at/reviewing the course content (f=3), solving daily life problems (f=2), and supporting courses being taken elsewhere (f=2) were the motivations non-completers’ stated the least among other motivations. Non-completers also stated that they enrolled in the pdMOOCs as they wanted to have different point of views/perspectives (f=1), to test their current knowledge (f=1), to look at/review the portal (f=1), and to support one’s kid’s courses (f=1). Moreover, they also enrolled in the pdMOOCs because they perceived the course useful for their daily life (f=1). Table 4.2 shows non-completers’ motivations for enrollment in pdMOOCs.

Table 4.2. Non-completers' Enrollment Motivations

Codes	f
Learning a new topic	98
Increasing current knowledge	18
Interest in the topic	17
Personal development	16
Curiosity	14
Job relevance	10
Perceiving the course useful for work	9
Developing projects	8
Professional development	8
Solving work life problems	6
Future (job) planning	6
Obtaining a certificate	5
Trusting the portal for learning	3
Looking at/Reviewing the course content	3
Solving daily life problems	2
Supporting courses being taken elsewhere	2
Having different point of views/perspectives	1
Testing current knowledge	1
Looking at/Reviewing the portal	1
Perceiving the course useful for daily life	1
Supporting one's kid's courses	1

Learning a new topic (f=98):

Non-completers also wanted to learn about the content of the pdMOOCs, which are about problematic people, programming, visual design, and databases. Learners stated:

"To learn to be able to communicate well with people and to deliver impressive persuasive speech without getting angry with problematic personalities. " [L-NC 17]

"To learn how to deal with problematic people and to get the certificate of this." [L-NC 22]

"To learn the Python programming language…" [L-NC 37]

"To make it look nice when I post images on the Internet." [L-NC 159]

"I wanted to learn about visual design…" [L-NC 160]

"In general, to obtain different information about databases." [L-NC 185]

Increasing current knowledge (f=18):

Non-completers also enrolled in the pdMOOCs for increasing their current knowledge. This was explained by learners as:

"I had difficulties in some of the applications we did in the artificial learning summer school I attended, and I decided that I should learn Python Programming better." [L-NC 66]

"I enrolled in the Python course because it is a basic programming language for many programs. I want to increase my current knowledge " [L-NC 68]

"Because I was learning SQL programming when I registered, I enrolled to increase my current knowledge and gain knowledge in different fields." [L-NC 142]

Interest in the topic (f=17):

Non-completers also had varied interests in the course topics, including interest due to hobby, interest due to work, interest due to future plans etc., and therefore, they enrolled in the courses. Learners mentioned:

"It is an area I am very interested in. Especially because I am a manager, I want to communicate professionally with problematic people I have to work with." [L-NC 10]

"…I signed up to learn this program [Python] both to develop myself in a different field and to work in an area of interest." [L-NC 41]

"I love software and doing something from scratch motivates me and makes me happy. I took a web design course before and finished it. I wanted to learn the algorithm and software to take it further. " [L-NC 78]

"Because I'm interested in visual design." [L-NC 172]

"I am interested in visual design; I have ideas I want to realize about my profession; and I think it will be useful for me." [L-NC 174]

"I am interested in MS Access." [L-NC 176]

Personal Development (f=16):

Non-completers also enrolled in the pdMOOCs for their personal development. Learners explained this as:

“I want to improve my dialogue with people. I also give great importance to education and personal development…” [L-NC 30]

“I signed up to improve myself in different ways.” [L-NC 69]

“I wanted to improve my skills and learn new things.” [L-NC 170]

Curiosity (f= 14):

Non-completers enrolled in the courses because of their curiosity in the course subjects. Learners stated:

“…I was curious and thought it might be useful.” [L-NC 31]

“The subject of programming drew my attention. I was wondering how it is done so I enrolled in the class. My expectation was to satisfy my curiosity.” [L-NC 51]

“I attended the course purely out of personal curiosity” [L-NC 62]

Job relevance (f=10):

Non-completers considered courses relevant to their jobs, and therefore, they enrolled in the courses. Learners mentioned:

“A course that anyone who communicates with people in their work should take. I provide adult education. This course is important for me." [L-NC 1]

“Everyone says Python is important and I wanted to learn the basics because it is related to my job field.” [L-NC 38]

“I do publishing and I am interested in design. I thought it would have something to do with my work.” [L-NC 157]

Perceiving the course useful for work (f=9):

Non-completers perceived the courses useful for their work, and they enrolled in the courses because of this. Learners explained:

"I registered because I thought it would be useful due to my profession (teaching)." [L-NC 5]

"I thought it would be beneficial to make my relations with the prisoners more effective as I work as the execution and protection officer." [L-NC 8]

"I am interested in MS Access ... I want to improve myself in this regard, and I hope that I can even reach solutions that will alleviate my workload in the company. " [L-NC 175]

Briefly, pdMOOC enrollment motivations of non-completers are mostly based on learning a new topic and increasing current knowledge. Their motivations are mostly intrinsic.

4.1.3 pdMOOC Enrollment Motivations of Completers

The motivations for taking the pdMOOCs of the completers were obtained from 864 pdMOOC learners who completed at least one pdMOOC on Bilgeİş Learning Portal. Almost all of the completers were motivated by learning a new topic/subject (n=858, 99.3%), which was followed by personal growth and enrichment (n=848, 98.1%), general interest in topic (n=846, 97.9%). and course offered by prestigious university (METU) (n=838, 97%). The least motivation sources of the completers were socialization (n=403, 46.6%) and fun (n=481, 55.7%). Table 4.3 shows the course taking motivations of the completers.

Table 4.3. Completers' Enrollment Motivations

Motivation	Applies	Does not apply
Learning a new topic/subject	858 (99.3%)	6 (.7%)
For personal growth and enrichment	848 (98.1%)	16 (1.9%)
General interest in the topic	846 (97.9%)	18 (2.1%)
Course offered by prestigious university (METU)	838 (97%)	26 (3%)
Increasing my current knowledge	837 (96.9%)	27 (3.1%)
Curiosity	807 (93.4%)	57 (6.6%)
To earn a certificate/statement of accomplishment	796 (92.1%)	68 (7.9%)
On the job learning purpose	759 (87.8%)	105 (12.2%)
Course relevant to job	709 (82.1%)	155 (17.9%)
To experience an online course	671 (77.7%)	193 (22.3%)
Challenge	656 (75.9%)	208 (25.1%)
For career change	622 (72%)	242 (28%)
Fun	481 (55.7%)	383 (44.3%)
Socialization	403 (46.6%)	461 (53.4%)

Briefly, pdMOOC enrollment motivations of completers are mostly based on knowledge and personal development related factors. Also, the enrollment motivations of completers are based on external factors such as courses offered by prestigious university and earning a certificate/statement of accomplishment. Therefore, they possess the mixture of intrinsic and extrinsic motivations.

4.1.4 Non-starters' Reasons for Not Starting the pdMOOCs

Non-starters' responses to open-ended questions revealed their reasons for not starting the pdMOOCs. After the analysis, 6 themes emerged as (1) Learner related time issues, (2) Learner related general issues, (3) Learner related technical issues, (4) Course related general issues, (5) Portal/course related usability issues, and (6) MOOC related issues.

Learner Related Time Issues (f=150):

Non-starters did not start their courses because they generally did not have enough time for the courses; they were busy with their work; they were busy with their education; and they were busy with their daily activities. Table 4.4 shows the codes for learner related time issues.

Table 4.4. Learner Related Time Issues

Codes	f
Lack of time	64
Lack of time due to work load/activities	47
Lack of time due to educational activities	28
Lack of time time due to daily activities	11

<u>Lack of time (f=64):</u>

Learners failed to spare enough time for the courses. As a result, they were not able to start the courses. Learners explained:

"I could not find time." [L-NS 27]

“I want to take the course, but I do not have time now. As soon as I have time, I want to take advantage of the courses on Bilgeİş Learning Portal.” [L-NS 33]

“I have very limited time. I would like to receive reminders or links to progress daily in a proper way” [L-NS 47]

“I have not found time yet.” [L-NS 59]

Lack of time due to work load/activities (f=47):

Learners failed to spare enough time for the courses due to their work load or work activities. As a result, they were not able to start the courses. Learners stated:

“Due to the increasing workload, I cannot spare time for the courses I enrolled for a while.” [L-NS 86]

“Due to my work intensity, I could not spare time although I wanted it very much.” [L-NS 88]

“I could not start the course due to my workload, but I am planning to start it at a convenient time.” [L-NS 97]

“I have a very busy work schedule and at the end of the year, I return to a more comfortable work schedule…” [L-NS 100]

Lack of time due to educational activities (f=28):

Learners failed to spare enough time for the courses due to their educational activities. As a result, they were not able to start the courses. Learners stated:

“I did not have time due to the intensity of classes at university” [L-NS 63]

“Unfortunately, I have not started yet because I have not been able to attend the course due to writing a thesis and being busy. But I will start the lesson as soon as possible.” [L-NS 68]

“Since I study Electrical and Electronics Engineering, I am interested in Python Programming and wanted to spare time for it, but I could not spare time because I have a busy semester.” [L-NS 81]

“All because of the problem caused by me. I am at the dissertation stage in my PhD study, and I thought I would have the two together, but it did not happen.” [L-NS 93]

"After I enrolled in the course, I could not start the course because I had intensive exams and homework." [L-NS 110]

<u>Lack of time time due to daily activities (f=11):</u>

Learners failed to spare enough time for the courses due to their daily activities. As a result, they were not able to start the courses. Learners explained:

"I registered for the course using my phone, and I could not start immediately due to my busy daily life..." [L-NS 2]

"As I have started to become busier, I could not find the time to start the course." [L-NS 5]

"The insensity of one's life makes a person forget about the online courses, which are offered on the Internet and do not require any liability to complete, one is taking. I remembered the course with your e-mail." [L-NS 72]

"Unfortunately, I went through a very busy period." [L-NS 77]

Learner Related General Issues (f=85):

Non-starters did not start their courses because in general, they forgot their registration for the course; they had insufficient knowledge on MOOCs; they needed reminder notifications; they had health problems; they queued the courses; and they already knew about the course content. Table 4.5 shows all codes for learner related general issues.

Table 4.5. Learner Related General Issues

Codes	f
Forgetting that s/he registered for the course	30
Insufficient knowledge on MOOCs	10
Needing reminder notifications	8
Health problems	6
Already knowing the course content	4
Forgetting the web adress of the portal/course	3
Forgetting username/password	3
Taking other course(s) at that time	3
Private problems	3
Taking the same course on a different platform/portal	2
Lack of time planning	2
Inadequate concentration	2
Using other information sources currently	2
No aim of learning /No real intention to learn	1
Course not in one's current plans	1
Postponed starting the course	1
Not needing the course anymore	1
Perceived difficulty	1
Taking other courses on different platforms	1
Lack of concentration due to medication	1

<u>Forgetting that s/he registered for the course (f=30):</u>

Non-starters forgot about the courses they registered for. As a result, they did not start the courses. Learners explained:

“I forgot, I wish you reminded me by mail.” [L-NS 9]

“I was busier with myself… This course that I enrolled in has gone out of my mind.” [L-NS 154]

“I forgot that I registered for the course.” [L-NS 168]

“I got a new job, and I completely forgot about the course because my work is so busy…” [L-NS 175]

<u>Insufficient knowledge on MOOCs (f=10):</u>

Non-starters had insufficient knowledge about how courses work, and therefore, they were confused about how courses work. As a result, they were not able to start the courses. Learners expressed:

"I forgot the dates of the course as there was no notification reminding the start date." [L-NS 83]

"There was no notification that the course had started. I could not get any information about the link to follow the course. I even learned with this e-mail that lessons had started." [L-NS 156]

Needing reminder notifications (f=8):

Non-starters needed reminder notifications about the courses. As they claimed that they did not receive any, they did not start the courses they registered for. Clearly, learners needed to be supported by reminder notifications. Learners stated:

"I had a hard time finding your web page again. I wish a link were sent to the e-mail address after registering for the course." [L-NS 49]

"I forgot the lesson start date because of being busy. I could not attend the course because the reminder sms and e-mails did not reach to me." [L-NS 165]

"I did not receive a reminder email about the course later, and I completely forgot that I took this course due to the intensity of my daily life." [L-NS 188]

Health problems (f=6):

Learners had some health problems. As a result, they were not able to start the courses. Learners explained:

"I have been dealing with my injuries for a long time as a result of an accident, and I cannot access the Internet, luckily I noticed when I looked at the incoming e-mail now." [L-NS 3]

"I could not start because of my illness. I will attend the course." [L-NS 17]

"Because of health problems." [L-NS 129]

Already knowing the course content (f=4):

As learners already know about the course content, they thought that they would not get any new information. As a result, they did not start the courses. Learners stated:

“I am interested in psychology, and I have read many articles and books on the Internet about it. I enrolled in Dealing with Problematic People course because of my interest in psychology, but I did not want to continue the course because there was nothing much different that I did not know. The course is not bad. It is useful for someone with no knowledge, but there was no new information for me.” [L-NS 14]

“I took Python course at school” [L-NS 85]

Learner Related Technical Issues (f=24):

Non-starters did not start their courses because they had no access to Internet; they had no access to a computer; they experienced Internet connection problems; they had broken computers; they owned a computer with low specifications/features; and they were not able to access the portal using their work computer. Table 4.7 shows the codes for learner related technical issues.

Table 4.6. Learner Related Technical Issues

Codes	f
No access to Internet	5
No access to a computer	5
Internet connection problems	4
Broken computer	3
Owning a computer with low specifications/features	1
Not being able to access the portal using work computer	1

No access to Internet (f=5):

Some learners had no access to Internet. As a result, they were not able to start the courses. Learners expressed:

“I could not attend the course because I do not have Internet connection.” [L-NS 67]

“Since there is no Internet connection in my student house, I will continue to take the courses at my parents' home after summer internship” [L-NS 89]

“I am a student; I live in a dormitory; and there is no Internet connection in the dormitory.” [L-NS 105]

“I did not have time, and there is no Internet connection in the house which I live now.” [L-NS 127]

No access to a computer (f=5):

Some learners had no access to a computer. As a result, they were not able to start the courses. Learners explained:

“I have not had access to the computer since the last course I took.” [L-NS 95]

“… I am planning to buy a personal computer outside of work.” [L-NS 100]

“I am currently abroad, and I do not have my computer with me.” [L-NS 160]

Internet connection problems (f=4):

Some learners experienced Internet connection problems. As a result, they were not able to start the courses. Learners mentioned:

“I am having problems with the Internet connection, so I cannot start the course. I will solve this problem as soon as possible and start the course.” [L-NS 178]

“I could not start due to problems with my Internet connection.” [L-NS 180]

“Time and Internet connection problems. ” [L-NS 208]

Broken computer (f=3):

Some learners’ computers were broken. As a result, they were not able to start the courses. Learners explained:

“I could not start because my computer was broken.” [L-NS 48]

“My PC is broken and I cannot buy a new PC right now.” [L-NS 219]

Course Related General Issues (f=8):

Non-starters did not start their courses because they did not find the courses qualified enough; they found the coırse content simple; they found the course content boring;

they thought course certificate was not functional; they thought that courses were not part of a whole; and courses had low difficulty for senior students. Table 4.6 shows the codes for course related issues.

Table 4.7. Course Related General Issues

Codes	f
Courses not qualified enough	2
Simple course content	2
Boring course content	1
Course certificate not functional	1
Courses not part of a whole	1
Low course difficulty for senior students	1

<u>Courses not qualified enough (f=2):</u>

Non-starters did not start their courses because they did not find the courses qualified enough. Learners explained:

“I did not find the courses qualified enough, and I thought that the course certificate to be given was not functional enough. ” [L-NS 69]

“Courses were prepared in an extremely amateurish manner, and they addressed to the general public. I did not start the course as it does not for intermediate and upper level learners.” [L-NS 109]

<u>Simple course content (f=2):</u>

Non-starters did not start their courses because they found the course content simple. Learners stated:

“I had already learned something myself when I signed up. The course content sounded simple and boring, but it is well prepared for a beginner.” [L-NS 118]

“This course covers the basics as far as I can see. I did not start the course because even if I finish this course there was no course that I would follow and improve myself (only Python Programming II on the portal). My reason was that the course was not part of a whole. However, I intend to revisit the course in a short time.” [L-NS 145]

Portal/Course Related Usability Issues (f=6):

Non-starters did not start their courses because courses were not fully mobile compatible; course videos were not accessible due to work Internet filters; learners were not able to retrieve their username-password from the portal; and portal loaded slowly. Table 4.8 shows the codes for portal/course related usability issues.

Table 4.8. Portal/Course Related Usability Issues

Codes	f
Courses not fully mobile compatible	3
Course videos not accessible due to work Internet filters	1
Not being able to retrive username-password from the portal	1
Portal loading slowly	1

Courses not fully mobile compatible (f=3):

Learners were not able to access the courses effectively using their mobile devices as courses were not fully mobile compatible. As a result, learners did not start their courses. Learners explained:

"I have a computer problem. I tried to take the course using my mobile phone, but it did not work on my mobile phone." [L-NS 167]

"It is a problem for me to listen to the course and do the assignments over the phone." [L-NS 185]

Course videos not accessible due to work Internet filters (f=1):

Some of the course videos are hosted on YouTube, and access to YouTube is blocked on the computers located at the public schools managed by Ministry of National Education of Turkey. Therefore, course videos hosted on YouTube are not accessible, and learners were not able to access these videos. One learner explained:

"I could not access the course video lectures from the school where I work. That is why I could not start the course." [L-NS 25]

MOOC Related Issues (f=6):

Registering for multiple courses and Queuing the courses (f=6):

The nature of MOOCs allows learners to register for as many as courses they want to register. For this reason, learners can enroll in multiple courses, and they registered for multiple courses. However, this issue resulted in learners' queuing the courses. As a result, they were not able to start all the courses they registered for at once. Learners expressed:

"I took many courses from Bilgeİş Learning Portal and started studying by queuing the courses I took in order. Dealing with Problematic People course was my second goal. I finished my first course on project management." [L-NS 12]

"I enrolled in approximately 20 courses of my interest. I have completed nearly 6 courses so far, and I will continue to complete and learn from them." [L-NS 161]

"I take courses one after another." [L-NS 177]

"As I am taking other courses as well, I have not been able to start this course yet." [L-NS 217]

As a summary, non-starters did not start the pdMOOCs mainly due to learner related time issues.

4.1.5 Non-completers' Reasons for Not Completing the pdMOOCs

Non-completers' responses to open-ended questions revealed their reasons of not completing the pdMOOCs. After the analysis, 7 themes emerged as (1) Learner related time issues, (2) Learner related general issues, (3) Learner related technical issues, (4) Course design related issues, (5) Course content related issues, (6) Portal related usability issues, and (7) MOOC related issues.

Learner Related Time Issues (f=101):

Non-completers did not complete their courses because they generally did not have enough time for the courses; they were busy with their work; they were busy with their education; and they were busy with their daily activities. Table 4.9 shows the codes for learner related time issues.

Table 4.9. Learner Related Time Issues

Codes	f
Lack of time	50
Lack of time due to work load/activities	24
Lack of time due to educational activities	16
Lack of time time due to daily activities	11

<u>Lack of time (f=50):</u>

Learners failed to spare enough time for the courses. As a result, they were not able to complete the courses. Learners explained:

“ I did not have enough time to complete the course.” [L-NC 115]

“I was a little bored as the course started at a very basic level. Then I could not find time to complete.” [L-NC 119]

“I want to complete the course but I do not have much time.” [L-NC 124]

<u>Lack of time due to work load/activities (f=24):</u>

Learners failed to spare enough time for the courses due to their work load or work activities. As a result, they were not able to complete the courses. Learners stated:

“I am studying for the KPSS exam, and I also work 12 hours a day in the private sector. Naturally I cannot find the time or energy to complete the course.” [L-NC 131]

“I did not have much time. I could not spare much time for the course because my working hours were too long.” [L-NC 149]

<u>Lack of time due to educational activities (f=16):</u>

Learners failed to spare enough time for the courses due to their educational activities. As a result, they were not able to complete the courses. Learners stated:

“I could not find time during my university education.” [L-NC 134]

“I could not complete the course due to internship and DGS exam.” [L-NC 161]

“I could not complete the Visual Design Principles course due to my busy curriculum, academic career, and private reasons.” [L-NC 173]

Lack of time time due to daily activities (f=11):

Learners failed to spare enough time for the courses due to their daily activities. As a result, they were not able to complete the courses. Learners explained:

"I wanted to complete the course so much, but I am so busy that I did not have the opportunity to complete." [L-NC 20]

"I did not have the opportunity to watch the course video lectures because I was in a busy period." [L-NC 28]

"I can say that forgetting due to seasonal intensity and loss of priority." [L-NC 185]

Learner Related General Issues (f=75):

Non-completers did not complete their courses because in general, they forgot that they were taking the course; they had insufficient knowledge on MOOCs; they had health problems; they perceived course content difficult; they registered for the course to review the course; they took a break; and they were taking other course(s) at the same time. Table 4.10 shows the codes for learner related general issues for non-completers.

Table 4.10. Learner Related General Issues

Codes	f
Forgetting that learner was taking the course	15
Insufficient knowledge on MOOCs	6
Health problems	5
Perceived course content difficulty	5
Reviewing/Looking at the course	5
Taking a break	4
Taking other course(s) at the same time	4
Needing reminder notifications	3
Perceived task (assignment) difficulty	3
Taking another course from another portal/elsewhere	2
Taking the same course from another portal/elsewhere	2
Course not one's priority	2
Private problems	2
Lack of goal	2
No perceived usefulness (Not finding course content useful)	2
Losing enthusiasm	1
Being lazy	1
Being unemployed	1
Taking another course from the portal	1
Lack of motivation	1
Already knowing the course content/No new information	1
Not liking doing assignments	1
Not liking systems with a password entry	1
Not liking the way course was taught	1
Postponing completing the course	1
Accessing same course content elsewhere	1
Need for more interactive courses	1
Forgot doing the assignment	1

<u>Forgetting that learner was taking the course (f=15):</u>

Non-completers forgot about the courses they were taking. As a result, they did not complete the courses. Learners expressed:

“I do not remember taking a course like that.” [L-NC 48]

“….I completely forgot about this course.” [L-NC 93]

“I forgot that I took a course like this.” [L-NC 144]

“Forgetting because of periodic intensity and loss of priority.” [L-NC 185]

<u>Insufficient knowledge on MOOCs (f=6):</u>

Non-completers had insufficient knowledge about how courses work, and they were confused about how courses work. As a result, they did not complete the courses. Learners stated:

“I could not remember the attendance time of the course.” [L-NC 6]

“…I have not received any information that the course had started.” [L-NC 72]

“I have not received any e-mail stating that the course had started.” [L-NC 132]

Health problems (f=5):

Learners had some health problems. As a result, they were not able to complete the courses. Learners explained:

“Because of my health problems.” [L-NC 161]

“…I could not spare time because of my health problem.” [L-NC 171]

Perceived course content difficulty (f= 5):

Learners did not understand some parts in the courses, and they perceived the course content difficult. As a result, they did not complete the coırses. Learners mentioned:

“I did not understand some parts of the course...” [L-NC 83]

“Since I had almost no knowledge on this subject, the lesson was difficult. I thought of getting additional information from other educational platforms and educational videos on Youtube.” [L-NC 92]

Reviewing/Looking at the course (f=5):

Some of the learners had no real intention to complete the pdMOOCs. They started the pdMOOCs only for reviewing/looking at the course in order to satisfy their curiosity, and they were not taking the course seriously. One learner explained:

“I already knew Python. I just wanted to look at the course out of my curiosity.” [L-NC 39]

Another learner stated this as:

“I was curious about the content of the courses offered, and I signed up to take a quick look. Therefore, I did not have a goal to complete the course from the beginning.” [L-NC 57]

Taking a break (f=4):

Some of the learners took a break while they were taking the courses. This led them not to complete the courses. Learners expressed:

“I had a break. I am currently taking an AI course on another site. When it is finished, I will continue the Python course.” [L-NC 103]

“I took a break due to the poor content of the course.” [L-NC 138]

Taking other course(s) at the same time (f=4):

Learners were taking other courses at the same time they were registered for the courses on Bilgeİş Learning Portal. Therefore, they did not complete the courses. Learners stated:

“I was also taking other courses. I will continue my Python course in August.” [L-NC 80]

“The reason why I could not complete the course is my own laziness rather than the deficiencies of Bilgeİş Learning Portal. I could not motivate myself; I could not spare time; and I have other courses that I continue taking.” [L-NC 169]

Learner Related Technical Issues (f=27):

Non-completers did not complete their courses because they had no access to Internet; they had broken computers; they were not being able to run the required program on their computer; and they had slow Internet connection. Table 4.11 shows the codes for learner related technical issues for non-completers.

Table 4.11. Learner Related Technical Issues

Codes	f
No access to Internet	7
Broken computer	7
Not being able to run the required program on one's computer	4
Slow Internet connection	1
Internet connection problems	1
Not having constant Internet connection	1
Not being able to access the portal using work computer	1
Not having the required program in the course	1
Computer not compatible with the program required in the course	1
Limited Internet connection	1
Owning a computer with low specifications/features	1

No access to Internet (f=7):

Some learners had no access to Internet. As a result, they were not able to complete the courses. Learners expressed:

“I am in a place without Internet access.” [L-NC 105]

“Because I do not have Internet access.” [L-NC 106]

“Because I lost my internet connection.” [L-NC 166]

Broken computer (f=7):

Some learners’ computers were broken. As a result, they were not able to complete the courses. Learners explained:

“My computer is broken.” [L-NC 75]

“My computer broke down.” [L-NC 110]

“My computer was infected by a virus. It took a long time to clean the virus and make the computer be usable. Meanwhile, I got into other things.” [L-NC 184]

Not being able to run the required program on one's computer (f=4):

Learners were not able to run the required program by the course on their computers. As a result, they failed to complete the courses. Learners stated:

"Although I installed the correct version of the program on my computer, I could not run it. They said a patch is needed. It has nothing to do with you." [L-NC 77]

"I could not install the program due to a problem with my computer. My computer did not allow this even though I tried a few times." [L-NC 94]

Slow Internet connection (f=1):

As MOOCs are mostly based on video lectures, they require good Internet connection speed. Therefore, slow Internet connection might prevent learners viewing video lectures. As a result, learners might fail to complete the courses. One learner mentioned:

"The internet network in my location is slow, and I had to leave the course because I had no other means. " [L-NC 49]

Course Design Related Issues (f=8):

Non-completers did not complete their courses due to navigational design of course video lectures, overwhelming voiceover of course lectures, course content not matching with current versions of programs, course content not matching with exam questions, and lack of incentives to encourage continuity. Table 4.12 shows the codes for course design related issues.

Table 4.12. Course Design Related Issues

Codes	f
Navigational design of course video lectures	3
Overwhelming voiceover of course lectures	2
Course content not matching with current versions of programs	1
Course content not matching with exam questions	1
Lack of incentives to encourage continuity	1

Navigational design of course video lectures (f=3):

Non-completers failed to complete the courses due to navigational design of course video lectures. Course video lectures were chunked into small pieces, and learners were required to click next button to move to the next screen. These chunks made the courses seem long and at the same time they decreased learner attention. Moreover, learners were required to watch the course video lectures instead of skipping them. These prevented learners from completing the courses. Learners asserted:

"…It is also very boring to navigate the course lectures one page by one while taking the course. Too many pages discouraged me." [L-NC 38]

"There was a problem like not being able to forward or skip the videos." [L-NC 139]

"The course lecture videos are very fragmented and cannot hold the attention stable enough." [L-NC 158]

Course Content Related Issues (f=12):

Non-completers did not complete their courses because they found the coırse content simple; they found course content not appealing; they found course content not effective; and they found course content inadequate. Table 4.13 shows the codes for course content related issues.

Table 4.13. Enter the Table Caption here

Codes	f
Simple course content	9
Course content not appealing	1
Course content not effective	1
Inadequate course content	1

Simple course content (f=9):

Non-completers did not complete their courses because they found the course content simple. Learners stated:

"The content of the course was too simple." [L-NC 67]

"I was a little bored as the course started from a very basic level." [L-NC 119]

"Course lectures were simple and insufficient. There are channels with much better lecturing on the Youtube platform. I was surprised that an institution like METU offered such prosaic lessons." [L-NC 164]

Portal/Course Related Usability Issues (f=16):

Non-completers did not complete their courses because portal/courses were not fully mobile device compatible; course videos were not accessible due to learners' work Interet filters; portal design was inadequate; and portal design was complicated. Table 4.14 shows the codes for portal/course related usability issues.

Table 4.14. Portal/Course Related Usability Issues

Codes	f
Portal/Courses not fully mobile device compatible	4
Course videos not accessible due to work Internet filters	4
Inadequate portal interface design	3
Complicated portal interface design	2
Lack of guidance on the portal	1
Portal causing learners to have bad experiences	1
Portal showing completed course components not completed	1

Portal/Courses not fully mobile device compatible (f=4):

Learners were not able to access the courses effectively using their mobile devices as courses were not fully mobile compatible. As a result, learners did not complete their courses. Learners explained:

"There are problems when the videos are viewed from the mobile phone..." [L-NC 99]

"It would be better if the course was working on mobile devices." [L-NC 101]

Course videos not accessible due to work Internet filters (f=4):

Some of the course videos are hosted on YouTube, and access to YouTube is blocked on the computers located at the public schools managed by Ministry of National Education of Turkey. Therefore, course videos hosted on YouTube are not accessible, and learners are not able to access these videos. One learner explained:

“There have been too many technical problems. I could not access the course content, I constantly wrote to you. Progress has not been much. Then I got angry and quitted. I hope your access problem is resolved.” [L-NC 7]

“I am having difficulty opening course lecture videos. Internet quality is not very high because I work at a school.” [L-NC 9]

“…In addition, I could not access the courses on the Internet line of the institution where I work which is MEB itself. I had to turn to other resources.” [L-NC 79]

Inadequate portal interface design (f=3):

Learners failed to complete the courses as they found the portal interface design inadequate. Learners stated:

“Website design is very poor.” [L-NC 43]

“The interface could have been designed better.” [L-NC 101]

“Because the design of the site was… too simple.” [L-NC 139]

Complicated portal interface design (f=2):

Learners failed to complete the courses as they found the portal interface design complicated. Learners explained:

“The design of the website is very inadequate; the necessary guidence is not provided; and the design is very complex.” [L-NC 43]

“It was a very complex portal I could not use it.” [L-NC 142]

MOOC Related Issues (f=3):

Learners did not complete the courses due to MOOC related issues, including registering for many courses and courses being free of charge. Table 4.16 shows the codes for MOOC related issues for non-completers.

Table 4.15. MOOC Related Issues for Non-completers

Codes	f
Registering for many courses	2
Courses free of charge	1

Registering for many courses (f=2):

Non-completers did not complete their courses because they registered for multiple courses. Learners explained:

"…I am enrolled in many courses on your site at the same time (greed) and I have not completed most courses such as Python yet. I am progressing step by step in a certain pattern." [L-NC 92]

"I completely forgot about this course as I tried to continue two courses at the same time on the portal. " [L-NC 93]

As a summary, non-completers did not complete the pdMOOCs mainly due to learner related time issues.

4.1.6 Completers' Reasons for Completing the pdMOOCs

Completers' responses to open-ended questions revealed their reasons for completing the pdMOOCs. After the analysis, 18 codes emerged, all of which indicate the diversity in completers' reasons of course completion. The majority of the completers enrolled in pdMOOCs completed them for learning a new topic (f=33), solving/dealing with their daily life problems (f=23), solving/dealing with their work life problems (f=22), personal development (f=22), having interest in the topic (f=18), perceived usefulness of the course (f=15), professional development (f=12), curiosity (f=10), and obtaining a certificate (f=7). However, life long learning (f=2), finding a job (f=2), increasing one's current knowledge (f=2), liking the title of the course (f=2), course provided by a prestigious university (f=1), online free course (f=1), and course given as an assignment by one's instructor (f=1) were the least stated course completion reasons. Table 4.16 shows completers' course completion reasons.

Table 4.16. Completers' Course Completion Reasons

Codes	f
Wanting to learn a new topic	33
Solving/Dealing with daily life problems	23
Solving/Dealing with work life problems	22
Personal development	22
Interest in the topic	18
Perceived usefulness of the course	15
Professional development	12
Curiosity	10
To obtain a certificate	7
Job relevancy	3
Desire to complete	3
Life long learning	2
Finding a job	2
Increasing one's current knowledge	2
Liking the title of the course	2
Course provided by a prestigious university	1
Online free course	1
Given as an assignment by the instructor	1

Wanting to learn a new topic (f=33):

Learners completed the courses as they wanted to learn a new topic. Completers wanted to learn about the content of the pdMOOCs, which are about problematic people, programming, visual design, and databases. Learners stated:

"The desire to learn information and use this in daily life." [L-C 16]

"To have the knowledge of introduction to coding and proceed with using Python." [L-C 90]

"To learn new technologies required by 21st century education and to guide students." [L-C 121]

"I completed the course in order to understand what can be done on the databases with MS Access." [L-C 139]

"I felt that I needed to learn these subjects for my daily life." [L-C 142]

Solving/Dealing with daily life problems (f=23):

Learners completed the courses for solving the problems they face in their daily lives. This was explained by learners as:

"I realized I was under the pressure of problematic people without realizing it, and I wanted to complete the course." [L-C 17]

"I had a lot of stress in my life, and I had trouble understanding some people." [L-C 31]

"Because of the problems we encounter in daily life and to solve the problems with people who cause these problems." [L-C 54]

"In order to communicate positively with people in the society as I am a graduate of the teaching department." [L-C 73]

Solving/Dealing with work life problems (f=22):

Learners completed the courses for solving the problems they face in their work lives. This was explained by learners as:

"Because of the situations I have encountered in working life." [L-C 16]

"Because of experiences I had in communication processes with internal and external customers in my work life." [L-C 21]

"To be prepared for difficult situations encountered in work life and daily life in general and to make stress manageable." [L-C 25]

"It is very likely that you will always encounter difficult people in work life. That is why I wanted to learn strategies for dealing with problematic people." [L-C 46]

Personal development (f=22):

Learners completed the courses for personal development regarding their soft skills and technical skills. Learners explained this as:

"I am a doctor. I deal with very different people. I completed the course in order to be protected from violence and to establish a healthier relationship with my patients." [L-C 6]

"I enrolled in this course and completed it in order to establish more comfortable dialogues with people who are more aggressive than normal under stress in their work and private lives and to express myself more accurately and effectively." [L-C 27]

"To improve myself, to increase my knowledge of a database and to find a job." [L-C 134]

Interest in the topic (f=18):

Completers also had varied interests in the course topics, including interest due to hobby, interest due to work, interest due to future plans etc., and therefore, they completed the courses. Learners mentioned:

"I am interested in coding and want to constantly improve myself. This was the biggest factor." [L-C 92]

"I am interested in software and coding." [L-C 101]

"In my previous job before retiring, I was working with large lists about databases. I wanted to learn because of my interest." [L-C 141]

Perceived usefulness of the course (f=15):

Completers perceived the courses useful in general, and they completed the courses because of this. Learners explained:

"I am in a manager position. I thought it would be useful in my relationships with my colleagues." [L-C 13]

"I completed the course because it is a language suitable for everywhere use." [L-C 110]

"Because people with English and software knowledge will be needed in the future." [L-C 119]

Professional development (f=12):

Learners completed the courses for their professional development. This was explained by learners as:

"I had the opportunity to prepare for the title change exam to be held by my institution." [L-C 84]

"…As I am a research assistant, I completed this course because Python will be covered in the basics of programming course, and I will be assisting." [L-C 91]

"I am a teacher. I thought the course would be useful for me to improve myself professionally." [L-C 130]

Curiosity (f=10):

Learners completed the courses because of their curiosity in the course subjects. Learners stated:

"I was curious. I got information about communication with problematic people." [L-C 28]

"Total curiosity and a desire to learn something new. I work in the statistics unit in the health sector in the public sector" [L-C 106]

To obtain a certificate (f=7):

Learners wanted to obtain a certificate, and they completed the courses because of this. Learners mentioned:

"I liked the course because of its connection with the daily life. I wanted to complete the course and get my certificate as it would add to me that the course teaches today's human types and explaines the methods of coping with problematic people." [L-C 29]

"To progress and become certified in Python" [L-C 95]

"To obtain a certificate." [L-C 125]

As a summary, completers completed the pdMOOCs mainly for learning a new topic, solving/dealing with their daily life problems, solving/dealing with their work life problems and for their personal development.

4.2 RQ2: What are completion rates based on traditional and alternative approaches in pdMOOCs?

The participants were grouped into 3 distinct categories based on their behaviors in pdMOOCs: non-starters, non-completers, and completers. Non-starters are the participants who registered to the pdMOOC, but never carried out any activity. Non-completers are the participants who started to carry out some activity in the pdMOOC, but failed to satisfy the required criteria, and therefore, did not finish it. Completers are the participants who successfully completed the pdMOOC after satisfying the required criteria and got a certificate of completion. Completion rates have been calculated based on traditional and alternative approaches.

Traditional completion rates based on enrolled participants were calculated via dividing the number of completers by the number of total registration. As an alternative to the traditional approach, completion rates based on starters were calculated via dividing the number of completers by the number of starters. As the second alternative to the traditional approach, participant intent was used. In the beginning of the courses, the participants were asked to answer an intention survey including 4 distinct participant intent categories: unsure, browse, audit, and complete. In order to calculate the completion rates based on intention, the number of completers was divided by the number of participants who stated their intention as complete.

4.2.1 Course 1: Dealing with Problematic People pdMOOC (DPP pdMOOC)

In DPP pdMOOC, the total enrollment was 7176. Although the participants registered for the course, 26.80% (n=1923) of the participants did not start to take the course at all, and 73.20% (n=5253) started to take the course. Of the participants, 3161 completed the course while 2092 of them did not. These are summarized in Table 4.17 below.

Table 4.17. DPP pdMOOC Enrollment Figures

pdMOOC	Total Enrolment	Non-starters	Starters	Non-Completers	Completers
DPP	7176 (100%)	1923 (26.80%)	5253 (73.20%)	2092	3161

The completion rate based on enrolled participants was calculated as 44.05% while that of based on starters was calculated as 60.18%. Similarly, the non-completion rate based on enrolled participants was 55.95%, and the non-completion rate based on starters was 39.82%. The completion and non-completion rates are shown in Table 4.18 below.

Table 4.18. Completion and Non-completion Rates for DPP pdMOOC

DPP pdMOOC	Percentage
Completion Rate (Based on enrolled participants)	44.05
Completion Rate (Based on starters)	60.18
Non-completion Rate (Based on enrolled participants)	55.95
Non-completion Rate (Based on starters)	39.82

Completion rate based on intention was calculated as 66.06%. Intention based completion rates are shown in Table 4.19 below.

Table 4.19. Completion Rate based on Intention for DPP pdMOOC

pdMOOC	Intention to Complete	Consent Given	Completers	Completion Rate based on Intention
DPP	4521	4160	2748	66.06%

For DPP pdMOOC, when completion rates are calculated based on intention, they are higher than traditional completion rates and completion rates based on starters, which are also active learners. DPP pdMOOC has the highest completion rate among the pdMOOCs used in this study.

4.2.2 Course 2: Python Programming-I pdMOOC (PP-I pdMOOC)

In PP-I pdMOOC, the total enrollment was 5666. Although the participants registered for the course, 27.07% (n=1534) of the participants did not start to take the course at all, and 72.93% (n=4132) started to take the course. Of the participants, 1138 completed the course while 2994 of them did not. These are summarized in Table 4.20 below.

Table 4.20. PP-I pdMOOC Enrollment Figures

pdMOOC	Total Enrolment	Non-starters	Starters	Non-Completers	Completers
PP-I	5666 (100%)	1534 (27.07%)	4132 (72.93%)	2994	1138

The completion rate based on enrolled participants was calculated as 20.08% while that of based on starters was calculated as 27.54%. Similarly, the non-completion rate based on enrolled participants was 79.92%, and the non-completion rate based on starters was 72.46%. The completion and non-completion rates are shown in Table 4.21 below.

Table 4.21. Completion and Non-completion Rates for PP-I pdMOOC

PP-I pdMOOC	Percentage
Completion Rate (Based on enrolled participants)	20.08
Completion Rate (Based on starters)	27.54
Non-completion Rate (Based on enrolled participants)	79.92
Non-completion Rate (Based on starters)	72.46

Completion rate based on intention was calculated as 31.03%. Intention based completion rates are shown in Table 4.22 below.

Table 4.22. Completion Rate based on Intention for PP-I pdMOOC

pdMOOC	Intention to Complete	Consent Given	Completers	Completion Rate based on Intention
PP-I	3338	3055	948	31.03%

For PP-I pdMOOC, when completion rates are calculated based on intention, they are higher than traditional completion rates and completion rates based on starters, which are also active learners.

4.2.3 Course 3: Visual Design Principles pdMOOC (VDP pdMOOC)

In VDP pdMOOC, the total enrollment was 1561. Although the participants registered for the course, 47.60% (n= 743) of the participants did not start to take the course at all, and 52.40% (n= 818) started to take the course. Of the participants, 192 completed the course while 626 of them did not. These are summarized in Table 4.23 below.

Table 4.23. VDP pdMOOC Enrollment Figures

pdMOOC	Total Enrolment	Non-starters	Starters	Non-Completers	Completers
VDP	1561 (100%)	743 (47.60%)	818 (52.40%)	626	192

The completion rate based on enrolled participants was calculated as 12.30% while that of based on starters was calculated as 23.47%. Similarly, the non-completion rate based on enrolled participants was 87.70%, and the non-completion rate based on starters was 76.53%. The completion and non-completion rates are shown in Table 4.24 below.

Table 4.24. Completion and Non-completion Rates for VDP pdMOOC

VDP pdMOOC	Percentage
Completion Rate (Based on enrolled participants)	12.30
Completion Rate (Based on starters)	23.47
Non-completion Rate (Based on enrolled participants)	87.70
Non-completion Rate (Based on starters)	76.53

Completion rate based on intention was calculated as 25.54%. Intention based completion rates are shown in Table 4.25 below.

Table 4.25. Completion Rate based on Intention for VDP pdMOOC

pdMOOC	Intention to Complete	Consent Given	Completers	Completion Rate based on Intention
VDP	655	603	154	25.54%

For VDP pdMOOC, when completion rates are calculated based on intention, they are higher than traditional completion rates and completion rates based on starters, which are also active learners. VDP pdMOOC has the lowest completion rate among the pdMOOCs used in this study.

4.2.4 Course 4: Database Management with MS Access (DMMA pdMOOC)

In DMMA pdMOOC, the total enrollment was 1402. Although the participants registered for the course, 42.15% (n= 591) of the participants did not start to take the course at all, and 57.85% (n= 811) started to take the course. Of the participants, 254 completed the course while 557 of them did not. These are summarized in Table 4.26 below.

Table 4.26. DMMA pdMOOC Enrollment Figures

pdMOOC	Total Enrolment	Non-starters	Starters	Non-Completers	Completers
DMMA	1402 (100%)	591 (42.15%)	811 (57.85%)	557	254

The completion rate based on enrolled participants was calculated as 18.12% while that of based on starters was calculated as 31.32%. Similarly, the non-completion rate based on enrolled participants was 81.88%, and the non-completion rate based on starters was 68.68%. The completion and non-completion rates are shown in Table 4.27 below.

Table 4.27. Completion and Non-completion Rates for DMMA pdMOOC

DMMA pdMOOC	Percentage
Completion Rate (Based on enrolled participants)	18.12
Completion Rate (Based on starters)	31.32
Non-completion Rate (Based on enrolled participants)	81.88
Non-completion Rate (Based on starters)	68.68

Completion rate based on intention was calculated as 34.67%. Intention based completion rates are shown in Table 4.28 below.

Table 4.28. Completion Rate based on Intention for DMMA pdMOOC

pdMOOC	Intention to Complete	Consent Given	Completers	Completion Rate based on Intention
DMMA	703	646	224	34.67%

For DMMA pdMOOC, when completion rates are calculated based on intention, they are higher than traditional completion rates and completion rates based on starters, which are also active learners.

4.2.5 Summary

For four pdMOOCs, the number of total enrollment, non-starters, starters, non-completers, and completion as well as completion and non-completion rates are summarized in the Table 4.29 below.

Table 4.29. Summary of the Courses

pdMOOCs	TEnr	NS	S	NC	C	CR (Enr)	CR (S)	NCR (Enr)	NCR (S)
DPP	7176	1923	5253	2092	3161	44.05	60.18	55.95	39.82
PP-I	5666	1534	4132	2994	1138	20.08	27.54	79.92	72.46
VDP	1561	743	818	626	192	12.30	23.47	87.70	76.53
DMMA	1402	591	811	557	254	18.12	31.32	81.88	68.68
Total	15805	4791	11014	6269	4745	30.02	43.08	69.98	56.92

Note: TEnr: Total Enrolment, NS: Non-starters, S: Starters, NC: Non-completers, C: Completers, CR (Enr): Completion rate based on enrolled participants, CR (S): Completion rate based on starters, NCR (Enr): Non-completion rate based on enrolled participants, NCR (S): Non-completion rate based on starters

For two course categories (soft skill and technical skill), the number of total enrollment, non-starters, starters, non-completers, and completion as well as completion and non-completion rates are summarized in the Table 4.30 below.

Table 4.30. Summary of Numbers per Course Category

pdMOOCs	TEnr	NS	S	NC	C	CR (Enr)	CR (S)	NCR (Enr)	NCR (S)
Soft Skill	8737	2666	6071	2718	3353	38.38	55.23	61.62	44.77
Technical Skill	7068	2125	4943	3551	1392	19.69	28.16	80.31	71.84

Note: TEnr: Total Enrolment, NS: Non-starters, S: Starters, NC: Non-completers, C: Completers, CR (Enr): Completion rate based on enrolled participants, CR (S): Completion rate based on starters, NCR (Enr): Non-completion rate based on enrolled participants, NCR (S): Non-completion rate based on starters

For four pdMOOCs, the participants who selected "intention to complete" as their intention, completers, and completion rate based on participant intent are summarized in the Table 4.31 below.

Table 4.31. Summary of Courses based on Intention to Complete

pdMOOCs	Intention to Complete	Consent Given	Completers	Completion Rate based on Intention
DPP	4521	4160	2748	66.06%
PP-I	3338	3055	948	31.03%
VDP	655	603	154	25.54%
DMMA	703	646	224	34.67%
Total	9217	8464	4074	48.13%

For two course categories (soft skill and technical skill), the participants who selected "intention to complete" as their intention, completers, and completion rate based on participant intent are summarized in the Table 4.32 below.

Table 4.32. Summary of Numbers per Course Category

pdMOOCs	Intention to Complete	Consent Given	Completers	Completion Rate based on Intention
Soft Skill	5176	4763	2902	60.93%
Technical Skill	4041	3701	1172	31.67%

In brief, when completion rates are calculated based on intention, they are higher than traditional completion rates and completion rates based on starters in four pdMOOCs. Overall, soft skill course category has higher course completion rate than technical course category. Moreover, DPP has the highest course completion rate while VDP pdMOOC has the lowest course completion rate.

4.3 RQ3: What are learners' behaviors based on their intentions and what are the reasons behind intention-behavior gap?

Learner intention was measured using four categories as unsure, browse, audit, and complete. Correspondingly, learner behaviors were classified into four categories as no activity, browsed, audited, and completed based on system logs. Table 4.33 below shows the explanations of learner intention and their behaviors.

Table 4.33. Intention and Behaviour

Intention	Explanation	Behavior	Explanation
Unsure	"Have not decided whether I will complete any course activities"	No activity	Not started the course, not carried out any activity, and not received a certificate
Browse	"Here to browse the materials, but not planning on completing any course activities (watching videos, reading text, answering problems, etc.)"	Browsed	Started the course, checked one activity, and not received a certificate
Audit	"Planning on completing some course activities, but not planning on earning a certificate"	Audited	Started the course, completed more than one activity, and not received a certificate
Complete	"Planning on completing enough course activities to earn a certificate."	Completed	Started the course and earned a certificate

Learner intentions in pdMOOCs varying from unsure to complete and their consecutive behaviors were classfied into intention-behavior patterns. Four intention-behavior patterns, which are inclined actors, inclined abstainers, disinclined actors, and disinclined abstainers, have been used in this study. Table 4.34 below shows the explanation of intention-behavior patterns.

Table 4.34. Intention-behaviour Patterns

Intention-behavior patterns	Explanation
Inclined actors	Learners did what they intended, and their behaviors were equal to their intention accordingly
Inclined abstainers	Learners' behaviors were not equal to their intentions
Disinclined actors	Learners formed no intentions, but they acted anyway
Disinclined abstainers	Learners formed no intentions, and they did not act accordingly

4.3.1 Learners' Behaviors based on Their Intentions

4.3.1.1 Dealing with Problematic People pdMOOC (DPP pdMOOC)

The total number of starters was 5253. 68 of the learners started the course after the intention survey was removed from the course. 446 learners did not give consent for the use of their data. As a result, the data of 4739 learners who stated their intentions before starting the DMMA pdMOOC were used in the analysis. Almost 90% of the learners stated their intention as they would like to complete the course, and among these learners 66% did so. The distribution of learner intention and completion status for DPP pdMOOC is given below in Table 4.35.

Table 4.35. Learner Intention and Completion Status for DPP pdMOOC

Intention	n	%	Completer	%	Non-completer	%
Unsure	252	5.3	71	28.2	181	71.8
Browse	86	1.8	17	19.8	69	80.2
Audit	241	5.1	60	24.9	181	75.1
Complete	4160	87.8	2748	66.1	1412	33.9
Total	4739	100	2896	61.1	1843	38.9

Among 4739 MOOC learners enrolled in DPP pdMOOC, 2842 (60%) of them can be considered as inclined actors because their consecutive behaviors were equal to their intention accordingly. That means learners formed a specific intention, and they acted in parallel with this intention. A further 1643 (34.7%) can be considered as inclined abstrainers because their consecutive behaviors were not equal to their intention. That means learners formed a specific intention, and they failed to act in parallel with this intention. As a result, the behavior was less than learners' intentions, and intention exceeded the behavior of the learners. Of the learners, 239 (5%) can be considered as disinclined actors as learners formed no intentions, but they acted anyway. Only 13 (.3%) learners can be considered disinclined abstainers because learners formed no intentions, and they did not act accordingly. Table 4.36 below shows the distribution of intention, behavior, and intenton-behavior gap in DPP pdMOOC.

Table 4.36. Distribution of Intention, Behavior, and Intention-behavior Gap in DPP pdMOOC

Intention	n	Behavior				Intention-Behavior Gap			
		NA	B	A	C	IAc	IAb	DAc	DAb
Unsure	252	13 (5.2%)	126 (50%)	42 (16.7%)	71 (28.2%)	0 (0%)	0 (0%)	239 (94.8%)	13 (5.2%)
Browse	86	10 (11.6%)	42 (48.8%)	17 (19.8%)	17 (19.8%)	42 (48.8%)	44 (51.2%)	0 (0%)	0 (0%)
Audit	241	12 (5%)	115 (47.7%)	52 (21.6%)	60 (24.9%)	52 (21.6%)	187 (77.6%)	0 (0%)	0 (0%)
Complete	4160	193 (4.6%)	713 (17.1%)	504 (12.1%)	2748 (66.1%)	2748 (66.1%)	1412 (33.9%)	0 (0%)	0 (0%)
Total	4739	228 (4.8%)	996 (21%)	615 (13%)	2896 (61.1%)	2842 (60%)	1643 (34.7%)	239 (5%)	13 (.3%)

Note: 4 (.1%) values are missing for Browse and Complete for behavior, 2 (.0%) values are missing for Browse for Intention-Behavior Gap, NA: No action, B: Browse, A: Audit, C: Complete, IAc: Inclined actors, IAb: Inclined abstainers, DAc: Disinclined actors, DAb: Disinclined abstainers

4.3.1.2 Python Programming-I pdMOOC (PP-I pdMOOC)

The total number of starters was 4132. 159 of the learners either started the course after the intention survey was removed from the course or before the intention survey was placed in the beginning of the course. 422 learners did not give consent for the use of their data. As a result, the data of 3596 learners who stated their intentions before starting the DMMA pdMOOC were used in the analysis. Almost 85% of the learners stated their intention as they would like to complete the course, and among these learners 31% did so. The distribution of learner intention and completion status for PP-I pdMOOC is given below in Table 4.37.

Table 4.37. Learner Intention and Completion Status for PP-I pdMOOC

Intention	n	%	Completer	%	Non-completer	%
Unsure	240	6.7	35	14.6	205	85.4
Browse	101	2.8	9	8.9	92	91.1
Audit	200	5.6	18	9	182	91
Complete	3055	85	948	31	2107	69
Total	3596	100	1010	28.1	2586	71.9

Among 3596 MOOC learners enrolled in PP-I pdMOOC, 1116 (31%) of them can be considered as inclined actors because their consecutive behaviors were equal to their intention accordingly. That means learners formed a specific intention, and they acted in parallel with this intention. A further 2240 (62.3%) can be considered as inclined abstrainers because their consecutive behaviors were not equal to their intention. That means learners formed a specific intention, and they failed to act in parallel with this intention. As a result, the behavior was less than learners' intentions, and intention exceeded the behavior of the learners. Of the learners, 231 (6.4%) can be considered as disinclined actors as learners formed no intentions, but they acted anyway. Only 9 (.3%) learners can be considered disinclined abstainers because learners formed no intentions, and they did not act accordingly. Table 4.38 below shows the distribution of intention, behavior, and intenton-behavior gap in PP-I pdMOOC.

Table 4.38. Distribution of Intention, Behavior, and Intention-behavior Gap in PP-I pdMOOC

Intention	n	Behavior				Intention-Behavior Gap			
		NA	B	A	C	IAc	IAb	DAc	DAb
Unsure	240	9 (3.8%)	62 (25.8%)	134 (55.8%)	35 (14.6%)	0 (0%)	0 (0%)	231 (96.2%)	9 (3.8%)
Browse	101	2 (2%)	29 (28.7%)	61 (60.4%)	9 (8.9%)	29 (28.7%)	72 (71.3%)	0 (0%)	0 (0%)
Audit	200	5 (2.5%)	38 (19%)	139 (69.5%)	18 (9%)	139 (69.5%)	61 (30.5%)	0 (0%)	0 (0%)
Complete	3055	142 (4.6%)	407 (13.3%)	1558 (51%)	948 (31%)	948 (31%)	2107 (69%)	0 (0%)	0 (0%)
Total	3596	158 (4.4%)	536 (14.9%)	1892 (52.6%)	1010 (28.1%)	1116 (31%)	2240 (62.3%)	231 (6.4%)	9 (.3%)

Note: NA: No action, B: Browse, A: Audit, C: Complete

4.3.1.3 Visual Design Principles pdMOOC (VDP pdMOOC)

The total number of starters was 818. Six of the learners started the course after the intention survey was removed from the course. Seventy-seven learners did not give consent for the use of their data. As a result, the data of 741 learners who stated their intentions before starting the DMMA pdMOOC were used in the analysis. Almost 82% of the learners stated their intention as they would like to complete the course, and among these learners 25% did so. The distribution of learner intention and completion status for VDP pdMOOC is given below in Table 4.39.

Table 4.39. Leaner Intention and Completion Status for VDP pdMOOC

Intention	n	%	Completer	%	Non-completer	%
Unsure	66	8.9	7	10.6	59	89.4
Browse	19	2.6	2	10.5	17	89.5
Audit	53	7.2	8	15.1	45	84.9
Complete	603	81.4	154	25.5	449	74.5
Total	741	100	171	23.1	570	76.9

Among 741 MOOC learners enrolled in VDP pdMOOC, 189 (25.5%) of them can be considered as inclined actors because their consecutive behaviors were equal to their intention accordingly. That means learners formed a specific intention, and they acted in parallel with this intention. A further 486 (65.6%) can be considered as inclined abstrainers because their consecutive behaviors were not equal to their intention. That

means learners formed a specific intention, and they failed to act in parallel with this intention. As a result, the behavior was less than learners' intentions, and intention exceeded the behavior of the learners. Of the learners, 64 (8.6%) can be considered as disinclined actors as learners formed no intentions, but they acted anyway. Only 2 (.3%) learners can be considered disinclined abstainers because learners formed no intentions, and they did not act accordingly. Table 4.40 below shows the distribution of intention, behavior, and intenton-behavior gap in VDP pdMOOC.

Table 4.40. Distribution of Intention, Behavior, and Intention-behavior Gap in VDP pdMOOC

Intention	n	Behavior				Intention-Behavior Gap			
		NA	B	A	C	IAc	IAb	DAc	DAb
Unsure	66	2 (3%)	37 (56.1%)	20 (30.3%)	7 (10.6%)	0 (0%)	0 (0%)	64 (97%)	2 (3%)
Browse	19	3 (15.8%)	12 (63.2%)	2 (10.5%)	2 (10.5%)	12 (63.2%)	7 (36.8%)	0 (0%)	0 (0%)
Audit	53	1 (1.9%)	21 (39.6%)	23 (43.4%)	8 (15.1%)	23 (43.4%)	30 (56.6%)	0 (0%)	0 (0%)
Complete	603	67 (11.1%)	241 (40%)	141 (23.4%)	154 (25.5%)	154 (25.5%)	449 (74.5%)	0 (0%)	0 (0%)
Total	741	73 (9.9%)	311 (42%)	186 (25.1%)	171 (23.1%)	189 (25.5%)	486 (65.6%)	64 (8.6%)	2 (.3%)

Note: NA: No action, B: Browse, A: Audit, C: Complete

4.3.1.4 Database Management with MS Access (DMMA pdMOOC)

The total number of starters was 811. Ten of the learners started the course after the intention survey was removed from the course. Eighty learners did not give consent for the use of their data. As a result, the data of 721 learners who stated their intentions before starting the DMMA pdMOOC were used in the analysis. Almost 90% of the learners stated their intention as they would like to complete the course, and among these learners 35% did so. The distribution of learner intention and completion status for DMMA pdMOOC is given below in Table 4.41.

Table 4.41. Leaner Intention and Completion Status for DMMA pdMOOC

Intention	n	%	Completer	%	Non-completer	%
Unsure	39	5.4	4	10.3%	35	89.7%
Browse	11	1.5	0	0%	11	100%
Audit	25	3.5	2	8%	23	92%
Complete	646	89.6	224	34.7%	422	65.3%
Total	721	100	230	31.9%	491	68.1%

Among 721 MOOC learners enrolled in PP-I pdMOOC, 247 (34.3%) of them can be considered as inclined actors because their consecutive behaviors were equal to their intention accordingly. That means learners formed a specific intention, and they acted in parallel with this intention. A further 435 (60.3%) can be considered as inclined abstrainers because their consecutive behaviors were not equal to their intention. That means learners formed a specific intention, and they failed to act in parallel with this intention. As a result, the behavior was less than learners' intentions, and intention exceeded the behavior of the learners. Of the learners, 37 (5.1%) can be considered as disinclined actors as learners formed no intentions, but they acted anyway. Only 2 (.3%) learners can be considered disinclined abstainers because learners formed no intentions, and they did not act accordingly. Table 4.42 below shows the distribution of intention, behavior, and intenton-behavior gap in DMMA pdMOOC.

Table 4.42. Distribution of Intention, Behavior, and Intention-behavior Gap in DMMA pdMOOC

Intention	n	Behavior				Intention-Behavior Gap			
		NA	B	A	C	IAc	IAb	DAc	DAb
Unsure	39	2 (5.1%)	16 (41%)	17 (43.6%)	4 (10.3%)	0 (0%)	0 (0%)	37 (94.9%)	2 (5.1%)
Browse	11	1 (9.1%)	7 (63.6%)	3 (27.3%)	0 (0%)	7 (63.6%)	4 (36.4%)	0 (0%)	0 (0%)
Audit	25	0 (0%)	7 (28%)	16 (64%)	2 (8%)	16 (64%)	9 (36%)	0 (0%)	0 (0%)
Complete	646	62 (9.6%)	128 (19.8%)	232 (35.9%)	224 (34.7%)	224 (34.7%)	422 (65.3%)	0 (0%)	0 (0%)
Total	721	65 (9%)	158 (21.9%)	268 (37.2%)	230 (31.9%)	247 (34.3%)	435 (60.3%)	37 (5.1%)	2 (.3%)

Note: NA: No action, B: Browse, A: Audit, C: Complete

4.3.1.5 Summary

In brief, the data of 9797 learners who stated their intentions before starting four pdMOOCs were used in the analysis. Almost 87% of the learners stated their intention as they would like to complete the course, and among these learners 48% did so. The distribution of learner intention and completion status for four pdMOOCs is given below in Table 4.43.

Table 4.43. Leaner Intention and Completion Status for Four pdMOOCs

Intention	n	%	Completer	%	Non-completer	%
Unsure	597	6.09	117	19.60	480	80.40
Browse	217	2.21	28	12.90	189	87.10
Audit	519	5.30	88	16.96	431	83.04
Complete	8464	86.39	4074	48.13	4390	51.87
Total	9797	100	4307	43.96	5490	56.04

Among 9797 MOOC learners enrolled in four pdMOOCs, 4394 (44.85%) of them can be considered as inclined actors because their consecutive behaviors were equal to their intention accordingly. That means learners formed a specific intention, and they acted in parallel with this intention. A further 4804 (49.04%) can be considered as inclined abstainers because their consecutive behaviors were not equal to their intention. That means learners formed a specific intention, and they failed to act in parallel with this intention. As a result, the behavior was less than learners' intentions, and intention exceeded the behavior of the learners. Of the learners, 571 (5.83%) can be considered as disinclined actors as learners formed no intentions, but they acted sanyway. Only 26 (.27%) learners can be considered disinclined abstainers because learners formed no intentions, and they did not act accordingly. Table 4.44 below shows the distribution of intention, behavior, and intenton-behavior gap in four pdMOOCs.

Table 4.44. Distribution of Intention, Behavior, and Intention-behavior Gap in Four pdMOOCs

Intention	Behavior				Intention-Behavior Gap			
	NA	B	A	C	IAc	IAb	DAc	DAb
Unsure (n=597)	26 (4.36 %)	241 (40.37%)	213 (35.68%)	117 (19.60%)	0 (0%)	0 (0%)	571 (95.64%)	26 (4.36%)
Browse (n=217)	16 (7.37 %)	90 (41.47%)	83 (38.25%)	28 (12.90%)	90 (41.47%)	127 (58.53%)	0 (0%)	0 (0%)
Audit (n=519)	18 (3.47 %)	181 (34.87%)	230 (44.32%)	88 (16.96%)	230 (44.32%)	287 (55.30%)	0 (0%)	0 (0%)
Complete (n=8464)	464 (5.48 %)	1489 (17.59%)	2435 (28.77%)	4074 (48.13%)	4074 (48.13%)	4390 (51.87%)	0 (0%)	0 (0%)
Total (n=9797)	524 (5.35 %)	2001 (20.42%)	2961 (30.22%)	4307 (43.96%)	4394 (44.85%)	4804 (49.04%)	571 (5.83%)	26 (.27%)

In brief, the results showed that intention-behavior gap occurs in Bilgeİş pdMOOCs. Particularly, inclined abstrainers are responsible for this gap as their consecutive behaviors were not equal to their intention. That means learners formed a specific intention, and they failed to act in parallel with this intention.

4.3.2 The Reasons behind Intention-behavior Gap

As the learner intentions did not result in intended behaviors, intention-behavior gap occurred in the pdMOOCs used in this study. The reasons behind intention-behavior gap was explored using learner responses to open ended questions.

4.3.2.1 The Reasons Behind Why Learners Achieved Less Than Intended

The reasons behind intention-behavior gap for learners who achieved less than they intended were gouped under 6 themes as (1) Learner related time issues, (2) Learner related general issues, (3) Learner related technical issues, (4) Portal/course related usability issues, (5) Course related issues, and (6) MOOC related issues.

Learner Related Time Issues (f= 86):

Learners achieved below their intentions in the course due to time issues caused by themselves. Learner related time issues included lack of time, lack of time due to work load/activities, lack of time due to educational load/activities, and lack of time due to daily load/activities. Table 4.45 shows the codes for learner related time issues for learners achieved less than they intended.

Table 4.45. Learner Related Time Issues for Learners Achieved Less Than They Intended

Codes	f
Lack of time	40
Lack of time due to work load/activities	24
Lack of time due to educational load/activities	13
Lack of time time due to daily load/activities	9

Lack of time (f= 40):

The main reason why learners achieved less than they intended was lack of time. Clearly, learners did not have enough time to continue pdMOOCs and complete them. Learners expressed:

"I am not able to allocate time to watch course lectures." [L 4-47]

"The course durations on your site were too long. I could not spare enough time." [L 4-75]

Lack of time due to work load/activities (f= 24):

Following general lack of time, learners were not be able to achieve in the way they intended because they were busy with their work load/activities. Learners stated:

"I am not able to allocate dime due to work and tense stress." [L 4-46]

"I had plenty of free time when I filled in the intention instrument. I registered for many courses. Soon after, I got a job, and I work 12 hours a day. I cannot spare time for these courses in the time left for me." [L 4-119]

Lack of time due to educational load/activities (f= 13):

Learners reported that they spare their time for their other educational activities, such as preparing for exams, studying for creadit-based courses they are taking. For this reason, learners were not able to achieve what they intended. They mentioned:

“I am not able to spare time as I am preparing for the university entrance exam.” [L 4-18]

“I am not able to find enough time because of my school and exams unfortunately, but I would like to complete the course.” [L 4-48]

Lack of time time due to daily load/activities (f= 9):

Following lack of time due to educational load/activities, learners spare their time for their daily activities. This also led them to achieve less than what they intended. Learners explained:

“…I have not had a chance so far in the evenings since we have a little baby”. [L 4-74]

“I still have things to do. I am busy every day.” [L 4-89]

Learner Related General Issues (f= 64):

In addition to learner time related issues, learner related general issues were accountable for learners achieving below their intentions in the course. Learner related issues included forgetting that learners were taking the course, insufficient knowledge on MOOCs, health problems, private problems, no interest in certificate, and taking a break. In addition to common learner related issues, one issue, learning enough without completing the course activities, was a lot different than other learner related general issues. Table 4.46 shows the codes for learner related general issues for learners achieved less than they intended.

Table 4.46. Learner Related General Issues for Learners Achieved Less Than They Intended

Codes	f
Forgetting that learner was taking the course	8
Insufficient knowledge on MOOCs	7
Health problems	6
Private problems	6
No interest in certificate	2
Took a break	2
Change in one's interest	2
Taking another course from another portal	2
Course not useful	1
Not being able to afford course program	1
Difficulty in focusing again	1
Lack of interest for the course	1
Intense stress	1
Forgetting to return to the course	1
Low Internet use knowledge/skill	1
Following the courses whenever one can	1
Already knowing the course content	1
Losing interest	1
Course not one's priority	1
Having bad experiences while taking other courses	1
Postponing to obtain/receive the certificate	1
Needing prior knowledge in related topics	1
Being unsure about what to learn	1
Learning enough without completing the course activities	1
Needing reminder notifications	1
Will be starting another course	1
Assignment anxiety	1
Forgetting the password	1
Taking the same course from another portal	1
Lack of planning	1
Lack of goal	1
Perceived course difficulty	1
Change in course taking plans	1
Forgetting things due to age	1

Forgetting that learner was taking the course (f= 8):

As pdMOOCs on Bilgeİş Learning Portal are self-paced courses with no start and end date, leaners could register and take the course anytime. However, this flexibity led learners to achieve less than they intended. Learners frequently stated that they forgot that they were taking the course. Two learners reported:

"Frankly, I forgot I enrolled in such a course." [L 4-38]

“It was just out of my mind because of being busy, unfortunately. You reminded me.” [L 4-84]

“Since I started an intensive master's and English course programs, I could not spare time. Later, time passed and I even forgot that I was taking the course. This e-mail was kind of like a reminder to me.” [L 4-128]

Insufficient knowledge on MOOCs (f= 7):

As MOOCs on Bilgeİş Learning Portal provide open access to pdMOOCs, anyone can take any pdMOOC from the portal. This resulted in learners with insufficient knowledge on MOOCs registering for the pdMOOCS. As they did not have insufficient knowledge about how MOOCs work, they had some misconceptions about the course process, and this led to learners becoming confused about how courses work. Learners stated:

“Although I completed all the assignments, noone got back to me for the assignments. I want these issues to be resolved. I did all the assignments, but did not get any results on the assignments.” [L 4-14]

“When I missed the course lectures, I could not keep up with the course. Lack of time has also been the cause, but I would like to continue.” [L 4-52]

“I could not follow up the course because I did not receive any notification from you and did not know the hours of the course” [L 4-59]

Health problems (f= 6):

Due to their health problems, learners achieved less than they intended in the course. Learners stated:

“As I was sick, I could not continue the course.” [L 4-99]

“I have a serious illness. My health problems prevented me.” [L 4-114]

Private problems (f= 6):

Due to their private problems, learners achieved less than they intended in the course. Learners stated:

"I did not spare time for this kind of activity and course because I had problems in both my school life and private life." [L 4-26]

"I could not continue because of private reasons." [L 4-66]

No interest in certificate (f= 2):

Learners decided that they have no interest in receving a certificate from Bilgeİş Learning Portal. For this reason, they achieved less than intended. Learners mentioned:

"I decided it did not matter to get a certificate. The important thing is to learn." [L 4-50]

"I decided that I am not interested in the certificate anyway." [L 1-20]

Taking a break (f= 2):

Learners took a break while they were taking the courses. This led them to achieve less than they intended. Learners expressed:

"…I took a break for a while and I will continue to complete the course." [L 1-28]

"I took a break from learning from Bilgeİş courses during the period I have been preparing for the TÜBİTAK high school research projects competition." [L 4-42]

Learning enough without completing the course activities (f=1):

One learner stopped participating in the pdMOOC because he/she reported learning enough without completing the course activities. This was one of the most striking learner related issue. This was explained by the learner as:

"Since I had the necessary information from the course, I did not have to complete all course topics. It was essential for my own personal growth…" [L 3-9]

Learner Related Technical Issues (f= 10):

Learners achieved below their intentions in the course due to learner related technical issues. Learner related technical issues included Internet connection issues, not being able to access the portal using work computer, having a computer with low features/specifications, and having a broken computer. Table 4.47 shows the codes for learner related technical issues for learners achieved less than they intended.

Table 4.47. Learner Related Technical Issues for Learners Achieved Less Than They Intended

Codes	f
Internet connection issues	5
Not being able to access the portal using work computer	2
Low computer features/specifications	2
Broken computer	1

Internet connection issues (f= 5):

Learners were not able to connect to the Internet due to some reasons such as not having constant Internet connection, having a limited Internet quota, and having no access to Internet for a while. These issues caused learners to achieve less than they intended in the course. Learners stated:

"I have a minor Internet-computer incompatibility problem after moving my home to a new place." [L 4-6]

"I cannot attend the course as I do not have a permanent Internet connection. I still want to get a certificate, my decision remains in place." [L 4-43]

"I could not complete the course due to the difficulty I experienced in accessing the Internet." [L 4-44]

"I could not complete the course because I did not have enough Internet quota to watch course videos." [L 4-91]

Not being able to access the portal using work computer (f=2):

Learners were not able to access the portal using their work computers as their work computers were restricted. This caused them to achieve less than they intended in the course. Learners explained:

"I was having difficulty accessing the course due to restircted Internet at work. At home I did not take care of the course." [L 4-64]

“I am still determined to complete the course, but my computer at work is restricted so I cannot access the course from my workplace…” [L 4-74]

<u>Low computer features/specifications (f=2):</u>

Having a computer with low features/specifications caused learners to achieve less than they intended in the course as they were not able to watch course lectures or code for Python. Learners mentioned:

“I could not watch some lecture videos on my computer.” [L 1-1]

“I wanted to learn programming with Python, but I had to delete the compiler I downloaded for Python because the features of my computer were very low, and I could not afford a new computer; otherwise, I was not able to do other works on my computer.” [L 4-129]

Portal/Course Related Usability Issues (f= 4):

Learners achieved less than they intended in the course due to portal/course related usability issues including not being able to access course content because of learners' work Interet filters, courses being not fully mobile device compatible, experiencing errors on the course completed parts, and support desk not working properly. Table 4.48 shows the codes for portal/course related usability issues for learners achieved less than they intended.

Table 4.48. Portal/Course Related Usability Issues for Learners Achieved Less Than They Intended

Codes	f
Not being able to access course content	1
Courses not fully mobile device compatible	1
Errors on the course completed parts	1
Support desk not working properly	1

<u>Not being able to access course content (f=1):</u>

Some of the course videos are hosted on YouTube, and access to YouTube is blocked on the computers located at the public schools managed by Ministry of National Education of Turkey. Therefore, course videos hosted on YouTube are not accessible, and learners are not able to access these videos, and this led them to achieve less than they intended. One learner explained:

“The relevant course materials are not opened at the institution I am affiliated with, and therefore, I could not complete my course.” [L 4-7]

Courses not fully mobile device compatible (f=1):

Courses not being fully mobile device compatible resulted in learners achieving less than they intended in the course as they were not able to watch course lectures effectively on their mobile devices. A learner explained:

“Because I cannot watch course videos on a mobile device, and I cannot find the time to watch them on a computer.” [L 4 -17]

Course Related Issues (f= 12):

Learners who achived less than they intended stated course design related issues for this. Learners found the courses not explanatory enough, course content not clear, course content not interesting, course content simple, course requiring some time to finish, assignment grading duration long, course having long length, course having insufficient content, course content not as expected, and course lacking reminder notifications. Learners also mentioned the need for more interactive courses and quality education. These issues led learners to have behaviors which were below their intentions. Table 4.49 shows the codes for course design related issues for learners achieved less than they intended.

Table 4.49. Course Design Related Issues for Learners Achieved Less Than They Intended

Codes	f
Courses not explanatory enough	1
Course content not clear	1
Course content not interesting	
Too basic/Simple course content	1
Course requires some time to finish	1
Late assignment grading	1
Long course length	1
Insufficient content	1
Course content not as expected	1
Lack of reminder notifications	1
Need for more interactive courses	1
Need for quality education	1

MOOC Related Issues (f=3):

Learners achieved less than they intended due to MOOC related issues, including registering for many courses and not having a physical course environment/context. Table 4.50 shows the codes for MOOC related issues for learners achieved less than they intended.

Table 4.50. MOOC Related Issues for Learners Achieved Less Than They Intended

Codes	f
Registering for multiple courses	2
No physical course environment/context	1

Registering for multiple courses (f=2):

Learners achieved less than they intended as they registered for multiple courses, and they were not able to spare enough time for these courses. Learners explained:

“I have not changed my intention… I have not had time to start the other courses I registered for yet.” [L 4-98]

“I had plenty of free time when I filled in the intention instrument. I registered for many courses…I cannot spare time for these courses in the time left for me.” [L 4-119]

No physical course environment/context (f=1):

Learners did not take the course seriously as there was no physical course environments provided by MOOCs. Therefore, learners achieved less than they intended in the course. A learner stated:

"Since there was no physical course environment, I could not provide the necessary seriousness for the course. I made the decision to start the course again after receiving your e-mail." [L 4-58]

4.3.2.2 The Reasons Behind Why Learners Achieved More Than Intended

The reasons behind intention-behavior gap for learners who achieved more than they intended were gouped under 2 themes as (1) Learner related general issues and (2) Course design related issues.

Learner Related General Issues (f= 16):

Learners who achived more than they intended mostly stated learner related general issues for this. Learner related general issues included getting motivated to learn, personal development, wanting to obtaing a certificate, and perceiving the course useful. Table 4.51 shows the codes for learner related issues for learners achieved more than they intended.

Table 4.51. Learner Related Issues for Learners Achieved More Than They Intended

Codes	f
Got motivated to learn	3
Perceived the course useful	3
Personal development	2
Wanted to obtain a certificate	2
Not that difficult as one expected	1
Credible portal for learning	1
Kept going as long as one could	1
Interest in the topic	1
Perceived assignment difficulty	1
Tried his/her luck	1

Got motivated to learn (f=3):

Learners got motivated to learn the MOOC topic, and this led them to achieve more than they intended. This was explained by two learners as the following:

"I wanted to learn the course …" [L 1-8]

"I was not sure whether I could spare enough time for the course, but later I wanted to complete the course." [L 1-13]

Perceived the course useful (f=3):

Learners perceived that the course would be useful for them, and this facilitated achieving more than they intended. Two learners stated:

"…I thought that the course would be useful for me." [L 1-8]

"Because the course was useful." [L 1-16]

Personal development (f=2):

Learners achieve more than they intended because they saw their MOOC experience valuable for their personal development. This was summarized by two learners as the following:

"I wanted to improve myself in my free times, and I wanted to make use of my time." [L 1-25]

"I wanted to improve myself." [L 1-29]

Wanted to obtain a certificate (f=2):

Learners wanted to obtain a certificate, and this helped them to achieve more than they intended. Two learners explained:

"I thought that it would be better to have a certificate in hand…" [L 1-29]

"I found the course useful, and I wanted to obtain a certificate." [L 1-34]

Course Design Related Issues (f= 5):

Learners who achived more than they intended also stated course design related issues for this. Course design issues included course being clear to learners, course being developed in a professional way, course content having good quality, course being fluent, and course being appealing. Table 4.52 shows the codes for course design related issues for learners achieved more than they intended.

Table 4.52. Course Design Related Issues for Learners Achieved More Than They Intended

Codes	f
Clear course	1
Professionally developed course	1
Quality course content	1
Fluent course	1
Appealing course	1

As a summary, the results showed that the majority of learners achieved less than their intentions, and only few learners achieved more than their intentions. These signal that learner intentions tend to change in MOOCs. Particularly, learner related time issues led learners to achieve less than their intentions, and learner related general issues led learners to achieve more than their intentions.

4.4 What are the relationships between learners' characteristics, online learning readiness, learners' intent, learners' course behaviors, and pdMOOC completion?

4.4.1 The Relationship between Learners' Characteristics and pdMOOC Completion

In order to explore the relationship between learners' characteristics and pdmooc completion, age, gender, education level, employment status, previous online learning experience variables were used as learners' characteristics.

Learners' age categories were grouped into five categories as less than 18, between 18-25, between 26-35, and greater than 35. As it can be clearly seen from the Table 4.53 below, the ages of the majority of pdMOOC learners are between 18 and 25.

Table 4.53. Distribution of Learners' Age Categories

Age	n	%
<18	1906	13.3
18-25	6383	44.5
26-35	3846	26.8
>35	2215	15.4
Total	14350	100

Pearson's chi-square test for independence was carried out to discover the relationship between learners' age categories and pdMOOC completion. The results of Pearson's chi-square test showed a significant relationship between learners' age categories and pdMOOC completion ($\chi 2(3)= 12.03$, $p <.05$). The strength of the association between age and pdMOOC completion were evaluated using Phi coefficient. However, phi coefficient was found as .03 which shows a very small effect. Learners aged between 18 and 25 are more likely to complete pdMOOCs than learners aged less than 18, between 26 and 35, and more than 35. Table 4.54 provides Pearson's Chi-square test results for age categories and pdMOOC completion.

Table 4.54. Pearson's Chi-square Test Results for Age Categories and pdMOOC Completion

Age Category	Completion		$\chi^2(1)$	p
	No	Yes		
<18	1328 (13.2%)	578 (13.4%)	12.03	.007
18-25	4374 (43.6%)	2009 (46.5%)		
26-35	2751 (27.4%)	1095 (25.3%)		
>35	1574(15.7%)	641(14.8%)		
Total	10027 (69.9%)	4323 (30.1%)		

Pearson's chi-square test for independence was carried out to discover the relationship between learners' gender and pdMOOC completion. The results of Pearson's chi-square test showed a significant relationship between learners' gender and pdMOOC completion ($\chi^2(1)= 14.04$, $p <.05$). The strength of the association between gender and pdMOOC completion were evaluated using Cramer's V coefficient. However, Cramer's V coefficient was found as .03 which shows a very small effect. Male learners are more likely to complete pdMOOCs than female learners. Table 4.55 provides Pearson's Chi-square test results for gender and pdMOOC completion.

Table 4.55. Pearson's Chi-square Test Results for Learners' Gender and pdMOOC Completion

Gender	Completion		$\chi^2(1)$	p
	No	Yes		
Female	4401 (43.9%)	2044 (47.3%)	14.04	.000
Male	5626 (56.1%)	2279 (52.7%)		
Total	10027 (69.9%)	4323 (30.1%)		

Education level of learners were classified into three categories as high school degree and below, bachelor's student and bachelor's degree, and graduate student and graduate degree. Pearson's chi-square test for independence was carried out to discover the relationship between learners' educational level and pdMOOC completion. The results of Pearson's chi-square test showed a significant relationship between learners' educational level and pdMOOC completion ($\chi^2(2)= 26.32$, $p <.05$). The strength of the association between education level and pdMOOC completion were evaluated using Phi coefficient. However, Phi coefficient was found as .04 which shows a very small effect. Learners who have Bachelor's degree or who are still Bachelor's students are more likely to complete pdMOOCs than other learners. Table 4.56 provides Pearson's Chi-square test results for education level and pdMOOC completion.

Table 4.56. Pearson’s Chi-square Test Results for Learners’ Education Level and pdMOOC Completion

Education level	Completion		$\chi^2(1)$	p
	No	Yes		
High school degree and below	1483 (14.8%)	747 (17.3%)		
Bachelor’s student and Bachelor’s degree	7143 (71.3%)	3082 (71.3%)	26.32	.000
Graduate student and graduate degree	1396 (13.9%)	494 (11.4%)		
Total	10022 (69.9%)	4323 (30.1%)		

Employment status of learners were classified into two categories as working and not working. Pearson’s chi-square test for independence was carried out to discover the relationship between learners’ employment status and pdMOOC completion. The results of Pearson’s chi-square test showed a significant relationship between learners’ employment status and pdMOOC completion ($\chi^2(1)$= 19.01, p <.05). The strength of the association between employment status and pdMOOC completion were evaluated using Cramer’s V coefficient. However, Cramer’s V coefficient was found as .04 which shows a very small effect. Learners who are not working are more likely to complete pdMOOCs than learners who are working. Table 4.57 provides Pearson’s Chi-square test results for employment status and pdMOOC completion.

Table 4.57. Pearson’s Chi-square Test Results for Learners’ Employment Status and pdMOOC Completion

Employment status	Completion		$\chi^2(1)$	p
	No	Yes		
Not working	5513 (55%)	2547 (58.9%)		
Working	4514 (45%)	1776 (41.1%)	19.01	.000
Total	10027 (69.9%)	4323 (30.1%)		

Pearson’s chi-square test for independence was carried out to discover the relationship between learners’ previous online learning experience and pdMOOC completion. The results of Pearson’s chi-square test showed no significant relationship between learners’ previous online learning experience and pdMOOC completion ($\chi^2(1)$= 3.16, *p* >.05). Table 4.58 provides Pearson's Chi-square test results for previous online learning experience and pdMOOC completion.

Table 4.58. Pearson's Chi-square Test Results for Learners' Previous Online Learning Experience and pdMOOC Completion

Previous online learning experience	Completion		□^{2}(1)	p
	No	Yes		
No	6479 (64.6%)	2860 (66.2%)		
Yes	3548 (35.4%)	1463 (33.8%)	3.16	.075
Total	10027 (69.9%)	4323 (30.1%)		

4.4.2 The Relationship between Online Learning Readiness and pdMOOC Completion

A binary logistic regression was performed to examine whether there is a relationship between online learning readiness and pdMOOC completion. The logistic regression model was found to be statistically significant ($\chi 2(5) = 31.36$, $p < .05$). The model explained 4% (Nagelkerke R^2) of the variance in course completion and correctly classified 68.9% of the cases. Among the dimensions of online learning readiness, only Self-directed learning was found to be a significant predictor of course completion (Wald's $\chi 2$ (1) = 25.22, $p < .05$). Computer/Internet self-efficacy (Wald's $\chi 2$ (1) = 3.79, $p > .05$), Learner control (Wald's $\chi 2$ (1) = .01, $p > .05$), Motivation for learning (Wald's $\chi 2$ (1) = .53, $p > .05$), and Online communication self-efficacy (Wald's $\chi 2$ (1) = .21, $p > .05$) dimensions of online learning readiness were found to be non-significant predictors of course completion. Table 4.59 below provides logistic regression analysis results for the relationship between online learning readiness and pdMOOC completion.

Table 4.59. Logistic Regression Analysis Results

Predictor	B	SE of B	Wald	df	p	Odds Ratio
Constant	-1.299	.183	50.598	1	.000	.273
Computer/Internet self-efficacy	-.023	.012	3.794	1	.051	.978
Self-directed learning	.052	010	25.223	1	.000	1.054
Learner control	-.002	015	.013	1	.910	.998
Motivation for learning	-.010	014	.528	1	.468	.990
Online communication self-efficacy	-.006	.014	.207	1	.649	.994

Increased self-directed learning scores of learners was associated with an increased likelihood of course completion. Learners with higher self-directed learning scores 1.05 times more likely to complete the pdMOOCs.

4.4.3 The Relationship between Learners' Course Participation Intent and pdMOOC Completion

Pearson's chi-square test for independence was carried out to discover the relationship between learners' course participation intent (unsure, browse, audit, and complete) and pdMOOC completion. The distribution of learner intention was given in the Table 4.60 below.

Table 4.60. Distribution of Learner Intention

Learner Intention	n	%
Unsure	597	6.1
Browse	217	2.2
Audit	519	5.3
Complete	8462	86.4
Total	9795	100

As the distribution of learner intention was uneven, unsure, browse, and audit were grouped into other. The grouped distribution of learner intention was given in the Table 4.61 below.

Table 4.61. Distribution of Learner Intention

Learner Intention	n	%
Other	1333	13.6
Complete	8462	86.4
Total	9795	100

The results of Pearson's chi-square test showed a significant relationship between learner intent and pdMOOC completion ($\chi^2(1)= 439.24$, $p <.05$). The learners who stated their intentions as complete are more likely to complete the pdMOOCs when compared to the learners who stated their intentions as unsure, browse, and audit. The strength of the association between learner intent and pdMOOC completion were evaluated using Phi coefficient. Phi coefficient value was found as .212, which shows a small to medium effect. Table 4.62 provides Pearson's Chi-square test results for learner intention and pdMOOC completion.

Table 4.62. Pearson's Chi-square Test Results for Intention and pdMOOC Completion

Intention	Completion		$\chi^2(1)$	p
	No	Yes		
Other	1100 (82.5%)	233 (17.5%)	439.24	.000
Complete	4389 (51.9%)	4073 (48.1%)		
Total	5489 (56%)	4306 (44%)		

4.4.4 The Relationship between Learners' Course Behaviors and pdMOOC Completion

The number of course views, number of clicks in the course, time spent on the course, days stayed on the course, and average quiz attempts of learners were collected as learners' course behaviors. Descriptive statistics of learners' course behaviors are given in Table 4.63 below.

Table 4.63. Descriptive Statistics of Learners' Course Behaviors

Variables	M	SD	Median	Minimum	Maximum
Number of Course views	5.16	5.60	3	1	93
Number of clicks in the course	46.22	47.67	29	3	668
Time spent on the course (in minutes)	56.04	83.11	22	0	1113
Days stayed on the course	26.45	71.9	0	0	398
Average quiz attempts	.59	.83	0	0	11

n= 13,194

Point biserial correlation was calculated to reveal the relationships between number of course views, number of clicks in the course, time spent on the course, days stayed on the course, average quiz attempts, and pdMOOC completion. The results of point biserial correlation showed that there was a significant positive correlation between number of course views and pdMOOC completion (r (13192)= .41 , p <.05), number of clicks in the course and pdMOOC completion (r (13192)= .65, p <.05), time spent on the course and pdMOOC completion (r (13192)=.53 , p <.05), days spent on the course and pdMOOC completion (r (13192)= .09 , p <.05), and average quiz attempts and pdMOOC completion (r (13192)= .81, p <.05). While the correlation between number of clicks in the course and pdMOOC completion, time spent on the course and pdMOOC completion, and average quiz attempts and pdMOOC completion had a large effect size, number of course views and pdMOOC completion had a medium to large effect size. On the other hand, days stayed on the course and pdMOOC completion had a small effect size. Table 4.64 presents point biserial correlation between learners' course behaviors and pdMOOC completion.

Table 4.64. Point Biserial Correlation between Learners' Course Behaviors and pdMOOC Completion

Variables	Course views	Number of clicks	Time spent on the course	Days stayed on the course	Average quiz attempts	pdMOOC completion
Number of course views	-					
Number of clicks in the course	.741*	-				
Time spent on the course	.668*	.861*	-			
Days stayed on the course	.251*	.238*	.152*	-		
Average quiz attempts	.467*	.760*	.561*	.124*	-	
pdMOOC completion	.411*	.655*	.534*	.095*	.811*	-

*: $p < .01$, n= 13,194

As a summary, the results showed a significant relationship between learners' age categories, gender, education level, employment status, learner intent and pdMOOC completion while there was no significant relationship between learners' previous online learning experience and pdMOOC completion. Among the dimensions of online learning readiness, only self-directed learning was found to be a significant predictor of course completion. Computer/Internet self-efficacy, learner control, motivation for learning, and online communication self-efficacy dimensions of online learning readiness were found to be non-significant predictors of course completion. Regarding course behaviors, the results showed significant positive associations between number of course views, number of clicks in the course, time spent on the course, days spent on the course, and average quiz attempts, and pdMOOC completion.

4.5 RQ5: What are the predictors of course satisfaction and perceived learning?

Table 4.65 shows the descriptive statistics of online learning readiness, course satisfaction, perceived learning, and perceived usability.

Table 4.65. Descriptive Statistics of the Variables

Variables	M	SD	Min	Max
Online Learning Readiness (n= 8974)				
Computer/Internet Self-efficacy	4.04	.73	1	5
Self-directed Learning	3.98	.57	1	5
Learner Control	3.81	.63	1	5
Motivation for Learning	4.12	.56	1	5
Online Communication Self-efficacy	3.97	.69	1	5
Course Satisfaction (n= 5145)	4.17	.83	1	5
Perceived Learning (n= 5145)	7.56	1.50	0	9
Perceived Usability (n= 861)				
Perceived Usefulness	6.05	.95	1	7
Information Quality	5.86	1.07	1	7
Interface Quality	5.48	1.31	1	7
Overall Satisfaction	5.66	1.35	1	7

Online learning readiness dimensions and course satisfaction were used to predict perceived learning in Bilgeİş pdMOOCs conducting a hierarchical multiple regression analysis. After carrying out the hierarchical regression, two models were created. The results of F test showed that model1 ($F(5,4947)= 141.42$, $p < .05$) and model2 ($F(6, 4946)= 486.30$, $p < .05$) are significant, which means that both of the regression models fit to predict perceived learning. The first model used online learning readiness dimensions, which are Computer/Internet Self-efficacy, Learner Control, Self-directed Learning, Motivation for Learning, and Online Communication Self-efficacy, as the predictors. The second model used course satisfaction as the predictor while controlling the effect of online learning readiness dimensions. Table 4.66 presents the model summary.

Table 4.66. Model Summary

Model	R	R Square	Adjusted R Square	Std. Error	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.354	.125	.124	1.18	.125	141.42	5	4947	.000
2	.609	.371	.370	.998	.246	1934.35	1	4946	.000

Model summary results depicted that the multiple correlation coefficient (R) for the first model was .35, and for the second model was .61. The first model had the squared multiple correlation (R^2) of .13, and the second model had the squared multiple correlation (R^2) of .37. The squared multiple correlation of the first model demonstrated that 12.5% of the variance in perceived leaarning can be explained by online learning readines dimensions. Similarly, the squared multiple correlation of the second model demonstrated that 24.6% of the variance in perceived leaarning can be explained by course satisfaction after controlling for online learning readiness dimensions. Considering all of the predictors, 37.1% of the variance in perceived learning can be explained in total. The hierarchical multiple linear regression results revealed that self-directed learning (β= .16, $p < .05$), learner control (β= .08, $p < .05$), and motivation for learning (β= .14, $p < .05$) dimensions of online learning readiness, and course satisfaction (β= .54, $p < .05$) were significant in terms of positively predicting perceived learning in Bilgeİş pdMOOCs. On the other hand, computer/Internet self-efficacy ($p > .05$) and online communication self-efficacy ($p > .05$) did not have any significant contribution to predict perceived learning. Table 4.67 shows the hierarchical multiple linear regression results.

Table 4.67. Hierarchical Multiple Linear Regression Results

	Model	Predictors	B	SE B	β	t	sr^2	R^2	ΔF
	Model1							.125	141.42*
		Computer/Internet Self-efficacy	.017	.011	.026	1.612	.000		
		Self-directed Learning	.077	.009	.157	8.787*	.014		
1		Learner Control	.054	.013	.076	4.288*	.003		
		Motivation for Learning	.087	.012	.140	7.313*	.009		
		Online Communication Self-efficacy	.021	.011	.033	1.854	.000		
	Model2							.371	1934.35*
2		Course Satisfaction	.156	.004	.538	43.981*	.246		

* p < .05

Perceived usability dimensions were used to predict perceived learning in Bilgeİş pdMOOCs conducting a multiple regression analysis. After carrying out the multiple regression, the result of F test was significant ($F(4,857) = 17.52$, $p < .05$) , which means that the regression model fit to predict perceived learning. The regression model used perceived usability dimensions, which are Perceived Usefulness, Information Quality, Interface Quality, and Overall Satisfaction, as the predictors. Table 4.68 presents the model summary.

Table 4.68. Model Summary

R	R Square	Adjusted R Square	Std. Error	Change Statistics				
				R Square Change	F Change	df1	df2	Sig. F Change
.322	.104	.098	1.30	.104	17.518	4	857	.000

Model summary results depicted that the multiple correlation coefficient (R) was .32, and the squared multiple correlation (R^2) of .10. The squared multiple correlation demonstrated that 10.4% of the variance in perceived learning can be explained by perceived usability dimensions. The multiple linear regression results revealed that perceived usefulness (β= .17, $p < .05$) and overall satisfaction (β= .12, $p < .05$) dimensions of perceived usability were significant in terms of positively predicting perceived learning in Bilgeİş pdMOOCs. On the other hand, information quality (p > .05) and interface quality (p > .05) did not have any significant contribution to predict perceived learning. Table 4.69 shows the multiple linear regression results.

Table 4.69. Multiple Linear Regression Results

Predictors	B	SE B	β	t	sr^2	R^2
						.104
Perceived Usefulness	.039	.015	.172	2.615*	.010	
Information Quality	.036	.025	.063	1.027	.001	
Interface Quality	.003	.021	.008	.125	.000	
Overall Satisfaction	.123	.058	.121	2.115*	.007	

* p < .05

Online learning readiness dimensions were used to predict course satisfaction in Bilgeİş pdMOOCs conducting a multiple regression analysis. After carrying out the multiple regression, the result of F test was significant (F(5,4947)= 176.68, p < .05) , which means that the regression model fit to predict course satisfaction. The regression model used online learning readiness dimensions, which are Computer/Internet Self-efficacy, Learner Control, Self-directed Learning, Motivation for Learning, and Online Communication Self-efficacy, as the predictors. Table 4.70 presents the model summary.

Table 4.70. Model Summary

R	R Square	Adjusted R Square	Std. Error	Change Statistics				
				R Square Change	F Change	df1	df2	Sig. F Change
.389	.152	.151	3.99	.152	176.68	5	4947	.000

Model summary results depicted that the multiple correlation coefficient (R) was .39, and the squared multiple correlation (R^2) of .15. The squared multiple correlation demonstrated that 15.2% of the variance in course satisfaction can be explained by online learning readines dimensions. The multiple linear regression results revealed that computer/Internet self-efficacy (β= .07, $p < .05$), self-directed learning (β= .14, $p < .05$), learner control (β= .08, $p < .05$), and motivation for learning (β= .17, $p < .05$) dimensions of online learning readiness were significant in terms of positively predicting course satisfaction in Bilgeİş pdMOOCs. On the other hand, online communication self-efficacy ($p > .05$) did not have any significant contribution to predict course satisfaction. Table 4.71 shows the multiple linear regression results.

Table 4.71. Multiple Linear Regression Results

Predictors	B	SE B	β	t	sr^2	R^2
						.152
Computer/Internet Self-efficacy	.168	.036	.074	4.718*	.004	
Self-directed Learning	.237	.030	.140	7.958*	.011	
Learner Control	.192	.043	.079	4.518*	.003	
Motivation for Learning	.362	.041	.169	8.941*	.014	
Online Communication Self-efficacy	.050	.039	.023	1.289	.000	

* $p < .05$

As a summary, the results showed a significant relationship between online learning readiness, course satisfaction and perceived learning, online learning readiness and course satisfaction, and perceived usability and perceived learning.

4.6 RQ6: What do learners think about their online learning readiness, course satisfaction, perceived learning, portal usability, and perceived benefits obtained from the course?

4.6.1 Online Learning Readiness

Learners were asked how ready they were feeling themselves for online learning. Learner responses were grouped under 2 main themes as (1) Not feeling ready for online learning and (2) Feeling ready for online learning.

Not Feeling Ready for Online Learning (f= 22):

Learners were not mainly feeling themselves ready for online learning due to having bias towards online learning and needing the presence of course instructor. The other reasons included that learners lack communication self-efficacy; they lack motivation for online learning; they lack time; they do not have previous online learning experience; they have low self-confidence; and they have low self- efficacy. Table 4.72 shows the codes for not feeling ready for online learning.

Table 4.72. Codes for Not Feeling Ready for Online Learning

Codes	f
Bias towards online learning	13
Needing presence of the instructor	3
Lack of communication self-efficacy	1
Lack of motivation for online learning	1
Lack of time	1
No previous online learning experience	1
Low self-confidence	1
Low self-efficacy	1

<u>Bias towards online learning (f= 13):</u>

Learners frequently hold biased views towards online learning, and they thought that online learning was ineffective, difficult, and unsuccessful. Therefore, they did not feel themselves ready for online learning. These were expressed by learners as:

"I took online courses for the first time thanks to you. I previously had some biases about the success of online education in general ..." [L-C 33]

"Before, I was very distant from education over the Internet. Bilgeİş changed all my thoughts on this issue…" [L-C 46]

"Before taking this course, I believed that it was difficult to take courses online, so I was not keen on enrolling in such courses, but after this course I decided that I would be more interested in and ready for online courses." [L-C 75]

"Obviously, I had very heavy biases about learning on portals where content is learned individually without the existence of an instructor (especially on a platform like the internet where there is a high potential for distraction). Even if my biases are not gone completely, I can say most of them are gone." [L-C 92]

Needing presence of the instructor (f= 3):

Some learners needed the presence of the instructor in online courses, and for this reason, they did not feel themselves ready for online learning. This was mentioned as:

"The truth is that a formal education is above everything else because we are able to learn not only the theoretical knowledge but also the experiences of the teachers/instructors and their thoughts on a subject. However, this is not like that in online or distance learning. Since we are not in direct contact with the teacher/instructor in these environments, some information may not be understood good enough no matter how well it is explained…" [L-C 34]

"I find the teacher/instructor necessary to benefit from the experiences in classes that require social relations…" [L-C 119]

"Frankly, I thought I would be distracted because there was no teacher teaching me and no physical classroom, and I did not feel ready…" [L-C 61]

Feeling Ready for Online Learning (f= 107):

Learners were mostly feeling themselves ready for online learning due to their previous online learning experience, their motivation for learning, completing a course, their positive attitudes towards online learning, self-directed learning, working/studying in a related field/in education, and having learner control in the courses. In addition to these, learners felt ready for online learning due to the fact that learners had previous distance learning experience; learners were competent in technology; learners had enough computer self-efficacy; courses were based on self-paced learning; and courses were on well structured portal. Table 4.73 shows the codes for feeling ready for online learning.

Table 4.73. Codes for Feeling Ready for Online Learning

Codes	f
Previous online/distance learning experience	34
Motivation for learning	18
After completing a course	11
Positive attitudes towards online learning	10
Self-directed learning	8
Working/studying in a related field/in education	7
Learner control	4
Competent in technology	
Frequent use of computer and Internet	3
Computer self-efficacy/computer skills	3
Self-paced learning	2
Well structured portal	2
Well designed courses	2
Needing online learning	1
Courses appropriate for everyone	1
Suffiicient knowledge of online learning	1

Previous online learning experience (f=34):

Learners frequently stated that they were feeling ready for online learning due to their previous online learning experiences. This was stated by learners as:

"As someone who learned everything about software and web design over the Internet, even if not as a certificate program, since my primary school years, I was more than ready." [L-C 94]

"I have previous experience as I took online education from Ahmet Yesevi University." [L-C 106]

"I felt quite ready as I took courses from online platforms before." [L-C 108]

"I attended online courses from different platforms before. So, there was no problem for me." [L-C 120]

Motivation for learning (f=18):

Learners were already motivated for learning, and this contributed to their readiness and learning positively. This issue was expressed as:

"…When I evaluate the question from my point of view, I complete most of my personal development on the computer. The reason for this is that I cannot spare time for formal education due to the workload. I recommend these courses to people as I see the positive results of the courses I took." [L-C 25]

"As a character, I am open and willing to learn. Therefore, I decided to take your courses without thinking. Also, being an instructor in the past, I always told my students that age has nothing to do with learning. Why would not I do this for myself? " [L-C 26]

"Since I am always ready to learn, I was ready to learn online over the Internet." [L-C 32]

"In general, I do not want to complete the courses. In Bilgeİş, my desire to do the assignments and to complete the course were at a high level. I enjoyed it." [L-C 138]

<u>Feeling ready after completing a course (f= 11):</u>

After completing a course on the portal, learners developed positive attitudes towards the course, and they felt themselves ready for online learning. Learners explained:

"I was not quite ready, I did not know much about online courses. Completing the course also helped me in that regard." [L-C 41]

"I knew that we had the chance to access a wide range of information on the Internet. However, I was extremely pleased to see the more disciplined format of this type of courses that aims and encourages teaching. I am more comfortable and I lose myself in the course by making good use of the time. After taking this course, I stopped spending unnecessary time on the Internet, especially in social media, and I feel myself more ready for online courses." [L-C 45]

"It was the first time I took a course over the Internet, and it was a very enjoyable experience…" [L-C 115]

<u>Positive attitudes towards online learning (f=10):</u>

Learners stated that they have positive attitudes towards online learning, and they felt themselves ready for online learning because of that. Learners put forward:

"I have always had a positive attitudes toward education over the Internet, and I am thinking of continuing to take online courses on subjects that I think it will be necessary for myself." [L-C 27]

"I find such educational programs useful in my own free time, and I manage my time myself." [L-C 44]

"I have always liked online learning more. It is nice not to be tied to a certain physical space and time." [L-C 114]

Self-directed learning (f= 8):

Learners felt ready as they can self-direct their learning. Learners clarified this as:

"…I felt very ready to take the courses as I thought most of the courses on the Internet would not need a teacher." [L-C 119]

"I have taken courses over the Internet before. Planning the time and learning according to yourself provides convenience for employees like us." [L-C 121]

Working/studying in a related field (f= 6):

Learners felt themselves ready for online learning as either they are working or studying in a related field with online learning. This was explained by learners as:

"I was feeling ready for online learning as I study in the computer field." [L-C 69]

"Since I worked in the distance education center for many years and used the Moodle learning management system before, I always felt myself technologically ready for online learning..." [L-C 91]

"I work as a computer teacher." [L-C 118]

Learner control (f= 4):

Learners' control over the course lecture affected their readiness in a positive way. Learners expressed:

"I think that learning over the Internet is an efficient method. Also, I felt ready for online learning as I had the freedom to manage the learning process whenever I wanted." [L-C 21]

"First of all, because the course was online, I could stop and take a break whenever I wanted, and something better is that certificate comes to me without going to school. Think about it!" [L-C 36]

"I usually study my lessons by watching videos on the Internet. I can rewind the subjects I missed or I did not understand. I was ready for such experience...." [L-C 116]

In brief, pdMOOC learners mainly did not feel themselves ready for online learning due to their bias towards online learning. Furthermore, they mainly felt themselves ready for online learning due to previous online/distance learning experience, motivation for learning, and positive attitudes towards online learning. What is more and important, they felt themselves ready for online learning after completing a pdMOOC.

4.6.2 Course Satisfaction

Qualitative responses of learners to course satisfaction revealed the areas where learners were satisfied and not satisfied with in the course. The areas where learners were satisfied included (1) Course design and (2) Course components, including course lectures, exams, and assignments. Apart from the themes revealed after the analysis, thirty-one learners stated that they were very satisfied or satisfied with the course, and nineteen mentioned that they were satisfied with learning the course content.

The Areas Learners Satisfied with in the Course:

Course Design (f= 39):

Learners were satisfied with well designed nature of the course, the ways the courses were taught, course length, courses being offered completely free of charge, completion of the courses providing certificates, courses having self-paced design, learner control over the course as lectures allowed repetitions, stepwise design of the courses, courses having good visual design, resuming from where one left the course, and courses being immersive. Table 4.74 shows the codes for course satisfaction due to course design.

Table 4.74. Course Satisfaction due to Course Design

Codes	f
Well designed	8
Teaching methods/techniques	7
Course length	6
Free of charge	4
Certificate	4
Self-paced	3
Learner control	2
Stepwise design of course	2
Good visual design	1
Resuming from where one left the course	1
Immersive	1

Well designed (f=8):

Learners mentioned that the courses were well designed, and they were satisfied with well designed nature of the course. Three learners explained:

“The course content is well-designed and well-transferred." [L-C 45]

“I believe the course is well designed in all aspects...” [L-C 47]

“It was a well-prepared course. I do not remember any aspects that I have not been satisfied with.” [L-C 85]

Teaching methods/techniques (f=7):

Learners were satisfied with the way courses were taught. Learners stated:

“…Bilgeİş Learning Portal is a portal that is definitely beneficial for taking online courses. I absolutely liked using it. Compared to other online courses, the way the lesson was taught was one of the aspects that I was satisfied with.” [L-C 75]

“I was satisfied with the teaching method…” [L-C 98]

"I am very satisfied with the way the course is taught and with the assignments..." [L-C 132]

Course length (f=6):

Learners were satisfied with the course length, and they found course length appropriate as they thought that short courses did not make them bored. Learners expressed:

“It is important for me that the course is online and that the videos are of sufficient length and do not make people bored.” [L-C 62]

"The course was suitable for both the duration and the activities, and assignments, and it met my needs." [L-C 137]

Free of charge (f=4):

All the course on Bilgeİş Learning Portal are offered free of charge, and learners were satisfied with courses being free of charge. Three learners stated:

“… I am also pleased that you provide such a course free of charge and with high quality. [LC-132]

“…Course’s being free of charge and getting a certificate after completing the course make me feel happy.” [LC-134]

“… Thanks to this portal, we learn the information, which can be learned by spending money for the courses on the Internet, in a free, fast, reliable, simple and clear way. That is why it is satisfying. " [L-C 136]

Certificate (f=4):

Upon completion of the courses, learners received certificates, and they were satisfied with receiving certificates. It was explained by two learners:

"… I was pleased… that the course provides certificates." [L-C 15]

"I am very satisfied that you provided us with such training and certification afterwards." [L-C 139]

Self-paced (f=3):

All of the courses on Bilgeİş Learning Portal have self-paced design. Learners were satisfied with self-paced design as learners were able to learn from the courses whenever and wherever they want to learn. Three learners mentioned:

"I was satisfied to take courses whenever and wherever I want." [L-C 122]

“It was good for me that I could complete the course whenever I wanted." [L-C 127]

"It was nice to be able to continue where we left off and to take the course based on our timing." [L-C 134]

Course Components – Course Lectures (f=95):

Learners reported very diverse reasons for their satisfaction with the course lectures. Learners found the course lectures effective/instructive, clear, simple, concise, enriched with examples, explanatory, fluent, interactive, and enjoyable/fun. The course lectures also provided examples based on real life, provided feedback during lectures, and had narrator with good voice tone. Table 4.75 below shows the codes for course satisfaction due to course lectures.

Table 4.75. Course Satisfaction due to Course Lectures

Codes	f
Effective/Instructive	19
Clear	17
Simple	15
Concise	8
Enriched with examples	8
Explanatory	6
Fluent	4
Interactive	3
Enjoyable/Fun	2
Examples based on real life	2
Feedback given during lectures	2
Voice tone of the narrator	2
Enriched with visuals	1
Examples based on cases	1
Accessible (Subtitles)	1
Enriched with videos	1
Not boring	1
Simple course examples	1
As qualified as its foreign counterparts	1

Effective/Instructive (f=19):

Learners found the course lectures effective/instructive, and they were satisfied with this. Learners mentioned:

"The lecture was instructive." [L-C 4]

"The subject is explained well." [L-C 7]

“Watching the lecture… was fun and instructive.” [L-C 74]

"…I think what was done during the lecture was effective." [L-C 135]

“… Lectures… were effective enough. And this situation encouraged me to complete the course. " [L-C 136]

Clear (f=17):

Learners found the course lectures clear, and they thought that course lectures were appropriate and understandable for anyone wanting to learn, and they provided clear explanation of the course content. Learners were satisfied with these, and they explained:

"I was satisfied that course lecture had an understandable narrative." [L-C 60]

“The course was very suitable for anyone wanting to learn programming. The course lecture is clear…” [L-C 82]

"I was satisfied that the course was simple and understandable ..." [L-C 95]

"Topic explanation is clear..." [L-C 104]

“… Understandable simple (effective) language was used. Even people who do not have any knowledge can easily learn. " [L-C 133]

Simple (f=15):

Learners found the course lectures simple, and they were satisfied with this. Learners expressed:

"… Course lecture was designed in a simple way that even people who do not have any programming knowledge can easily understand the topics." [L-C 88]

“I am satisfied that certification programs are often aimed at helping people, who do not know anything about the topic, proceed to entry level. We also expect courses that will take us from beginner to intermediate level, from intermediate to advanced level. " [L-C 94]

"I am satisfied that the courses are taught starting from the basic level, and I am satisfied with using the portal." [L-C 136]

Concise (f=8):

Learners found the course lectures concise, and they were satisfied with this. Learners addressed:

“… The topic was brief and concise. It provided both adequate information and a comfortable environment.” [L-C 62]

“Course lectures were concise.” [L-C 96]

“… Course lectures were concise and explanatory.” [L-C 126]

Enriched with examples (f=8):

Learners were satisfied with course lectures as they were enriched with examples. Learners explained:

“The lecture was… enriched with examples. In this regard, I was satisfied. " [L-C 32]

"What I am satisfied with, is that the lecture was supported with examples..." [L-C 34]

"For someone starting programming from beginning, it was satisfying that the lecture was very understandable, and that it was supported by examples." [L-C 106]

Explanatory (f=6):

Learners were satisfied with course lecutres as they were explanatory. Learners mentioned:

The lecture is… explanatory." [L-C 17]

"A well-designed, explanatory lecture for learning from scratch." [L-C 90]

“It was a nice and explanatory lecture. I was satisfied. " [L-C 121]

Fluent (f=4):

Learners were satisfied with course lecutres as they were fluent. Learners stated:

"I was satisfied that the lecture was ... fluent." [L-C 15]

“Subjects are presented with a fluent and guiding model. It has a very successful structure. " [L-C 21]

"I was very satisfied with the course. The lecture is fluent and decent..." [L-C 78]

"Easy, simple, and fluent explanation, easy to understand." [L-C 107]

Course Components – Course Exams (f= 15):

Learners were satisfied with course exams because exams reinforced their learning; exams were effective, enjoyable, and challenging. Moreover, learners were able to remember the course content thanks to exams, and exams were contributing to practice. Table 4.76 shows the codes for course satisfaction due to course exams.

Table 4.76. Course Satisfaction due to Course Exams

Codes	f
Reinforcing learning	4
Effective	3
Enjoyable/Fun	3
Challenging	1
Reminding course content	1
Contributing to practice	1
Equivalent to face to face education	1
Satisfactory	1

Reinforcing learning (f=4):

Learners were satisfied with course exams because they thought that exams reinforced their learning. Learners explained:

"The exams were prepared in a reinforcing and informative manner…" [L-C 45]

"… The exams provide a better understanding of the subject." [L-C 99]

"… Exam questions reinforce learning…" [L-C 104]

Effective (f=3):

Learners were satisfied with course exams because they thought that exams were effective for their learning. Learners explained:

"I was very satisfied with the course… the exams were appropriate and effective for my learning." [L-C 92]

"… Exam questions are very effective in terms of teaching the subject." [L-C 33]

Enjoyable/Fun (f=3):

Learners found course exams enjoyable/fun. Learners expressed:

"… Doing exams was fun and instructive." [L-C 74]

“I liked the exams very much. Researching and applying what you have learned makes it more permanent in mind. " [L-C 130]

Course Components – Course Assignments (f= 28):

Learners were satisfied with course assignments as they thought that assignments reinforced their learning; and they were effective and appropriate for their learning. Learners were also satisfied with receiving feedback after assignments. Table 4.77 shows the codes for course satisfaction due to course assignments.

Table 4.77. Course Satisfaction due to Course Assignments

Codes	f
Reinforcing learning	8
Effective	4
Receiving feedback after assignments	3
Leading learners to research	2
Paralell to/matching with course content	2
Satisfactory	2
Based on practice	1
Not very difficult or challenging	1
Contributing to practice	1
Enjoyable/Fun	1
Applying course content	1
Repetetion of course content	1
Equivalent to face to face education	1

Reinforcing learning (f=8):

Learners were satisfied with course assignments as they thought that assignments reinforced their learning. Learners stated:

"… The given assignments helped me understand the subject better." [L-C 127]

"… Assignments are useful and necessary to revise the subject." [L-C 45]

“… The assignments of the course improve learning…” [L-C 82]

Effective (f=4):

Learners were satisfied with course assignments as they thought that assignments were effective and appropriate for their learning. Learners mentioned:

"I was satisfied with the assignments. They were very instructive, practical and fun assignments that were not too difficult." [L-C 92]

"I was satisfied that the lecture and assignment contents were effective for my learning." [L-C 135]

Receiving feedback after assignments (f=3):

Assignments in the courses are graded by course assistants, and they provide necessary feedback for learners. Learners were satisfied with receiving feedback after their assignments are graded. This was expressed by learners:

"… Also, after the assignments were submitted, I was satisfied that the course assistants responded by commenting on the assignments." [L-C 75]

"I was satisfied to get feedback from assignments." [L-C 94]

"… I was satisfied with the assignment and assignment grading system." [L-C 108]

The Areas Learners Not Satisfied with in the Course:

Similarly, the areas where learners were not satisfied included (1) Course design and (2) Course components, including course lectures, exams, and assignments, and (3) Technical problems.

Course Design (f= 17):

Learners mostly were not satisfied with course length and lack of support to ask questions instantly. Moreover, learners were not satisfied with technical requirements in the course, course progress reporting, no presence of instructor in the course, course content, and unprofessional design of the course. Table 4.78 shows the codes for course design that learners were not satisfied with.

Table 4.78. Codes for Course Design that Learners were not Satisfied

Codes	f
Course length	7
Lack of support to ask questions instantly	4
Technical requirements	1
Course progress reporting	1
No presence of instructor	1
Course content	1
Unprofessional	1

Course length (f=7):

Learners were not satisfied with the course length, and they requested relatively longer courses. Learners expressed:

“But my only negative criticism is that the course length is unfortunately short. It can be diversified and extended with more examples." [L-C 91]

“… If the course had been longer, it would have been more efficient for me. [L-C 126]

"… The length of the course… could have been longer." [L-C 134]

"… The longer the course, the better for us." [L-C 138]

Lack of support to ask questions instantly (f=4):

Learners were not satisfied with lack of support to ask questions instantly as they were not able to get some help as quick as possible. Learners explained:

“… The aspect I was not satisfied with is that there is no one available we can instantly ask the course parts we do not understand. " [L-C 92]

"… There is no one to contact when there is a point I do not understand. This caused me have some difficulties. [L-C 102]

Technical requirements (f=1):

Learners were not satisfied with program version requirements in the technical course as the course was focusing on one specific version of the programming language. A learner stated:

"I was not satisfied with the imposition that a particular version of a program was required to be used in the course." [L-C 95]

Course Components – Course Lectures (f= 40):

Learners were not satisfied with course lectures as course lectures were not detailed; course lectures included insufficient number of examples; course lectures were shallow/simple; course lectures failed in providing more documentation about the course content; and course lectures provided very simple examples. Table 4.79 shows the codes for course lectures that learners were not satisfied.

Table 4.79. Codes for Course Lectures that Learners were not Satisfied

Codes	f
Not detailed	15
The number of examples	9
Shallow/Simple	8
Lack of more documentation about the course content	2
Very simple course examples	2
Examples not very rational and realistic	1
Monotonous explanation	1
Perceived difficulty	1
Examples not matching with lecture content	1
Slide-like apperance of lectures	1

<u>Not detailed (f=15):</u>

Learners found the course lectures too general and not detailed, and they were not satisfied with this. Learners stated:

“I wish the course were longer and more detailed. Still, I learned a lot though. " [L-C 6]

"The course contents can be expanded." [L-C 13]

“… As for this lesson, the subject could have been a little longer and more comprehensive…” [L-C 25]

“There was not enough information in the course. The course could have been more detailed. " [L-C 38]

"There was a very general explanation of course content…" [L-C 66]

"The course could have been more detailed." [L-C 81]

“The course lectures could have been more detailed. I got information about the parts I felt lacking from other resources. " [L-C 97]

"The details of the course lectures should be increased." [L-C 103]

The number of examples (f=9):

Learners were not satisfied with the number of the examples presented in the course lectures as they found them inadequate. Learners expressed:

"…the number of examples can be increased to provide a clear understanding of the concepts." [L-C 51]

"The examples on the subject were not enough for me. I guess it was prepared for people who had some knowledge about the subject at least. I had no prior knowledge..." [L-C 126]

"The examples are insufficient. More and explanatory examples are needed. " [L-C 140]

Shallow/Simple (f=8):

Learners found course lectures shallow as course lectures did not cover many topics. As a result, learners had distraction due to very simple course. Learners explained:

"I found the whole course lectures too simple. I got distracted." [L-C 23]

"I think you can present the subjects a little more deeply and go into detail. I had a feeling that course lectures were a bit simple and superficial." [L-C 109]

"It was explained very simple. A little more comprehensive information and algorithms could have been shown." [L-C 111]

"The course contents are useless and very simple. The contents could be more detailed. " [L-C 113]

Lack of more documentation about the course content (f=2):

Learners needed more documentation about the course content, and they were not satisfied with lack of more documentation about the course content. Learners mentioned:

"… Additional documentations would be more useful, including case studies to supplement the course lectures." [L-C 25]

"… What I was not satisfied with is that the course lecture does not focus on too many examples, at least a reliable supplementary source that is suitable for this course can be provided to support personal development.” [L-C 64]

Very simple course examples (f=2):

Learners found course examples very simple, and they were not satisfied with this. Learners said:

“I am satisfied with the information provided. The point I am not satisfied with is that the course examples are very simple.” [L-C 16]

“… The lectures were useful for learning, but the examples’ being too simple made me not develop myself enough. More difficult examples can be added to the course.” [L-C 96]

Course Components – Course Exams (f=4):

Learners were not satisfied with course exam formats as some courses only included the multiple choice exam format. Learners were also not satisfied with the number of exams, and they found exams easy. Table 4.80 shows the codes for course exams that learners were not satisfied.

Table 4.80. Codes for Course Exams that Learners were not Satisfied

Codes	f
Exam format	2
The number of exams	1
Easy	1

Exam format (f=2):

Learners stated that they were not satisfied with the exam types, which are mostly close ended questions in the form of multiple choice or true/false, used in the pdMOOCs. They requested practical assessments instead of close ended exams. Learners stated:

"Of course, there had to be an evaluation in this course since there is a certificate at the end of the course. I think it would be more efficient if the exam format was about gaining experience or practicing with more practical daily life rather than just testing." [L-C 29]

"I wish the course had more exams and assignments including a variety of question types. It would be nice if we could revise a lot." [L-C 65]

The number of exams (f=1):

Learners were not satisfied with the number of the exams in the course as they wanted more exams. A learner expressed:

"I wish the course had more exams and assignments including a variety of question types. It would be nice if we could revise a lot." [L-C 65]

Easy (f=1):

Learners found course exams easy, and they were not satisfied with this. Learners expressed:

"… The exams were easy. They can be made a little more difficult." [L-C 70]

Course Components – Course Assignments (f= 16):

Learners were not satisfied with the number of assignments as they were expecting more assignments. Moreover, learners experienced delayed grading, and they thought that the grading duration was long. Learners also found assignment descriptions insufficient. Table 4.81 shows the codes for course assisgnments that learners were not satisfied.

Table 4.81. Codes for Course Assignments that Learners were not Satisfied

Codes	f
The number of assignments	4
Delayed grading	3
Long grading duration	3
Assignment description	2
Feedback not concrete	1
Compulsory for course completion certificate	1
Not satisfactory	1
Request for exercises to apply knowledge in practice	1

The number of assignments (f=4):

Learners were not satisfied with the number of the assignments in the course as they needed them to reinforce the course content, and therefore, they needed more assignments. However, some learners were uncomfortable with the assignments, and they wanted no assignments.   Learners stated:

"… I think it is not good to make the assignments obligatory in order to get a certificate in this portal. Even the MoNE has taken homework off. One remains at a certain level whether the assignment is done or not anyway. Instead, plenty of exams can be added. Online exercises and exams should also increase. " [L-C 90]

"It was a very effective and satisfying course. I have been a little more familiar with the Python language. I would be more satisfied if there were more examples and assignments. " [L-C 93]

Delayed grading (f=3):

Learners were not satisfied with assignment grading duration as they experienced some delay in grading. Learners expressed:

"… learning whether I passed the course or not after months really made me angry." [L-C 95]

"I was generally satisfied with the course, but my assignment was not graded, and I could not get my certificate. I am not satisfied with this." [L-C 105]

"I think the assignments were not evaluated on time, and the late arrival of the certificate is the aspect that I am not satisfied with." [L-C 135]

Long grading duration (f=3):

Learners were not satisfied with assignment grading duration as they thought grading took long time. Learners stated:

"… It was taking time for assignments to be graded…" [L-C 94]

"I had some problems in the project assignments part. For example, grading duration was long…" [L-C 89]

"… I found the grading time of the assignments uploaded to the system negative." [L-C 98]

Assignment description (f=2):

Learners were not satisfied with assignment description, and they requested a more detailed and clear assignment description. One learner said:

"… I think it would be better if you write down more clearly or show an example about how assignments and projects will be prepared and delivered." [L-C 120]

Technical Problems (f=2):

Learners also mentioned that they faced technical problems, and their course satisfaction was influenced by these problems. The technical problems were about videos, which were stated as "Videos were not opening (f=1)" and "Videos were freezing (f=1)".

4.6.3 Factors Affecting Learning

Learners were asked what factors affected their learning. Based on learner responses, two main themes were created as (1) Positive incluencing factors and (2) Negative influencing factors. The positive influencing factors included (1) Course design related issues, (2) Course lecture related issues, (3) Course assignment and exam related issues, and (4) Learner related general issues. The negative influencing factors included (1) Course lecture related issues, (2) Course assignment related issues, (3) Learner related general issues, and (4) Technical issues.

Positive Influencing Factors:

Course design related issues (f= 6):

Learners stated that being able to take the MOOC whenever thay want, receiving a certificate upon course completion, and knowing that courses are provided by a prestigious university affected their learning in pdMOOCs positively. Table 4.82 shows the codes for course design related issues for the factors positively influencing learning in pdMOOCs.

Table 4.82. Course Design Related Issues for Positive Influencing Factors

Codes	f
Self-paced learning	4
Certificate	1
Courses provided by a prestigious university	1
Course dictionary	1
Being able to take notes while watching course lecture	1

Self-paced learning (f=4):

With the self-paced design of the courses on Bilgeİş Learning Portal, learners were able to learn from the courses whenever and wherever they want to learn. These were made clear by two learners as:

"I was able to take the course whenever I wanted in comfortable times at home." [L-C 35]

"Studying whenever we want and planning the courses in the way we want are the positive factors." [L-C 121]

Course Lecture Related Issues (f= 72):

Course lecture related issues also affected learners' learning positively in pdMOOCs. Course content, course lectures being clear, course lectures including many examples, using daily life examples in the course lectures, use of videos in the course lectures, interactive course lectures, visual design/presentation of the course lectures, studying well designed course content, simple course lectures, explanatory course content, short course content, and sequencing of the course content in course lectures influenced learning positively. Table 4.83 shows the codes for course lecture related issues for positive influencing factors.

Table 4.83. Course Lecture Related Issues for Positive Influencing Factors

Codes	f
Course content	21
Clear course lectures	11
Course examples	7
Use of daily life examples	6
Course lectures with videos	6
Interactive	5
Visual design/presentation of the course	4
Well designed course content	3
Simple course lectures	3
Explanatory course content	3
Course length/Short course content	2
Organization / Sequencing of the course content	1

<u>Course content (f= 21):</u>

Learning the course content affected learning positively. Learners might have satisfied their learning needs with learning in pdMOOCs. In this way, they might have had feelings of achievement and satisfaction after learning about the course content. Learners explained these by:

"In general, the content of the course and the way courses work had a positive effect on my learning." [L-C 44]

"It was nice to learn how to deal with problematic people theoretically." [L-C 54]

"Learning about some of the basic concepts that I thought I knew affected my learning positively. Basically, it is a well explained content." [L-C 114]

<u>Clear course lectures (f= 11):</u>

Course lectures were presented in a clear way and therefore, learners were exposed to clear course content, and they were able to comprehend the course content easily. Three learners explained:

"Clear course lectures affected my learning positively." [L-C 60]

"There is no situation that affected my learning negatively. A very clear and explanatory course." [L-C 93]

"The positive aspect is that it teaches the Python lesson in an enjoyable way without bothering the listener. Course lectures are fluent and very understandable." [L-C 104]

Course examples (f= 7):

Course lectures included many examples, and these examples influenced learners' learning positively. These were explained by two learners as:

"The given examples helped me understand the subject better." [L-C 57]

"Nothing negatively affected my learning, I found practical examples useful." [L-C 138]

Use of daily life examples (f=6):

Course lectures provide examples based on daily life, and this provided positive contributions to learning since adult learners prefer knowledge which they can use and apply in real life, and they can transfer these examples to their daily lives. Two learners reported that:

"The fact that the course is supported by examples from life instead of classical lecture ... are the factors affecting learning positively." [L-C 25]

"… I would like to express that the telephone conversation examples prepared based on different human profiles had a reinforcing effect on my perception and understanding of the subjects." [L-C 27]

Course lectures with videos (f= 6):

Learners thought that use of videos in the course lectures reinforced their learning in pdMOOCs. Two learners made this clear by:

"The course videos were very nice and really made a positive contribution to my learning. I felt like I was sitting at the meeting table…" [L-C 29]

"I do not have any negative thoughts. Video narratives ... reinforce keeping the subjects in mind." [L-C 33]

Interactive (f= 5):

Interactive elements were placed into course lectures such as pop-up questions, matching items through drag and drop etc., and learners perceived their interaction with course lectures positive for their learning. This was explained as:

"Interactive course instead of classical lecture …are the factors affecting learning positively." [L-C 25]

“Interactive content developed by professionals and experts in accordance with multimedia design principles positively affected my learning...” [L-C 91]

<u>Visual design/presentation of the course (f=4):</u>

Course lectures are supported by the use of visuals to a great extent, and learners thought that the visual design and visual presentation of the course affected their positively. These were revaled by two learners as:

“Good use of the visuals was one of the positive effects that made me understand the course.” [L-C 40]

“The visual presentation of the course had a positive effect on my learning…” [L-C 129]

Course Assignment and Exam Related Issues (f= 14):

Learners found course assignments instructive and reinforcing as course assignments were based on practical exercises. They also perceived positive contributions of receiving feedback after course exams and having well designed course assignments,. Table 4.84 presents the codes for course assignment and exam related issues for positive influencing factors.

Table 4.84. Course Assignment and Exam Related Issues for Positive Influencing Factors

Codes	f
Having course assignments	9
Immediate feedback after exams	2
Well designed course assignments	1

<u>Having course assignments (f=9):</u>

The courses have stepwise design where learners first watch the course lecture and then take the exam of the course and then do the assignment of the course, if any exists. Learners thought that having course assignments reinforces their learning, and they can improve their knowledge on the subject by means of course assignments. These were stated by learners:

“…The project assignment reinforces keeping the subject in mind.” [L-C 33]

“The assignments’ quality really did improve one's knowledge on the subject.” [L-C 82]

“The positive factors are that courses based on application, and they have assignment system which make courses more open to teaching. There are no negative factors.” [L-C 139]

Immediate feedback after exams (f=2):

Learners thought that receiving immediate feedback after course exams affect their learning positively. Two learners stated:

“…Feedback system in exams, assignment, and exams increase the seriousness of the courses and positively affect our learning.” [L-C 46]

“It is good to have feedback immediately after exams.” [L-C 130]

Learner Related General Issues (f= 37):

Learners intrinsic motivation, perceiving their learning experience positive, enjoying the course, practicing course examples, developing different perspectives with the knowledge they gained from the course, perceiving the course useful, and being allowed exemption from course assignments due to disability affected learners’ learning positively. Table 4.85 shows the codes for learner related general issues influencing learning positively.

Table 4.85. Learner Related General Issues for Positive Influencing Factors

Codes	f
Intrinsic motivation	15
Positive learning experience	9
Enjoying the course	5
Practising course examples	4
Developing/Gaining different perspectives	2
Useful course	1
Exemption from course assignments	1

Intrinsic motivation (f=15):

Self-directed adult learners are expected to be intrinsicly motivated for learning, and this was ensured in this study as well. Learners’ responses yielded that learners intrinsic motivation affected their learning positively. These were explained by learners that:

"…I had the chance to review what I knew and to learn what I did not know." [L-C 13]

"There was no situation that adversely affected my learning, I have benefited greatly in preparation for the exam I will take." [L-C 84]

"Learning and achieving something motivates me towards new learning." [L-C 97]

"There is no encouraging or unattractive situation for me within the scope of the courses. Holding on to the course and learning is something existing in me." [L-C 119]

"In general, I do not want to complete the courses. In this system, the desire to prepare the assignments and to complete the course was at a high level, I enjoyed it." [L-C 138]

Positive learning experience (f=9):

Learners perceived their learning experience positive, and this contributed to their learning positively. Two learners explained:

"There were no negative factors. My learning process was generally positive." [L-C 6]

"My course experience was generally positive." [L-C 96]

Enjoying the course (f=5):

Learner responses showed that they enjoyed the course while learning, and this influenced their learning positively. It was explained:

"…I enjoyed the course lectures very much..." [L-C 92]

"The positive aspect is that it teaches the Python lesson in an enjoyable way without bothering the listener..." [L-C 104]

"I enjoyed completing the course and learning from it because I will use what I learned somewhere." [L-C 110]

Practising course examples (f=4):

Courses provide many examples for learners, and practising those examples facilitated learners' learning. It was explained by learners that:

"The course is interactive, and I can practise examples." [L-C 101]

"The examples have been very useful for me. There I could revişe the examples with copy and paste and get an appropriate output for myself." [L-C 102]

"Since I downloaded the program and installed it on my computer, I was able to do the exercises at the same time, which contributed greatly to my learning." [L-C 116]

Negative Influencing Factors:

Course Lecture Related Issues (f= 20):

Some course lecture related issues affected learners' learning in MOOCs negatively as learners thought that courses had simple/shallow content; courses had short course length; courses presented insufficient number of examples in the lecture; course lecture examples focused on simple/too basic examples; course lecture included weak organization of course content; course lecture presented static texts; and course lecture lacked real life applications. Table 4.86 shows the codes for course lecture related issues for negative influencing factors.

Table 4.86. Course Lecture Related Issues for Negative Influencing Factors

Codes	f
Simple/Shallow course content	6
Short course length	5
Insufficient number of examples in the lecture	5
Simple/Shallow course examples	1
Weak organization of course content	1
Use of static texts in course lectures	1
Lack of real life applications	1

<u>Simple/Shallow course content (f=6):</u>

Learners found the course content simple and too basic. For this reason, their learning was affected negatively. It was explained by learners that:

"The course was too simple… it affected my learning negatively." [L-C 23]

"…Negative factors: lectures were very short and superficial..." [L-C 92]

“My course experience was generally positive, but I wanted to be able to write an application for practical use in real life. However, the course did not have such form of content or explanation...” [L-C 96]

“I have not learned anything. There is nothing the course can bring to anyone with this course content.” [L-C 113]

Short course length (f=5):

Learners found course length short, and they stated that they need longer courses. Two learners explained:

“Course length and examples should be increased.” [L-C 124]

“Short course length affected my learning negatively. More and descriptive examples can be the better for the course.” [L-C 140]

Insufficient number of examples in the lecture (f=5):

Learners thought the number of examples in the lecture was insufficient, and they needed more detailed examples. It was explained by learners that:

“Insufficient number of examples affected my learning negatively” [L-C 7]

“…Negative factors: more details and examples are needed.” [L-C 15]

“The examples are good but not sufficient.” [L-C 64]

Course Assignment Related Issues (f= 10):

Course assignments related issues also affected learning negatively. Learners mentioned facing insufficient assignment explanations, receiving insufficient feedback after assignments, having long assignment grading duration, having a requirement of submitting assignments, course assignments not matching with course lecture, and exams not being consistent with course content as the issues influencing their learning negatively. Table 4.87 presents the codes for course assignment related issues for negative influencing factors.

Table 4.87. Course Assignment Related Issues for Negative Influencing Factors

Codes	f
Insufficient assignment explanations	3
Insufficient feedback after assignments	2
Assignment grading duration	2
Requirement of submitting assignments (Obligatory assignments)	1
Course assignments not matching with course lecture	1
Exams not consistent with course content	1

Insufficient assignment explanations (f=3):

Learners thought that what assignments require from learners were not clear, and the assignment explanations were insufficient. Three learners explained:

"…In addition, the fact that you are not more clear and explanatory during the first login to the course and about the assignments negatively affected my learning." [L-C 26]

"At some points, while following the presentation of the course, I sometimes had difficulties in connecting the subjects with the projects and assignments given after the presentation of the course, so I think that the examples and assignments of the course should be more clear ..." [L-C 75]

"…I can also give assignments as a negative factor, by which I mean how to prepare the assignments should be explained more clearly." [L-C 120]

Insufficient feedback after assignments (f=2):

Learners' learning was affected negatively for receiving insufficient feedback after their assignments were graded. Learners explained this by:

"…In addition, the feedback given after the assignments was not comprehensive and sufficient." [L-C 75]

"…Feedback is insufficient after assignments. I could not realize what I was missing or what I did correctly." [L-C 126]

Assignment grading duration (f=2):

Uploaded assignments are graded by course assistants within 72 hours. However, this grading duration time was thought to be influencing learners' learning negatively. One learner explained:

“The evaluation time of the assignments affected my learning negatively.” [L-C 24]

Learner Related General Issues (f= 9):

Learner related issues affected learners’ learning negatively. These included low computer competency, bias towards online learning, already knowing the course content, being distracted while listening to course audio, having learning difficulty, having focusing problems, taking the course at different time points, perceiving the course difficult, and needing written documentations of the course lectures. Table 4.88 shows the codes for learner related general issues influencing learning negatively.

Table 4.88. Learner Related General Issues for Negative Influencing Factors

Codes	f
Low computer competency	1
Bias towards online learning	1
Already knowing the course content	1
Being distracted while listening to audio	1
Having learning difficulty	1
Having focusing problems	1
Taking the course at different time points	1
Percieved difficulty of the course	1
Need for written documentation of course lectures	1

Technical Issues (f=2):

Technical problems on the course (f=2):

Although it was not frequently stated by the learners, technical issues affected their learning negatively. Learners faced some technical problems while they were taking the pdMOOCs. Specifically, learners mentioned the busy web traffic on the portal and frozen course lectures influenced their learning negatively. These were clarified by learners as:

“The freezing course lectures sometimes affected my learning negatively.” [L-C 42]

“There had been some technical problems caused by the busy web traffic on the portal.” [L-C 79]

4.6.4 Portal Usability

Learners were asked to state their thoughts about the portal usability. Learner responses were grouped under three main themes as (1) Portal related general issues, (2) Portal interface related issues, and (3) Technical issues.

Portal Related General Issues (f=137):

Learners thought that portal was easy to use, well designed/structured, easy to understand/comprehend, attractive/appealing, effective/successful, useful, satisfactory, and they thought that portal provided easy access to the courses. Table 4.89 shows the codes for portal related general issues.

Table 4.89. Portal Related General Issues

Codes	f
Easy to use	73
Well designed/Structured	13
Easy to understand/comprehend	11
Attractive/Appealing	11
Effective/Successful	8
Useful	6
Satisfactory	4
Easy access to the courses	3
Enjoyable	2
Moderately easy to use	2
Difficult to use	1
Effective progress bar showing	1
Need for own certificates page	1
Need for guidance on the first login to the course	1

<u>Easy to use (f=73):</u>

The majority of learners found the portal easy to use. They provided short statements such as:

"Portal is absolutely perfectly designed, easy to use and useful interface ..." [L-C 92]

"I think it is very easy to use. I got many certificates from this portal." [L-C 97]

"Easy to use in every way." [L-C 104]

"I think the portal is very easy to use." [L-C 112]

Only very few learners mentioned that portal was moderately easy to use (f=2), and portal was difficult to use (f=1).

Well designed/Structured (f=17):

Learners found the portal well-designed/structured. Learners explained:

"I do not think there is anything missing about usability. Everything is very descriptive and simple. Even someone who does not know how to use a computer or who is not good with a computer can use the portal easily without needing someone's help." [L-C 34]

"The portal was easy because both the design, the language, the style, and the narrator's teaching skills formed a complete whole ..." [L-C 36]

"An extremely simple portal. At one point, I even thought of requesting course lecture videos of these courses from you…" [L-C 45]

"…A very well designed portal. It is also very wise to provide certificates based on pass or fail at the end of each course. I think it is very useful for me." [L-C 62]

"Portal is well structured. On the portal, I can easily access the course content that I have been looking. There is no situation to distract me or to make my eyes tired while watching the course videos." [L-C 88]

Easy to understand/comprehend (f=11):

Learners thought that portal was easy to understand/comprehend for them because everthing was clear to them. Learners expressed:

"The portal was prepared in a language that everyone could understand easily. I do not think it was a simple and sloppy portal." [L-C 10]

"I do not think anyone would have difficulty in using the portal because the interface is so clear." [L-C 110]

"There is no problem regarding the use of the portal. Very practical and understandable." [L-C 126]

"The portal is very easy. It is is convenient and understandable." [L-C 130]

Attractive/Appealing (f=11):

Learners considered the portal attractive/appealing. Learners said:

"Overall an attractive portal. Of course it can be improved." [L-C 9]

"The portal is very easy and appealing, but some course videos are not opening." [L-C 28]

"Very attractive and easy to use. The special training programs on foreign sites are just like that. Website design can be done better and improved. Also, the number of courses should definitely increase, and I recommend that you inform people by e-mail." [L-C 128]

Useful (f=6):

Learners thought that portal was useful as it had a practical or beneficial use for them. Learners mentoned:

"Easy, clear and straightforward, useful." [L-C 63]

"The portal is useful, I recommend it to my friends." [L-C 76]

"A very useful portal has been established. I did not have any trouble." [L-C 96]

"I think it is a very useful portal." [L-C 125]

In addition to finding the portal useful, learners also mentioned the perceived usefulness of the portal.

"The portal has been very useful for me, and there are many more courses I am thinking of taking… I think it is very useful for me." [L-C 62]

One learner also mentioned the need for guidance on the first login to the course as the portal did not provide any guidance on the first login.

Portal Interface Related Issues (f=24):

Learners found portal's interface user friendly, clear, and ideal. However, there have been some learners who experienced portal's interface as complicated. Learners also addressed the need for interface and visual design improvement. Table 4.90 shows the codes for portal interface related issues.

Table 4.90. Portal Interface Related Issues

Codes	f
User friendly interface	7
Complicated interface	3
Need for interface improvement	3
Need for visual design improvement	3
Clear interface	2
Ideal interface	2
Good visual design	2
Bad visual design	1
Simple interface	1

User friendly interface (f= 7):

Learners found portal's interface user friendly as they used the interface with ease. Learners expressed:

"A useful portal with a completely easy and simple interface in all aspects." [L-C 73]

"The web interface is very user friendly. It shows the course parts a user completes, and this made it even more effective..." [L-C 91]

"It was very easy to register for the course, upload the assignments to the portal, contact the assistant of the course... And I can download my certificate again whenever I want." [L-C 127]

"Generally, it has a user friendly interface, and its usage does not tire the user." [L-C 133]

Complicated interface (f=3):

Portal interface was found complicated by some learners. They stated:

"It was a bit complicated to comprehend the page layout at first. However, one gets used to it when it is used for a while." [L-C 77]

"The interface is very difficult to use. When compared to another portal, Istanbuluzem, the interface is complicated." [L-C 107]

Need for interface improvement (f=3):

Learners expressed the need for portal interface improvement to increase the clarity. Learners said:

"Although it is generally nice, the interface can be made a little more understandable. Especially when one topic is over in a course, it can be made easier to switch to another." [L-C 108]

"… Website design can be made better and improved…" [L-C 128]

Need for visual design improvement (f=3):

Learners expressed the need for improving portal's visual design. Learners said:

"I think the portal has an easy system. Visuals and graphics can be improved. The photographs chosen are fiction, so they look very contrived. Courses enriched with better graphics and photos, even videos and animations can make a greater impact." [L-C 46]

"…Its visuality can be improved a little more." [L-C 83]

Technical Issues (f= 11):

Learners provided some technical issues influencing the portal's usability. Learners mentioned that portal was not fully mobile compatible; they had video lecture playing problems; and they experienced assignment upload problems. Table 4.91 shows the codes for technical issues regarding portal's usability.

Table 4.91. Technical Issues Regarding Portal's Usability

Codes	f
Portal not fully mobile compatible	3
Video lecture playing problems	2
Assignment upload problems	2
Slow loading video lectures	1
Heavy site traffic	1
Received no error messages	1
Need for downloadable videos	1

Portal not fully mobile compatible (f=3):

Learners were not able to access the courses effectively using their mobile devices as courses were not fully mobile compatible. This caused learners not to see some parts of the portal, to see menus bigger than normal, and to have difficult interaction within the courses. Learners explained:

"I have hard times while using the portal with a tablet. I cannot see some parts of the screen. I would like you to work on this issue." [L-C 51]

"…Difficulty is encountered when the portal is accessed from a mobile device. For example, menus can look very large." [L-C 91]

"The mobile version of the portal is difficult to interact with." [L-C 103]

Video lecture playing problems (f=2):

Learners experienced video lecture playing problems, including videos not starting and videos starting late. Learners stated:

"…Videos not opening, opening after waiting for some time or skipping some episodes reduce motivation. You are setting your time to watch the course videos, but there occur technical problems. Then you can not find time. You are losing your motivation towards the course..." [L-C 13]

"The portal is very easy and appealing, but some course videos are not opening." [L-C 28]

Assignment upload problems (f=2):

Learners mentioned that they experienced some assignment upload problems. Learners explained:

"I had problems uploading some assignments, these were related to the system. I did not experience anything negative other than that…" [L-C 61]

"There are problems about … submitting assignments… I have problems in submitting the assignment in the second part of the course." [L-C 121]

4.6.5 Perceived Benefits from Courses

Learners were asked about the benefits they received after completing the courses. The responses were reported using 2 categories as (1) Perceived benefits obtained from soft skill courses and (2) Perceived benefits obtained from technical courses.

4.6.5.1 Perceived Benefits Obtained from Soft Skill Courses

Learners reported a variety of benefits from soft courses. Perceived benefits were categorized into 3 themes as (1) Knowledge benefits, (2) Personal benefits, and (3) No benefit.

Knowledge Benefits (f= 28):

After completing the courses, learners gained knowledge as a result of studying the course. Learners mentioned that they gained knowledge about dealing with problematic people, about analyzing and understanding types of people, about communicating with people, and about visual design principles. Table 4.92 shows the codes for knowledge benefits.

Table 4.92. Knowledge Benefits

Codes	f
Gaining knowledge:	
About dealing with problematic people	13
About analyzing and understanding types of people	8
About communicating with people	6
About visual design principles	1

Dealing with problematic people (f=13):

Learners gained knowledge about dealing with problematic people, including getting away from problematic situations, how to behave people, and how to approach people, after completing the courses. Learners explained:

“I learned to get away from situations that could cause problems easily. I use this in my work life and daily life as well.” [L-C 7]

“I have become more knowledgeable about dealing with problematic people in my workplace.” [L-C 18]

“As we can see from the course title, it has contributed to me in dealing with problematic people. Every person can use this information in every part of his life: school, workplace, home, and even on the street.” [L-C 32]

“…The benefits for me are that I learned how I should approach people and how I should behave them.” [L-C 36]

About analyzing and understanding types of people (f=8):

Learners gained knowledge about analyzing and understanding types of people, including. about getting to know people a little more, about accepting people as they are, about problematic people types, about why people become problematic, and about how to react to the problematic types of people. Three learners mentioned:

“I got a better understanding of why problematic people raise difficulties.” [L-C 1]

“I learned to accept people as they are and to analyze them better…” [L-C 13]

“I can say that I have started to understand people's behaviors better and become more understanding in work life.” [L-C 16]

About communicating with people (f=6):

Learners gained knowledge about communicating with people, including about how to use words carefully in communication, about how to overcome problems through dialogue, about being clear in communication, about strategies preventing communication conflicts, and about thinking of people's characteristics before communication. Two learners stated:

“However, the course taught me the most important feature that I should evaluate people for 1-2 minutes and do character analysis when I came across them whether at work, school or daily life.” [L-C 29]

“In my daily life, I try to communicate with people better by analzying their behavior.” [L-C 38]

Personal Benefits (f= 24):

After completing the soft skill courses, learners also had personal benefits. These included awareness about one’s behavior, developing different perspectives, obtaining a certificate, being more patient, and showing more empathy. Table 4.93 shows the codes for personal benefits.

Table 4.93. Personal Benefits

Codes	f
Raised awareness about one's behavior	3
Developed different perspectives	2
Obtained a certificate	2
Being more patient	2
Showing more empathy	2
Using "I" language	1
Approaching events with different perspectives	1
Being less stressed	1
Decreased the times when one had to kept silent	1
Looking at people from different perspectives	1
Relationship management with problematic people	1
Not being scared of problematic people	1
Researching more about the topic	1
Increased knowledge	1
Increased communication	1
Being a calm person	1
Not minding everything like before	1
Revised/Reviewed previous design knowledge	1

Raised awareness about one's behavior (f=3):

Learners raised awareness about their behaviors in their lives after completing the courses. Two learners exemplified:

“I became aware of problems with my own behaviors.” [L-C 2]

“I realized that sometimes we cannot develop empathy.” [L-C 54]

Developed different perspectives (f=2):

Learners developed different perspectives in their lives after completing the courses. Two learners explained:

"I had different points of view. When talking to people or arguing with them, I do not make sudden decisions, sudden speeches. I speak by thinking." [L-C 34]

"The course was effective in changing my perspective and approaching events from a different perspective." [L-C 50]

Obtained a certificate (f=2):

Obtaining a certificate was considered personal benefits by the learners. Two learners stated:

"Communication is very important for me, and this course has documented that I can do this under the most difficult conditions." [L-C 43]

"It has been useful to have a certificate. The course has had a positive effect on my daily life and communication at school." [L-C 60]

Being more patient (f=2):

Learners explained that they have more patience after completing the courses. Two learners explained this:

"I am more patient now" [L-C 12]

"The course helped me to approach people more patiently and professionally as I was reacting to people before the course." [L-C 14]

Showing more empathy (f=2):

Learners explained that they show more empathy after completing the courses. Two learners explained:

"I started to have more empathy." [L-C 26]

"First of all, I started using 'I' language constantly and started to empathize more with the person I communicate with." [L-C 35]

No Benefit (f=3):

Learners also mentioned the soft skill courses provided no benefit for them. The reasons behind this were that learners were already knowledgeable about the course topic (f=2), and they have not used the knowledge they gained from the courses yet (f=1).

4.6.5.2 Perceived Benefits Obtained from Technical Courses

Learners reported a variety of benefits from technical courses. Perceived benefits were categorized into 3 themes as (1) Knowledge benefits, (2) Personal benefits, and (3) No benefit.

Knowledge Benefits (f= 19):

After completing the courses, learners gained knowledge as a result of studying the course. Learners mentioned that they gained knowledge about programming using Python, basics of coding/programming, basics of databases, and about how programs work. Table 4.94 shows the codes for knowledge benefits.

Table 4.94. Knowledge Benefits

Codes	f
Gaining knowledge:	
About programming using Python	9
About basics of coding/programming	7
About basics of databases	2
About how programs work	1

<u>About programming using Python (f=9):</u>

Learners gained knowledge about programming using Python after completing the courses. Two learners said:

"This course helped me understanding the basics of the Python programming language. I will use this information as a basis for the continuation of my Python training." [L-C 108]

"I learned about programming with Python and helped me transition to Python Programming-2 course..." [L-C 115]

About basics of coding/programming (f=7):

Learners gained knowledge about basics of coding/programming after completing the courses. Three learners mentioned:

"I have gained knowledge about the basics of programming." [L-C 87]

"The information in this course is ultimately insufficient to make a project. But if we think of python as a syntax, the course has provided the foundation well. It has given the basic programming logic very well. From now on one should improve himself/herself…" [L-C 88]

About basics of databases (f=2):

Learners gained knowledge about basics of databases after completing the courses. Two learners explained:

"I had basic knowledge of Access and database, and it enabled me to deal with the databases more easily in the future." [L-C 134]

"I had an idea about how to prepare and use databases. Currently, there is no environment I will use this knowledge, but it will definitely be in the future." [L-C 141]

Personal Benefits (f= 16):

After completing the technical courses, learners also had personal benefits. These included taking further courses on other platforms, getting familiar with programming, obtaining a certificate, and having increased knowledge of programming. Table 4.95 shows the codes for personal benefits.

Table 4.95. Personal Benefits

Codes	f
Taking further courses on other platforms	2
Got familiar with programming	2
Obtained a certificate	2
Increased knowledge of programming	2
Increased interest in programming	1
Increased curiosity in programming	1
Revised/Reviewed Python knowledge	1
Enrolled in distance education programme	1
Raised awareness in programming	1
Thinking from different perspectives	1
Gained confidence for taking other courses	1
Got familiar with databases	1

Taking further courses on other platforms (f=2):

Learners mentioned that they started taking further courses on other platforms after completing the technical courses. Two learners exemplified:

“Completing the Python programming courses I took from Bilgeİş was the biggest factor in taking further Python course called Python from Zero to Advanced Level given by Mustafa Murat Çoşkun on Udemy.” [L-C 83]

“After completing introduction to programming and Python courses, I turned to other courses on Python to improve myself and enrolled in a web design program at open university.” [L-C 90]

Got familiar with programming (f=2):

Learners mentioned that they got familiar with programming after completing the technical courses. Two learners explained:

“The first benefit of the Python 1 course for me is that it raised my awareness. It was just a language I heard before, but after completing the course, I learned what it was and what it is used for. As I am a research assistant, I will use what I learned in the Programming Languages-1 course. I will also recommend this platform to my students.” [L-C 91]

“I got a little more familiar with programming. I will use it for developing applications and small applications. Of course, I make an effort to progress to artificial intelligence in the future.” [L-C 93]

Obtained a certificate (f=2):

Obtaining a certificate was considered personal benefits by the learners. Two learners stated:

“Its only contribution is certification. I guess not much was taught in the course as it was an introductory course. It was like an introduction to Python...” [L-C 92]

“I can show it in the certificate section of my CV.” [L-C 125]

Increased knowledge of programming (f=2):

Learners mentioned that they had increased knowledge of programming after completing the technical courses. Two learners explained:

“It helped me to improve myself in the Python language and to increase my interest in programming.” [L-C 82]

“It has enabled me to reinforce my general programming knowledge, but I have not had the opportunity to use it yet as there was no content related to advanced examples or coding of programs that I would like to use in daily life in the course.” [L-C 96]

No Benefit (f= 5):

Learners also mentioned the technical courses provided no benefit for them. The reasons behind this were that they have not used the knowledge they gained from the courses yet (f=2). Moreover, learners stated that the knowledge they gained was left in the air, and they forgot what they learnt (f=1). They had no idea where to use the knowledge they gained (f=1), and learners were already knowledgeable about the course topic (f=1). Table 4.96 shows the codes for no benefit.

Table 4.96. No Benefit

Codes	f
Have not used yet	2
Information left in the air	1
No idea where to use	1
Already knowledgeable about the course topic	1

4.7 Summary of Results and Major Findings

The results revealed the enrollments motivations of non-starters, non-completers, and completers. The results showed that learners in Bilgeİş pdMOOCs have diverse motivations. Overwhelmingly, their motivations included learning a new topic. The reasults also revealed why learners did not start the pdMOOCs, why they did not complete the pdMOOCs, and why they completed the pdMOOCs. Learner related time issues, including lack of time due to work activities, educational activities, and daily activities, were the main reason why learners did not start and complete the pdMOOCs. The majority of the completers completed the pdMOOCs for learning a new topic, solving/dealing with their daily life problems, solving/dealing with their work life problems, and personal development.

Completion rates were calculated based on traditional and alternative approaches (based on active learners and learner intent). The results showed very different percentages. Completion rates were found relatively higher than the available literature. The highest completion rates were obtained from the measurement based on learner intent. pdMOOC completion was significantly associated with age, gender, education level, employment status, learner intent, self-directed learning dimension of online learning readiness, and learners' course behaviors, but not with previous online learning experience.

The results also showed that intention-behavior gap occurs in pdMOOCs, and the main reason behind intention-behavior gap was learner related time issues as well.

The results indicated a significant relationship between online learning readiness, course satisfaction and perceived learning, online learning readiness and course satisfaction, and perceived usability and perceived learning. In addition, learners were mostly feeling themselves ready for online learning in pdMOOCs. They were mainly satisfied with the course design, and the course design related issues influenced their learning positively. They also found the portal easy to use and well-designed. They mainly obtained knowledge benefits from the pdMOOCs.

Figure 4.1 below summarizes the associations between presage, process, and product dimensions revealed by this study.

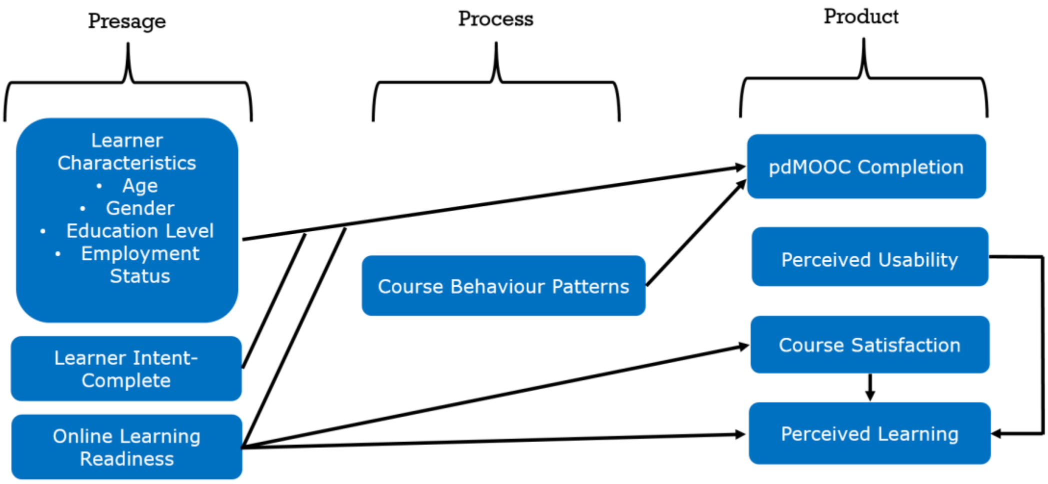


Figure 4.1. Associations between Presage, Process, and Product Variables

CHAPTER 5

DISCUSSION AND CONCLUSION

This chapter provides the major findings of the study, discussion, suggestions, and recommendations for future research.

1.1. Discussion

1.1.1. Motivations for Enrolling in the pdMOOCs

In order to obtain the enrollment motivations of pdMOOC learners, open-ended questions were used for non-starters, non-completers, and a survey was used for completers. In this section, enrollment motivations of non-starters, non-completers, and completers are discussed. Almost all of the research studies focus on MOOC learner motivation without grouping these learners based on their activities on MOOCs (e.g., completers or drop outs). This study investigated learners' enrollment motivations respectively as non-starters, non-completers, and completers.

The majority of the non-starters enrolled in the pdMOOCs for learning a new topic, personal development, solving their work life problems, professional development, increasing their current knowledge, solving their daily life problems, job relevance, and their interest in the topic. However, obtaining a certificate, trusting the portal for learning, looking at/reviewing the course content, preparing for university courses, supporting courses one teaches, and testing current knowledge were the motivations non-starters' stated the least among other motivations. All of these indicate the variety in non-starters' motivations. In the literature, there is a scarcity of research studies especially focusing on non-starters' motivations of enrollment in MOOCs. For this reason, it was not possible to compare and contrast the findings of this study with the available literature. The findings of this study contributed to filling in this gap in the literature by providing non-starters' enrollment motivations in the pdMOOCs.

Non-completers' responses to the open-ended question revealed their motivations for enrolling in the pdMOOCs. The majority of the non-completers enrolled in pdMOOCs for learning a new topic, increasing their current knowledge, their interest in the topic, personal development, curiosity, job relevance, and perceiving the course useful for work. However, obtaining a certificate, trusting the portal for learning, looking at/reviewing the course content, solving daily life problems, and supporting courses being taken elsewhere were the motivations non-completers' stated the least among other motivations. Non-completers also stated that they enrolled in the pdMOOCs as they wanted to have different point of views/perspectives, to test their current knowledge, to look at/review the portal, and to support one's kid's courses. All of these indicate the diversity in non-completers' motivations. In the limited literature regarding non-completers enrollment motivations in MOOCs, Gütl et al. (2014) surveyed 134 MOOC students who did not complete the MOOC. The majority of the non-completers in this study wanted to experience the MOOC, in other words they wanted to get a feeling about MOOCs. This was followed by completing the course, taking a "sneak preview" into the topic, learning without formally completing the course, and accessing the content learners are interested in without finishing the course. These results are partially in line with the results presented in this study. Bilgeİş pdMOOC learners overwhelmingly enrolled in pdMOOCs for learning purposes followed by other intrinsic motivations even if they did not complete the courses; however, in Gütl et al.'s (2014) study the majority of the non-completers wanted to experience the MOOC, in other words they wanted to get a feeling about MOOCs. It can be said that Bilgeİş pdMOOC learners had more learning related needs.

Completers' responses to the close-ended questions revealed their motivations for enrolling in the Bilgeİş pdMOOCs, all of which indicate the diversity in completers' motivations. Almost all of the completers were motivated by learning a new topic/subject, which was followed by personal growth and enrichment, general interest in topic, course offered by prestigious university (METU), increasing current knowledge, and curiosity. Moreover, 92.1% of the respondents were motivated by earning a certificate/statement of accomplishment. They were also motivated by job related issues. The least motivation sources of the completers were fun (55.7%) and socialization (46.6%). As there is a significant relationship between learners' motivation to enroll in MOOCs and completion, (Liu et al., 2019), and the general motivation for learning that the MOOC learners bring to the course might impact their engagement with activities (de Barba et al., 2016), completers' motivations for enrollment in MOOCs might have played a role in their pdMOOC completion. Phan et al. (2016) reported that learners with participation motives including earning the continuing professional development certificate, gaining skills, and improving professional practice preceded the learners who reported these traits less. In the literature, there are studies especially focusing on completers' motivations of enrollment in MOOCs. In this regard, Watted and Barak (2018) compared the factors of MOOC completers who were university-affiliated students and general participants. While MOOC participants were motivated by their general interest, growth, and enrichment, specifically, the motivations of university-affiliated MOOCers were toward improving their knowledge, and the motivations of general MOOC participants were toward career benefits. These results are quite in line with the results presented in this study. Bilgeİş course completers mostly enrolled in pdMOOCs for learning purposes, personal growth and enrichment, general interest in the course topic, taking courses from a prestigious university, increasing their current knowledge, curiosity, obtaining a certificate, and job related purposes. They also wanted to experience an online course, challenge themselves, and have a career change. Moore and Wang (2020) explored that students with intrinsic motivation had significantly higher scores than the ones with extrinsic motivation when the effect of the number of previous online courses completed online was controlled. It can be said that intrinsic motivations play a significant role in MOOC completion. As suggested by previous research studies, online learners are likely to be intrinsically motivated. However, this might not hold for every situation as both extrinsic and intrinsic types of motivation can co-exist and are highly open to situational influences (Hartnett, St. George, & Dron, 2011).

1.1.1.1. Comparison of Motivations of Non-starters, Non-completers, and Completers

When the enrollment motivations of non-starters, non-completers, and completers are compared, the prominent motivation of non-starters was learning a new topic followed by personal development. The prominent motivation of non-completers was learning a new topic followed by increasing their current knowledge. The prominent motivation of completers was learning a new topic/subject followed by personal growth and enrichment. The motivations of non-starters, non-completers, and completers are similar with regard to learning a new topic. However, the motivations of non-starters and non-completers are intrinsic to great extent. The motivations of completers differ from non-starters and non-completers in that they are a mixture of intrinsic and extrinsic motivations. It can be said that they are both internally and externally motivated. However, extrinsic motivation plays a more significant role in the enrollment motivations of completers. Although MOOC completers and dropouts might have different motivations (Watted & Barak, 2018), this study showed opposite results as the motivations of completers and non-completers were mostly similar.

Charo, Maite, and Guillermo (2020) found significant differences between completers and non-completers motivations of enrollment. They asked participants about their motivations of enrollment in the MOOC with three answer options as to obtain a certificate, to increase my knowledge, and to raise awareness of the subject. Participants in the completer group mostly enrolled in the MOOC to increase their knowledge. On the other hand, this percentage was lower in the non-completer group. However, in both of the groups, the motivation for obtaining a certificate was less than 10%. As there is not enough available literature to compare and contrast the motivations of non-starters, non-completers, and completers, the enrollment motivations of general MOOC learners can be compared and contrasted. The enrollment motivations of pdMOOC learners in this study were found to be mostly similar to the ones reported in the literature. Zheng et al. (2015) identified four general types of student motivations for enrolling in MOOCs as fulfilling current needs (course complement and professional needs), preparing for the future (impress potential employer and shape a goal for college application), satisfying curiosity, and connecting with people. In the current study, the least motivation sources of the completers were found to be fun and socialization. Shapiro et al. (2017) reported that MOOC learners stated at least one of the common intrinsic motivations, including the desire to obtain knowledge, convenience of online learning, work related motivations, and personal interest. Hew and Cheung (2014) reviewed students' and instructors' use of MOOCs with regard to motivations and challenges. They synthesized four reasons why students register for MOOCs, namely for the desire to learn about a new topic or to increase current knowledge, being curious about MOOCs, personal challenge, and the desire to collect completion certificates as many as one could. Liu et al. (2015) examined learners' MOOC taking from the perspectives of reasons where obtaining a certificate (18.75%) was less than the other reasons for taking the MOOC. As these studies clearly showed that the enrollment motivations of pdMOOC learners in the current study were found to be mostly similar to the results of these studies. Briefly, intrinsic motivation motivates these learners more than extrinsic motivation based on the results of the study. Egloffstein and Ifenthaler's (2017) findings also suggested that the reasons to participate in MOOCs are similar for employees working in businesses and students studying in higher education.

Although the acceptance of credentials provided by MOOCs, though they are deemed necessary, among the relevant stakeholders is valued rather low (Egloffstein & Ifenthaler, 2017), as mentioned above, some studies reported obtaining a certificate from MOOCs as the source of motivation with varying percentages. While this was low in some research studies, it was reported higher in other research studies. BilgeİŞ pdMOOC learners also reported the extrinsic motivation in the form of earning a certificate/statement of accomplishment. Even certificates of accomplishment obtained from MOOCs is mostly not acknowledged for credits or not seen as official proofs of knowledge, these are still a motivational factor for MOOC completers, and this might have affected the amount of learners' efforts in MOOCs. Statement of accomplishment might be more valuable in some parts of the world where it is much more difficult to access to formal, secondary education (Pursel et al., 2016). Macleod et al. (2015) also noted that learners from developing countries or learners from countries having particular economic difficulty, such as Spain and Greece, had more interest in MOOCs to obtain a certificate. This was confirmed in Psathas et al.'s (2018) study as well. Psathas et al. (2018) presented participant motivation of 591 learners in a Greek MOOC for Python Programming. They reported that one of the most prevalent reasons of participation in the MOOC was obtaining the certificate of participation, and therefore, the course certificate can be considered as an important motivational factor. It is likely to be the same for Bilgeİş pdMOOC learners as well because they also reported the extrinsic motivation in the form of earning a certificate/statement of accomplishment.

Despite the low frequency, it is evident in MOOC learners' enrollment motivations that learners enrolled in MOOCs with no real intention to complete the courses. This was also revealed in the responses of non-starters and non-completers. This issue has been discussed in the next section (see section 5.1.2).

Enrollment motivations of non-completers and non-starters also included trusting the portal for learning. This trust probably comes from courses' being offered by a prestigious university. However, this motivation clearly did not influence learners' starting or completing the pdMOOCs. Completers' enrollment motivations also included courses being offered by a prestigious university (METU). This motivation might have played a role in course completion as Khan et al. (2018) found the moderating effect of perceived reputation between the behavioral intention to use MOOCs and the usage behavior of MOOCs. When the reputation is higher, the relationship between the student intentions and MOOC adoption is stronger.

In general, the results of this study also confirmed that MOOC learners have diverse motivations, and learners had mix of intrinsic and extrinsic motivations for enrolling in MOOCs. These motivations were also reported by previous research studies. However, clearly, the motivations of non-starters and non-completers have not been enough for them to start and complete the pdMOOCs. Additionally, gaining knowledge related motivations are so pervasive for Bilgeİş pdMOOCs as well as other MOOCs in the literature. Therefore, the design of MOOCs should focus on promoting new knowledge and professional skillsets (Watted & Barak, 2018).

5.1.2 Completion Rates and the Related Reasons for Non-starting, Non-completing, and Completing the pdMOOCs

System logs were used to obtain learner activity data and then the completion rates were calculated. In particular, the participants were grouped into three distinct categories based on their behaviors in pdMOOCs: non-starters, non-completers, and completers. Then completion rates have been calculated based on traditional and alternative approaches (based on active learners and learner intent). In order to obtain the reasons for non-starting, non-completing, and completing the pdMOOCs, open-ended questions were used. In this section, completion rates and the related reasons for non-starting, non-completing, and completing the pdMOOCs are discussed.

First of all, each MOOC is likely to have different definition and calculation for completion. For example, Jordan (2015) located several MOOC completion definitions. Earning a certificate was the most prevalent definition. In a study, completion was defined as obtaining an overall grade average exceeding 70% or above, and this rate was calculated based on the average of six highest grades earned out of eight assignments (Crossley, Dascalu, McNamara, Baker, & Trausan-Matu, 2017). This issue primarily leads to some problems regarding calculation and comparison of the completion rates in the literature.

The definition used in the current study was that “grades obtained 70 or above from course quizzes and/or course assignments/projects”. As mentioned above, the calculation was carried out based on three approaches. Based on the traditional completion rate calculation, completion rates were found as 44.05%, 20.08%, 12.30%, and 18.12% for the DPP, PP-I, VDP, and DMMA pdMOOCs respectively. The overall traditional completion rate was 30.02% for these four pdMOOCs. Based on the completion rate calculation with respect to active learners based on the starters, completion rates were found as 60.18%, 27.54%, 23.47%, and 31.32% for DPP, PP-I, VDP, and DMMA pdMOOCs respectively. The overall completion rate based on active learners was 43.08% for these four pdMOOCs. Based on the completion rate calculation with respect to the learner intent, completion rates were found as 66.06%, 31.03%, 25.54%, and 34.67% for DPP, PP-I, VDP, and DMMA pdMOOCs respectively. The overall completion rate based on learner intent was 48.13% for these four pdMOOCs.

5.1.2.1 Traditional Completion Rates

Completion rates in MOOCs have generally been criticized in the literature, and they have been reported low by many research studies. Low completion rates and accordingly high dropout rates are used as a killer argument to dispute xMOOCs by MOOC critics (Lackner et al., 2015). Jordan (2014) reported that completion rates were found to change between 0.9% and 36.1%, with a median of 6.5%. In the data, 5% completion rate was the typical rate. Jordan (2015) revisited the MOOC completion rates based on 129 MOOCs from different MOOC providers. Completion rates, calculated by the traditional method, varied between .7% and 52.1% having the median value of 12.6%. Lastly, Reich and Ruipérez-Valiente (2019) have provided the most recent analysis results by analyzing data of all MOOCS which were provided on edX platform covering the dates between October 2012 and May 2018. The striking conclusion was that low completion rates have been maintained over 6 years meaning that they did not show any significant positive improvements. All of these completion rates were traditional completion rates. The related literature has been dominated by these traditional completion rates, and discussions have aroused from these completion rates. MOOCs were criticized about their failure based on low course completion rates; however, this might be unfair without taking into account some issues: how many people came to the course with the hope to finish? What was their enrolment motivation? Did they reach learning outcomes? (Yang & Evans, 2014). The term enrollment in MOOCs only means registration unlike the traditional understanding of taking the course is associated with enrollment (Kruchinin, 2019), and enrollment in a MOOC does not provide any guarantee that a learner can or intend to spare enough amount of time to complete the course (Kizilcec & Halawa, 2015). However, traditional completion rates included all participants who enrolled in the MOOCs, and it has been already shown that these MOOC participants did not even log in the MOOCs after enrollment. Traditional completion rates incorporate the learner group who never got in touch with the learning material (Meinel et al., 2014). Calculating the completion rate based solely on initial enrollment is a poor metric to evaluate the success of MOOCs as the evidence shows that the majority of participants who enroll in MOOCs do not start participating in the MOOC in any way (Rieber, 2017). For these reasons, using traditional completion rates for MOOCs is not a wise choice because they tend to be low due to massive nature of MOOCs. Furthermore, it is not fair to criticize MOOCs due to their low completion rates calculated through traditional approach. In this study, the traditional completion rates were 44.05%, 20.08%, 12.30%, and 18.12% for four pdMOOCs, and overall it was 30.02%. Although they are still relatively low, even the traditional completion rates observed in this study are higher than the ones typically reported by previous studies.

5.1.2.2 Completion Rates based on Active Learners

Traditional completion rates are not that meaningful in MOOC contexts as it has been widely showed that most of the participants who enroll in MOOCs do not log in the courses. In particular, it was found that 52% of those who register for a MOOC never start the course (Reich & Ruipérez-Valiente, 2019). Similarly, Jordan (2014) reported that approximately 50% of the total enrollment are active students in MOOCs. These were partly confirmed in the current study. In this study, the rates of non-starters were 26.80% for DPP, 27.07% for PP-I, 47.60% for VDP, and 42.15% for DMMA pdMOOCs. Overall, the non-starter rate was 30.31% for four pdMOOCs. For this reason, calculating completion rates based on active learners, who started the courses after enrollment, makes more sense, and it is more fair than traditional completion rates. They provide more holistic evaluation of MOOCs when MOOC learners who do not even log in the courses are not considered in the calculation of completion rates.

The more realistic metric to judge the success of a MOOC is taking into account the level of activity among learners who really participate in the MOOC (Rieber, 2017). When completion rate is defined based on a percentage of active learners in courses, the wider range of completion rates is observed. This time completion rates ranged from 1.4% to 50.1%, with a median of 9.8% based on 42 MOOCs from three main MOOC portals (Jordan, 2014). Meinel et al. (2014) provided the completion rates of five openhpi MOOCs from Germany. While the traditionally computed rates were between 13.15% and 23.55%, with an average of 18.30%, the completion rates based on active participants were 32.13% and 55.88%, with an average of 51.11%. These results showed remarkable differences between the completion rates based on traditional calculations and active students. Similarly, Gil-Jaurena et al. (2017) reported the completion and drop out rates of 17 MOOCs offered by the UNED. The traditional completion rate, which considers the whole enrollment, was reported as 13.71%, and the completion rate based on learners who started the courses was reported as 17.79%. Ho et al. (2014) reported the first year of HarvardX and MITx open online courses covering the first 17 courses between the fall 2012-summer 2013. The traditional completion rates in HarvardX courses changed between 1% and 8%, with an average of 5%. The traditional completion rates in MITx courses changed between 4% and 12%, with an average of 6%. Overall, the average completion rate in all HarvardX and MITx courses were 5%. Ho et al. (2015) reported two years of HarvardX and MITx open online courses covering 68 courses between the fall 2012-summer 2014. In the second year report, non-entrants, who never click-into the courses, were excluded from the analyses. The reported average certification rates were 7% and 6%, 14% and 11% for CS, STEM, HHRDE, and GHSS courses, respectively. This clearly showed that completion rates are higher when they are calculated based on active learners instead of including all enrolled learners in the completion rate calculation. In this study, the completion rates based on active learners were 60.18%, 27.54%, 23.47%, and 31.32% for four pdMOOCs, and overall it was 43.08%. The completion rates based on active learners in this study are higher than the ones typically reported by previous studies. This also ensures completion rates when calculated based on these different perspectives, such as considering active learners in the completion rate calculation instead of all enrolled learners etc., provided higher completion rates than the traditional completion rates. It can be said that these rates are higher in Bilgeİş pdMOOCs as these pdMOOCs supported learners' learning needs.

5.1.2.3 Completion Rates based on Learner Intent

Reich (2014) criticized how completion rates were calculated and evaluated as it is not clear whether the participants in MOOCs who dropped out from the course had really wanted to complete the course before starting (Reich, 2014). Also, traditional certification rates ignore participant intentions and in this way, it leads to inappropriate comparisons with residential certification rates, which is more consistent regarding participant intention to certify (Chuang & Ho, 2016). Gütl et al. (2014) surveyed 134 MOOC students who did not complete the MOOC. Among these students, 22% had intended to complete the MOOC. Reeves et al. (2017) reported that MOOC participants intended to receive a free certificate, and they received a free certificate in actuality. Although they generally obtained what they intended to, the proportion of participants was fewer than the proportion of participants intending to do so. These issues gave rise to the intentions of people before starting the MOOC and therefore, it is important to assess MOOC participants' intentions before reporting completion rates. Accordingly, several research studies also focused on learner intent and completion in MOOCs. When completion rates are approached from a different point of view, opposite results are obtained. Reich (2014) reported the certification rates (the percentage of all students who obtained a certificate) in nine HarvardX courses ranging from 2% to 11.2% with an average of 5.9%. He also showed that the certification rates varied significantly among students who reported different intentions. The percentages of earning a certificate changed between 9.1% and 35.7% among students who stated their intention to earn a certificate. The average of certificate earners in this way was 22.1%. Although certification rates were higher among students who intended to complete the course when compared to the ones with other intentions, the majority of these students were not successful in completing the courses, and their behaviors were not parallel with their intentions. In edX courses, Chuang and Ho (2016) indicated that ranging from 1% (CS50x) to 82% (a Chinese History module), the median certification rate was 30% among 498 thousand participants who intended to complete the course and earn a certificate in the 161 MOOCs that provided free certificates (Chuang & Ho, 2016). Moreover, Henderikx et al. (2017a) reported the completion rates using the traditional approach for two MOOCs as 6.5% and 5.6%, respectively. The completion rates from the perspectives of the MOOC-takers based on their intentions were 59% and 70%, respectively. In this study, the completion rates based on learner intent were 66.06%, 31.03%, 25.54%, and 34.67% for four pdMOOCs respectively, and overall it was 48.13% for these four pdMOOCs. These results were parallel with literature where completion rates are higher when learner intent is considered in calculating the completion rates. This also supports that it is more logical to omit the learners whose intention is not to complete the pdMOOCs in the calculation of completion rates.

Overall, the results of this study showed that when completion rates are calculated taking into account MOOC learners intentions, the rates are the highest compared to traditional completion rates and completion rates based on active learners. However, learner intentions also give rise to other issues. In other words, the relevant literature indicated that MOOC learners tend to give their intentions towards completing the course. To illustrate, in Gil-Jaurena et al.'s (2017) study, the majority of learners' answers were on obtaining the credential. This shows that four out of five learners' objective for taking the courses was the credential in this credentialist society. Similar to this, in Konstan et al.'s (2015) study, the majority of students (72.5%) who responded to the pre-course survey stated that they intended to complete the entire course. However, the actual course performance of MOOC students did not consistently match their intentions. This was also confirmed in this study as well. In this study, 8464 (76.85%) of them selected intention to complete for their intentions among 11014 starters. This high rate of intention to complete might be due to the fact that all pdMOOCs on Bilgeİş Learning Portal provide free certificates, and learners value these certificates. MOOC providers and researchers should be aware of this high rate of intention to complete and examine the reasons behind this. Despite the limitations, the most effective measure of MOOC completion rates is to take into account learner intent and calculate the completion rates accordingly.

5.1.2.4 Reasons for Completing the pdMOOCs

The completion rates calculated in this study using three approaches produced slightly higher percentages than the available literature on completion rates in the MOOCs. Completers' responses to open-ended questions revealed their reasons for completing the pdMOOCs. Other than completers' responses, the completion rates might be higher partly due to how courses were design, yet the effect of course design on course completion was not examined in this study. Completers had diverse reasons to complete the pdMOOCs. The majority of the completers enrolled in pdMOOCs completed them for learning a new topic, solving/dealing with their daily life problems, solving/dealing with their work life problems, personal development, having interest in the topic, perceived usefulness of the course, professional development, curiosity, and obtaining a certificate. However, life-long learning, finding a job, increasing one's current knowledge, liking the title of the course, course provided by a prestigious university, online free course, and course given as an assignment by one’s instructor were the least stated course completion reasons. Learners’ course completion reasons are quite parallel to their motivations. In brief, internal and external factors co-exist in completers’ course completion reasons. The main reason of completion was due to internal factors that learners completed the courses as they wanted to learn a new topic. Completers wanted to learn about the content of the pdMOOCs, which are about problematic people, programming, visual design, and databases. It might not wrong to infer that Bilgeİş course completers completed the courses to satisfy their learning needs. This result confirmed the previous finding that course completers are more likely to be interested in the content of the course while non-completers are more likely to be interested in the learning experience in MOOCs (Wang & Baker, 2015). The top three reasons for taking the MOOCs among participants who completed most/all of the assignments were job relevance, personal development, and interest in the topic (Liu et al., 2019). Although there was no statistically significant relationship between the reasons for taking the MOOCs and assignment completion, these top three reasons might have indirectly affected assignment completion and therefore, MOOC completion. In this study, personal development and having interest in the topic were stated by the completers. In Eriksson et al.’s (2017) study, learners’ responses showed that they completed the MOOC as it was useful for their profession, research or conventional studies. In this study, perceived usefulness of the course was also stated by the completers which supports the findings of Eriksson et al. (2017). External factors included finding a job and obtaining a certificate. As learners are from a developing country, they tend to value MOOC certificates more and they think that these statements of accomplishment could help them in finding a job.

5.1.2.5 Reasons for Not Starting the pdMOOCs

Research studies have shown that significant number of enrolled learners do not start the MOOCs, and even they do not enter the courses (e.g., Jordan, 2014; Reich & Ruipérez-Valiente, 2019). As mentioned before, in this study, the rates of non-starters were 26.80% for DPP, 27.07% for PP-I, 47.60% for VDP, and 42.15% for DMMA pdMOOCs. Overall, the non-starter rate was 30.31% for four pdMOOCs. Although there is enough quantitative evidence to support this, the reasons of why MOOC learners do not start the courses after enrollment are not known enough. The reasons for not starting the pdMOOCs are grouped into six themes: (1) Learner related time issues, (2) Learner related general issues, (3) Learner related technical issues, (4) Course related general issues, (5) Portal/course related usability issues, and (6) MOOC related issues. First of all, learner related time issues included lack of time due to work, educational, and daily activities. Learners provided time related issues dominantly in parallel to MOOC literature where the main reason of non-completion or dropout was due to lack of time as well (e.g., Onah et al., 2014; Eriksson et al., 2017; Shapiro et al., 2017). This issue is discussed in the following section (see section 5.1.2.6).

Learner related general issues included forgetting that one registered for the course, having insufficient knowledge on MOOCs, already knowing the course content, forgetting the web address of the portal and username/password, and taking other course(s) at the that time. Apart from already knowing the course content and taking other course(s) at the that time, learner relates general issues indicate that learners do not take the responsibility of their learning, and they are likely not to give value to the courses they registered for free of charge. Learner related technical issues included having no access to a computer and Internet, Internet connection problems, and broken computer. As learners are from a developing country, it is likely that they experience technical issues. Course related general issues included courses not qualified enough and simple course content. Bilgeİş courses were developed for learners with no prior information about the course topics. For this reason, some learners might have found the courses very simple for their levels. Portal/course related usability issues included courses not fully mobile compatible, course videos not accessible due to work Internet filters, and not being able to retrieve username/password from the portal. Bilgeiş Learning Portal is not 100% mobile compatible. This might have influenced learners' decision not to start the pdMOOCs as most people use their mobile devices for learning. Some course videos are hosted on YouTube and the access to YouTube is blocked at some workplaces, such as at the schools of Ministry of Education. Sometimes the portal does not work properly and fails to send the learners their username/password information on the portal. MOOC related issues included registering for multiple courses and queuing the courses. The majority of non-start reasons were related to learners among other reasons. Shortly, as the nature of MOOCs allow any learner to enroll in any course they want, this issue leads to serious problems. The reason behind learners' registering for pdMOOCs and then not starting these pdMOOCs can be due to casual participation, which is a typical behavior in MOOCs. Participants show casual participation patterns, which is registering for a number of courses one after another in a short amount of time (Chuang & Ho, 2016). There is always possibility that learners can come back to the courses anytime and continue taking the pdMOOCs.

5.1.2.6 Reasons for Not Completing the pdMOOCs

Research studies have shown that significant number of enrolled learners do not complete the MOOCs (e.g., Jordan, 2014, 2015; Reich & Ruipérez-Valiente, 2019). As mentioned before, this study investigated completion rates from three different perspectives. The overall traditional non-completion rate was 69.98%; the overall non-completion rate based on active learners was 56.92%; and the overall non-completion rate based on learner intent was 51.87% for four pdMOOCs.

Making a MOOC short for the purpose of promoting engagement seemed like a promising plan at first, yet this approach was not a panacea (Ferguson et al., 2015). Although the pdMOOCs on Bilgeİş Learning Portal are shorter than other typical

MOOCs, non-completion occurs in these MOOCs as well. The results of this study revealed why learners did not complete pdMOOCs. The reasons for not completing the pdMOOCs are grouped into seven themes: (1) Learner related time issues, (2) Learner related general issues, (3) Learner related technical issues, (4) Course design related issues, (5) Course content related issues, (6) Portal related usability issues, and (7) MOOC related issues.

(1) Non-completers did not complete their courses because they generally did not have enough time for the courses; they were busy with their work; they were busy with their education; and they were busy with their daily activities. As lack of time was the reason behind failure of completion in MOOCs, learners failed to spare enough time for the pdMOOCs. This might be partly related to low levels of volitional control that MOOC learners have (Kizilcec & Halawa, 2015). They seem to be not prepared enough in balancing their work, social, family, private, and study lives etc. For this reason, they were not able to start or complete the courses they registered on Bilgeİş Learning Portal. This was in line with the previous MOOC literature which presented lack of time as the primary cause of non-completion or dropout in MOOCs as well (Aboshady et al., 2015; Khalil & Ebner, 2014; Onah et al., 2014; Eriksson et al., 2017; Shapiro et al., 2017). Time spared for family life, work life, and other studies severely competed with the time learners spent for learning in MOOCs (Eriksson et al., 2017), and MOOC participation had a lower priority due to other priorities in life such as family, career or school etc. (Loizzo et al., 2017). Many learners' MOOC learning is motivated by utilitarian motivations. In other words, they expect help from MOOCs for future work or studies. When MOOC learning is clashed with actual work or university studies, MOOC learning is not given a priority as it is obvious that enrolling in MOOCs does not provide any clear guarantee of receiving a particular benefit for career or employment (Eriksson et al., 2017). Teo and Dai (2019) investigated the role of time in MOOC acceptance. They found that attitude and intention were not directly associated with perception of time although perception of time was a significant predictor of perceived usefulness. As Bilgeİş learners did not spare time for their pdMOOC learning, they

might not have perceived perceived usefulness, and this issue might have had an impact on learners' not starting and completing the pdMOOCs.

(2) Learner related general issues indicated wide range of reasons of non-completion in Bilgeiş pdMOOCs. Non-completers did not complete their courses because in general, they forgot that they were taking the course; they had insufficient knowledge on MOOCs; they had health problems; they perceived course content difficult; they registered for the course to review the course; they took a break; and they were taking other course(s) at the same time. Participants who were not well aware of the nature of MOOCs tended to feel overwhelmed by their MOOC learning experience (Liyanagunawardena, Parslow, & Williams, 2017). It is not surprising that learners can drop out from MOOCs because of having insufficient knowledge on the nature of MOOCs. When a course has been made open to any learner, some of these will have problems with the course content (too difficult or too basic), with the language the course is offered (e.g., English) or with Internet connections. Based on these issues, the level of course difficulty cannot be considered a problem for the majority of MOOC learners, yet the ones who have issues with the level of course difficulty face with severe consequences and they drop out from the courses (Eriksson et al., 2017), and course difficulty plays a secondary role with regard to student dropout in MOOCs according to Aldowah et al. (2019). Furthermore, learner responses showed that they registered for the course to review the course which indicate that they did not have any aim of completing the pdMOOCs (Loizzo et al., 2017). Therefore, it is very normal that they did not complete the pdMOOCs.

(3) Learner related technical issues showed that non-completers did not complete their courses because they had no access to Internet; they had broken computers; they were not being able to run the required program on their computer; and they had Internet connection problems (slow and limited). These were obstacles that prevented students from completing the pdMOOCs. From the developing country perspective, the primary reason for not completing the courses included slow Internet speed (Aboshady et al., 2015). Similarly, participation in MOOCs is usually complicated by limited technological resources (Kurt, 2019). Also, the barriers for

learning in MOOCs included lack of required resources, including infrastructure, and Internet access (Shapiro et al., 2017), and the usage barriers included lack of Internet access in the developing country context (Ma & Lee, 2019).

(4) Course design related issues also resulted in non-completion. Relevant studies reported that course design (Aldowah et al., 2019) and learner's perception of the course design (Eriksson et al., 2017) have impact on student dropout in MOOCs. This was similar in this study as well. Non-completers did not complete their courses due to navigational design of course video lectures and overwhelming voiceover of course lectures. MOOCs are offered by different MOOC providers and focus on different fields, and each MOOC has its own structure and content. In Bilgeİş pdMOOCs, all course video lectures have slide-like navigation to move from one page to another for chunking, and all course lectures were narrated by professional people. Clearly, these were not liked by pdMOOC learners, and they did not complete the courses. It might be because of the fact that the slide-like navigation could be tiring for learners as they are always required to click an arrow on the screen to continue, and probably they did not find the voiceover natural.

(5) Non-completers did not complete their courses because they found the course content simple; they found course content not appealing; they found course content not effective; and they found course content inadequate. Eriksson et al. (2017) revealed that learner's perception of the course content influences their decisions to drop out of MOOCs. It is also clear when a course has been made open to any learner, some of these will have problems (Eriksson et al., 2017). It is not an easy and feasible task to provide appropriate course content to diverse MOOC learners and to satisfy all MOOC learners.

(6) Regarding portal related usability issues, non-completers did not complete their courses because portal/courses were not fully mobile device compatible; course videos were not accessible due to learners' work Internet filters; portal design was inadequate; and portal design was complicated. As mentioned above, Bilgeiş Learning Portal is not 100% mobile compatible. This might have influenced learners'

decision not to continue the pdMOOCs as most people use their mobile devices for accessing the websites. Some course videos are hosted on YouTube and the access to YouTube is blocked at some workplaces. This might lead learners to lose their motivation and continue the pdMOOCs. Inadequate and complicated portal design might have resulted in non-completion because in previous studies, learners stated that their MOOC experience was worse due to poor interface design (Liu et al., 2019), and participants' learning experience and perception of the course were negatively affected by navigations and not-so-intuitive interface (Liu et al., 2015).

(7) Learners also did not complete the courses due to MOOC related issues, including registering for many courses and courses being free of charge. MOOCs allow anyone to enroll in the MOOCs and the registration is free of charge. In particular, this characteristics of MOOCs cause non-completion. Additionally, as it was for the reasons of non-start, casual participation (Chuang & Ho, 2016) can be responsible for non-completion. It is important to mention that there is always possibility that learners can come back to the courses anytime and complete the pdMOOCs because they are always available 7/24.

In MOOCs, retention mainly can be considered as a problem, yet it can also be seen as an opportunity (Zheng et al., 2015). In this regard, the literature provides adequate support for the fact that learners learn and benefit from MOOCs even though they do not complete the MOOCs although this is quite debatable (Cisel, Mano, Bachelet, & Silberzahn, 2015). Despite not achieving a certificate, still a significant number of learners engage in the course through watching videos or submitting the assessments, and even in this way they might have received contribution from the course according to their needs (Kahan et al., 2017). Also, MOOC learners can stop learning in MOOCs when they feel they learned enough.

5.1.3 Relevant Variables and pdMOOC Completion

Why learners completed the pdMOOCs with respect to learner characteristics has been further elaborated in this section. The associations between learner characteristics (age, gender, education level, employment status, previous online learning experience variables), online learning readiness, learners' course participation intent, learners' course behaviors, and pdMOOC completion were examined in this study

5.1.3.1 Age and pdMOOC Completion

According to the results of this study, there was a significant relationship between learners' age categories and pdMOOC completion. Particularly, learners aged between 18 and 25 completed pdMOOCs more than learners aged less than 18, between 26 and 35, and more than 36. The relationship between age and MOOC completion was inconclusive in the literature. While some research studies reported no relationship between age and MOOC completion (Breslow et al., 2013), some reported the opposite where increased age was associated with a decreased likelihood of dropout (Greene et al., 2015; Morris et al., 2015; Zhang et al., 2019). Ho et al. (2014) indicated that certificate earners had the median age higher than 30 in all courses. Also, Pursel et al. (2016) revealed a nonlinear association between age and completion rate, meaning that the completion rate increased with age initially and then tapered off when age went up further. The finding of this study provided the support in favor of the similar studies reporting a significant relationship between age and MOOC completion; however, unlike other research studies, relatively younger age group (between 18 and 25) in this study had higher rates of pdMOOC completion. This might be due to the fact that this age group is more likely to include learners who are university students or university graduates, and they are more prepared to take courses. In addition, this age group can be more active education wise, and they might be being more responsible for their learning where other age groups may lack this trait during their life rush, and they might not be caring enough for their education. In this regard, this finding was similar to the finding in Pursel et al.'s (2016) study which reported a nonlinear association between age and completion rate. Learners who are 26 years old and older are likely to be in employment, and therefore, they might not find enough time to spare for learning in MOOCs. As the results of this study showed, lack of time was the primary reason behind non-completion.

5.1.3.2 Gender and pdMOOC Completion

Regarding learners' gender and pdMOOC completion, there was a significant relationship between gender and pdMOOC completion. Male learners were more likely to complete pdMOOCs than female learners in Bilgeİş courses. This result is quite different than the most findings reported in the literature. Regarding gender, the studies reported mixed findings. Majority of the studies in the literature reported no significant association between gender and course completion and/or achievement (Breslow et al., 2013; Cisel, 2014; Hone & El Said, 2016; Morris et al., 2015; Pursel et al., 2016). That can provide the insight that both male and female learners equally took advantage of these courses. A limited number of studies reported significant association between gender and MOOC completion in favor of males (Crues et al., 2018; Liu et al., 2019; Reeves et al., 2017). Crues et al. (2018) found that a male had 1.59 times more odds to have high persistence than medium persistence than a female in a computer science MOOC when forum participation was held constant. Although females were equally likely to complete STEM MOOCs, smaller gender gaps in enrollment and completion occurred in countries which are less gender-equal and less economically developed (Jiang, Schenke, Eccles, Xu, & Warschauer, 2018). To date, very scarce number of studies reported findings in favor of females. Moore and Wang (2020) explored that female learners had significantly higher scores, and therefore, performed better than male learners, yet this difference had a small effect size. Bilgeİş Learning Portal offers more technical courses than soft skill courses. When enrollment numbers are examined in Bilgeİş pdMOOCs, technical courses had more male learner enrollment than female learners while soft skill courses had more female learner enrollment. As gender difference had a very small effect, the observed effect of gender can be due to sampling bias. Overall sample of this study included more male learners than female ones. In the courses used in this study, it seems that male learners took advantage of Bilgeİş pdMOOCs more than female learners.

5.1.3.3 Education Level and pdMOOC Completion

The results also showed a significant relationship between learners' education level and pdMOOC completion. Learners who have Bachelor's degree or who are still Bachelor's students were more likely to complete pdMOOCs than other learners when compared to high school degree and below, and graduate student and graduate degree. This was partly parallel to available literature. In edX courses, certified learners had a higher average educational level than the noncertified learners (Ho et al., 2014). Other studies also found out that learners' prior educational attainment showed significant association with the degree of completion, where learners with the higher prior educational attainment were more likely to complete the MOOC (Greene et al., 2015; Morris et al., 2015), and prior educational attainment was found to be positively associated with the completion rate (Pursel et al., 2016). Moore and Wang (2020) explored that students with masters and doctorate degrees had significantly higher scores than undergraduate students. However, in their survey study on exploring the factors affecting MOOC retention, Hone and El Said (2016) reported that completion rates did not differ by level of study (including undergraduate or postgraduate). The effect of educational level on MOOC completion can be explained by the fact that more educated people are likely to cope with the challenges of online learning. MOOC completers usually have a bachelor's degree or greater, and this might be the indication of the fact that this well-educated learner cohort might be comfortable in situations requiring a high degree of self-directed learning (Pursel et al., 2016). More educated learners seem to be more self-directed, and they seem to be taking more responsibility in their learning processes. Yet, Macleod et al. (2015) reported that the majority of MOOC learners were well educated, which is quite against the initial rhetoric that MOOCs would provide disadvantaged individuals with universal access to higher education courses.

5.1.3.4 Employment Status and pdMOOC Completion

Regarding employment status and pdMOOC completion, a significant relationship between learners' employment status (working vs not working) and pdMOOC completion was found in favor of learners who are not working. Parallel to this, Morris et al. (2015) indicated that learners' employment status and the degree of MOOC completion were found to be significantly related, yet the association was opposite meaning that learners who are not working were more likely to complete more of their MOOC. This might be attributed to the fact that learners who are not working might have more free time to spare for their studies so that they can spare the required time to complete MOOCs (Morris et al., 2015), and the same holds for Bilgeİş pdMOOCs as well. Unemployed learners who look for a job might be more motivated with regard to re-skilling or up-skilling than learners who are employed since they may be needing to have up to date skills in order to get higher chances of (re)enter in the labor market (Castaño-Muñoz et al., 2017). This can also be the reason of the relationship between learners' employment status and pdMOOC completion. Furthermore, learners who are working could be still benefiting from pdMOOCs as there is always possibility that learners can still benefit from a MOOC even though they do not complete the course to certification by selecting only useful modules for them and leaving others not completed (El Said, 2017). Macleod et al. (2015) reported that the majority of MOOC learners were employed, which is quite against the initial rhetoric that MOOCs would provide disadvantaged individuals with universal access to higher education courses. This study showed the opposite where the number of employed learners were lower than that of learners who were not working- this included K12 and university students as well. In this sense, it can be said that learners who are not working have benefited from Bilgeİş pdMOOCs. On the other hand, there is a point which should be mentioned that employees are required to change and grow rapidly in today's continuously evolving workspace, and they must be given relevant opportunities to develop the necessary skills, yet providing instruction and support at scale was not possible until recently (Ronaghi et al., 2014). Thanks to MOOCs, employees might have a chance to have personal and professional development opportunities without enrolling in face-to-face training centers. MOOCs are an important support tool for unemployed learners who tend to enroll in MOOCs more than employed ones, and they also provide a way for learners who work and do not receive employer support for other training activities for their professional development (Castaño-Muñoz et al., 2017). According to Castaño Muñoz, Kalz, Kreijns, and Punie (2016), the MOOC participation of employees is usually not known by employers although employee MOOC completion and obtaining certificates is positively related to employer support for general professional development. Employers might need support from their employers as their lack of time due to work load/activities was one of the primary reasons of non-completion. For example, some employers required their employees to take courses from Bilgeİş Learning Portal although this number was quite limited.

5.1.3.5 Previous Online Learning Experience and pdMOOC Completion

Regarding previous online experience and pdMOOC completion, no significant relationship between learners' previous online learning experience and pdMOOC completion was found in this study. This finding partially contradicted with the findings in the literature. Morris et al. (2015) revealed that learners' prior online learning experience was also significantly associated with the degree of completion. Greene et al. (2015) reported that MOOC participants with no prior experience with MOOCs tend to drop out when compared to MOOC participants with prior experience with MOOCs. However, previous online learning experience, including past MOOC experiences, did not have any influence on the completion rate according to Pursel et al. (2016). Also Liu et al. (2019) found no associations between participants' previous MOOC experience and the completion status or the weekly time that they spent on the MOOCs. In other words, the level of familiarity with MOOCs did not influence whether or not participants completed the assignments and the amount of time they spared for a MOOC weekly. There can be two reasons behind no significant relationship between learners' previous online learning experience and pdMOOC completion. Firstly, although students with previous experience with online learning might be more active and ready to engage in open online courses when compared to those with no or limited experience (Pilli & Admiraal, 2017), and they tend to have more effective learning strategies (Wang et al., 2013), Bilgeİş pdMOOCs are in the form of xMOOC. They allow learners to take the courses without any interaction with other learners, and course instructor as there is no physically available course instructor available. Learners are only required to complete the courses with learner-content interaction. For this reason, learners without previous online learning experience might have easily completed the pdMOOCs without requiring any previous online learning experience. Secondly, Bilgeİş courses are shorter than other MOOCs, and they are relatively easier. For this reason, learners could have completed the pdMOOCs without needing any previous online learning experience. Thirdly, the previous online experience of learners might be different from their current pdMOOC experience due to the nature of the MOOCs, and therefore, it might not have any effect on pdMOOC completion. It can be said that learners without online learning experience have equally benefited from Bilgeİş courses. Although previous online experience was not related to pdMOOC completion in this study, the qualitative results of this study indicated that previous online learning experience can be related to learners' online learning readiness as Bilgeİş pdMOOC learners stated that they felt themselves ready for online learning after they successfully completed the pdMOOCs.

5.1.3.6 Online Learning Readiness and pdMOOC Completion

Among dimensions of online learning readiness, computer/Internet self-efficacy, learner control, motivation for learning, and online communication self-efficacy dimensions of online learning readiness were found to be non-significant predictors of pdMOOC completion. Only self-directed learning was found to be a significant predictor of pdMOOC completion. Increased self-directed learning scores of learners was associated with an increased likelihood of course completion. Learners with higher self-directed learning scores were 1.05 times more likely to complete the pdMOOCs. This was confirmed in earlier research that found significant relationship between MOOC completion percentages and self-directed learning. That is, the adults who were stronger in self-directed learning were likely to complete more percentage of the MOOC (Schulze, 2014). Online learners who can determine their own learning are likely to have a better learning performance (Hung et al., 2010). The importance of self-directed learning has been emphasized heavily in the literature (Garrison, 1997; Knowles, 1975). Self-directed learners do not have to depend on others for their learning needs (Bonk & Lee, 2017). The flexibility of MOOC resources (e.g., availability of learning materials for repeated access without the limitations of time and place) strongly supported learners' perception of autonomy as learners can watch or read the several learning resources at the most suitable time for them, and they can decide what to learn according to their needs (Lan & Hew, 2020). This can support self-directed learning in MOOCs. However, in a study, learners indicated that too much self-directed learning requirement in the MOOC made their MOOC experience worse (Liu et al., 2019). This can show that the format of MOOC might be more appropriate for the learners who are already self-directed. This should be taken into account when MOOCs are considered as a panacea for a range of educational ills (Cassidy, Breakwell, & Bailey, 2014). Computer/Internet self-efficacy, learner control, motivation for learning, and online communication self-efficacy dimensions were found to be non-significant predictors of course completion. There could be two reasons behind this. One of which is that learners might be feeling themselves highly ready for online learning in Bilgeİş courses as it provided a unique opportunity for learners to learn anytime and anywhere they want free of charge. Therefore, their responses to the readiness measurement instrument could be high. The second of which is that these dimensions might not be working in MOOC environments as the structure and functioning of MOOCs are quite different than the traditional online courses. MOOC environments might be requiring other dimensions for online learning readiness. This issue is clarified in the following sections of this discussion section.

5.1.3.7 Intention and pdMOOC Completion

There was a significant relationship between learner intent and pdMOOC completion. The learners who stated their intentions as complete more likely to complete the pdMOOCs when compared to the learners who stated their intentions as unsure, browse, and audit. Although measured using various instruments, the relevant literature (Greene et al., 2015; Konstan et al., 2015; Reich, 2014; Zhang et al,2019) provided the evidence that learners' intention to complete a course or learners' intention to obtain a certificate significantly influence the probability of their MOOC completion and retention likelihood when the effect of learners' intention on MOOC completion was evaluated. MOOC students who planned to watch all MOOC lectures, and who agreed that they would obtain a statement of accomplishment, and who intended to be active in the course had higher course completion probability than others who indicated otherwise (Pursel et al., 2016). Also, the completion rates based on learner intent were higher than other approaches in this study. This association could be related to a number of reasons, and mostly it is kind of related to MOOC learners' effort in the courses. Through having intention to complete the course and/or to obtain a certificate, learners seem to have invested more effort for their intentions. Therefore, this situation might have supported them to complete the courses. Certificates provided by MOOCs seem to influence the amount of learners' efforts in MOOCs. Kizilcec and Schneider (2015) found that

MOOC learners who intended to obtain a certificate tend to watch most of the course video lectures, attempt most course assignments, and actively engage in the discussion forum more. The study also showed that the course certificate positively affected participants' participation in the course activities as learners who have asked for the certificate were more determined to complete course requirements. For this reason, the course certificate can be considered as an important motivational factor (Psathas et al., 2018). Konstan et al. (2015) found out that the stronger intention to complete the course students had, the more likely that they would complete the writing assignments and exams in the course. Moore and Wang (2020) showed that students who started the MOOC with the intention to receive a certificate outperformed the ones who were undecided with regard to earning a certificate or completing all of the coursework. Among the students who completed the courses, the ones registered for the course to obtain a certificate performed better than the group of ones, undecided, browse, and some work. Regarding the effect of the intention to certify on the number of videos students watched, intention to certify acted as a moderator between the number of videos students watched and student achievement, and as a result, it had an amplifying influence on students' achievement. In other words, an increase in engaging with videos is positively associated with an increase in MOOC achievement for the ones intended to receive a certificate (Bonafini et al., 2017). When students who completed either some or all course exams were compared to students who did not take any exams, it was found that students self-reporting intention to complete all course activities were more likely to complete either some or all course exams. This shows intention is likely to impact students' course activity completion in the courses (Engle et al., 2015).

5.1.3.8 Course Behaviors and pdMOOC Completion

Online learners engage in several educational components, such as course videos, quizzes, exams, projects, discussion forums etc., with varying levels in online learning environments. Simply behavioral engagement can be summarized as the learners' interactions in the learning environments. Regarding the relationship between learners' course behaviors and pdMOOC completion, the results of this study showed that there was a significant positive correlation between number of course views, number of clicks in the course, time spent on the course, days spent on the course, average quiz attempts and pdMOOC completion. It is likely that pdMOOC learners tend to complete the pdMOOCs when they viewed the courses, interacted with courses, attempted to answer the quizzes more. The results provided additional insights into learners' engagement in MOOCs, and showed the influence of different patterns of engagement on course completion. These results were parallel to the literature. The relevant research studies in the literature provided the following results. Relevant learning analytics and educational research have documented that students perform better when they engage with activities more (de Barba et al., 2016). Performance is mostly positively correlated with student activity logs which denotes that the higher the number of activities the students carry out, the better performance they exhibit. In other words, the better performance students have when they interact with the course activities more (Mubarak et al., 2020). Concerning students' final grade and their engagement with the course, the grade was generally proportional with students' activities overall (Anderson et al., 2014). The number of course views and number of clicks in the course indicate the active engagement of learners. The results of Deng et al.'s (2019a) review showed that higher retention rates and better academic performance are associated with more active behavioral engagement. Almeda et al. (2018) reported that the number of times a student viewed readings, number of times a student viewed a forum, number of times a student viewed videos features were found to predict students' final average grades significantly and positively. Similarly, Mubarak et al. (2020) found that resource view, forum view, course view, and assignments had substantial effects on student performance in the study on prediction of students' early dropout based on interaction logs in the online learning environment.

Time spent on the course is a good indicator of course completion as shown by previous studies. Chuang and Ho (2016) reported that the time learners spend online is a powerful predictor of certification among many other activity statistics in MOOCs. It was also shown that more videos watched per week, frequently watching lecture videos, time students viewed course videos (video time), and video hits are positively related to the completion rate (de Barba et al, 2016; Firmin et al., 2014; Pursel et al, 2016; Tseng et al., 2016). Anderson et al. (2014) explored that high-achieving students consumed many lecture videos, and most of them exhibited some re-watching behavior. These are expected as MOOC lectures heavily include videos, and learners mostly spend their time watching these course lecture videos. On the other hand, days stayed on the course and pdMOOC completion had a small effect size. Regarding the days stayed on the course had a significant low positive correlation with pdMOOC completion, but this correlation had a small effect size. It would not be wrong to state that this significant correlation might be caused by the large sample size. According to Lee (2018), MOOC students who carried out more learning activities, did more and had longer learning chunks per week tend to get a course certificate. In addition, more uninterrupted activities performed in longer duration is associated with student success. That is, the probability of obtaining a course certificate increased when learning activities were performed in fewer learning chunks. Self-regulated learning (SRL) is quite related to uninterrupted time-on-task as SRL requires sparing time and effort to improve learning performance. Students with higher self-regulated learning ability would not be uninterrupted by off-task activities and therefore, have longer time-on-task than students with less self-regulated learning ability. As Bilgeİş pdMOOCs provide bit-size information which learners can start using as soon as possible after completing the courses, it is logical that learners spend more time on a course, and this can be done without spending days on the course. In MOOCs, learners mostly have a chance to attempt to answer course quizzes multiple times. Therefore, it is normal that quiz attempts influence pdMOOC completion. This was not a surprising result as quiz grades contribute to the overall grade obtained from a MOOC. Research studies also have indicated that the number of quiz attempts significantly predicted the final grade positively (de Barba et al., 2016). Khalil’s (2018) results showed that the average of

MOOC interactions of completed students, which are quiz attempts, forum readings, forum writings, and login frequency, were higher than dropout students in both of the MOOCs. Moreover, the number of quiz attempts of high-achievers showed bimodal distribution, and they had several quiz attempts (Anderson et al., 2014).

Learner-produced data trails gave detailed information about what is actually going on in the learning process (Siemens & Long, 2011). The results revealed how Bilgeİş learners interacted with pdMOOCs. Overall, students' performance and course completion were influenced by their engagement. However, there are issues raised by learner-produced data trails. Without any intervention, it is hard to know whether learners actually spending their times on course components (e.g, video, discussion forum) to learn. Aforementioned proxies come with their inherent limitations. For example, the measure of time spent in online courses is problematic as what takes one student 10 minutes to complete may take another student's twenty minutes of time (Grandzol & Grandzol, 2010). If videos are viewed repeatedly by students, this might be the indication of the fact that the video content might require further clarification or more resources (Coffrin et al., 2014). In this sense, the longer time spent on the course could be problematic as well. Also, Li and Baker (2018) found out that the same engagement measure might be impacting learner achievement oppositely, and some engagement measures could predict achievement of one learner subgroup while they could not do the same for another. For this reason, the patterns of engagement obtained from behavioral data offer benefits, but they also come with their complexity.

5.1.4 Intention, Behavior, and Intention-Behavior Gap

Regarding the relationship between intention and subsequent behavior, the time interval between measurement of intention and the evaluation of behavior is used for temporal stability as it is considered that a number events might cause intentions to change with the passing time (Fishbein & Ajzen, 2010). The courses on Bilgeİş Learning portal are relatively short from the ones provided by other MOOC portals;

therefore, the time interval is less likely to affect the behavior. The data of 9797 learners who stated their intentions before starting four pdMOOCs were used in the analysis. Among learners, 4394 (44.85%) of them can be considered as inclined actors because their consecutive behaviors were equal to their intention accordingly. That means learners formed a specific intention, and they acted in parallel with this intention. This was similar to Henderikx et al.'s (2017a) results where most MOOC-takers were inclined actors, 42% and 49% respectively, in both of the MOOCs, and they achieved what they intended to do in the MOOC. This result was also similar to Sheeran and Webb's (2016) study where intentions result in action approximately one-half of the time. Only 26 (.27%) learners can be considered disinclined abstainers because learners formed no intentions, and they did not act accordingly. These were the expected result for intentions resulting in the behavior and for no intention resulting in no behavior.

Almost 87% of the learners stated their intention as they would like to complete the course, and among these learners 48% did so. As the learner intentions did not result in intended behaviors, intention-behavior gap occurred in the pdMOOCs used in this study. The results of this study confirmed that a formed intention does not always translate into the actual behavior (Fishbein & Ajzen, 2011). This intention-behavior discrepancy might result from sampling, but it is more likely that it occurs due to intention-behavior gap. That is to say, pdMOOC learners mostly wanted to complete the MOOCs and obtain certificates. However, they failed to do so, and their intentions changed. Then this situation resulted in intention-behavior gap. Of the learners, 4804 (49.04%) can be considered as inclined abstainers because their consecutive behaviors were not equal to their intention. That means learners formed a specific intention, and they failed to act in parallel with this intention. As a result, the behavior was less than learners' intentions, and intention exceeded the behavior of the learners. This was not similar to Henderikx et al.'s (2017a) results where the percentage of inclined abstainers was 41% and 30%, respectively. Of the learners, 571 (5.83%) can be considered as disinclined actors as learners formed no intentions, but they acted anyway. Although the number of these learners is low, this also indicated that intentions might not stay stable during the course, and they tend to change. This was not similar to Henderikx et al.'s (2017a) results where the percentage of disinclined actors was 17% and 21%, respectively. In this study, their percentage was lower. In brief, inclined abstainers were mainly responsible for intention-behavior gap for failing to act upon their positive intentions as was shown by Sheeran (2002), and this gap is still substantial (Sheeran & Webb, 2016) in this study as well. the performance sometimes depends on non-motivational factors, such as the availability of required opportunities and resources including time, money, skills, etc., at least to some degree. These factors indicate actual control of people over their behaviors. Briefly, as long as a person possesses the required opportunities and resources, and intends to engage in the behavior, they should succeed in doing so (Ajzen, 1991). However, this is not possible all the time.

The reasons behind intention-behavior gap was explored using learner responses to the open ended questions. The reasons behind intention-behavior gap was grouped as why learners achieved less than intended and why learners achieved more than intended. The results depicted that the majority of learners achieved less than their intentions, and only few learners achieved more than their intentions. These signaled that learner intentions tend to change in MOOCs and even this change can occur more than one time (Henderikx et al., 2018a). The reasons behind intention-behavior gap for learners who achieved less than they intended were mostly learner related. In other words, learners failed to spare enough time for pdMOOCs. They forgot that they were taking the course; that had insufficient knowledge about MOOCs; they had personal problems, including health and private problems; they had no interest in certificate; and they took a break from the pdMOOCs. Learners also experienced technical issues including Internet connection and access issues. Other reasons were MOOC related reasons including portal/course related usability issues (e.g, not being able to access course content because of work Internet filters, courses being not fully mobile device compatible, support desk not working properly), course related issues (e.g, simple, not clear, not interesting, not as expected), and MOOC related issues (e.g., registering for many courses and not having a physical course environment/context). When compared to learner related issues, these were low. Although the barriers causing the gap between intention and behavior can be MOOC-related or non MOOC-related (Henderikx et al., 2017b), they were mostly non MOOC-related in this study which was the same case in other research studies as well. Gütl et al. (2014) reported that learners failed to fulfill their intentions to complete the MOOC due to diverse factors including academic and personal reasons. The majority of the students stated that changes in their job, having insufficient time, difficulty of the subject matter, and unchallenging activities in the course were some of the reasons for their drop out from the course. Non-MOOC related indicated barriers were general barriers, which included workplace issues, lack of time, family issues, lack of workplace support, and lack of family support. MOOC related indicated barriers were design barriers, which included problems with the website, lack of interaction, lack of instant feedback, lack of instructor presence, and lack of useful feedback and expectation management barriers, which included course being too easy, course not meeting expectations, and course being too difficult (Henderikx et al., 2017b).The reasons behind the change of intention by learners whose intention changed once or more often were specified as getting busy with other things, giving high priority to other commitments, changes in life or work demands, not having enough time, unsatisfying interaction with the instructors, having poor Internet connection, underestimating the amount of time required for the MOOC, and time constraints and commitments (Henderikx et al., 2018a). As clearly seen, these barriers were mostly related to the individual learner as well. This study also confirmed that the intention-behavior gap in MOOCs mainly occur due to non-MOOC related reasons. That is, learners mainly failed to spare enough time for the pdMOOCs.

In addition, the reasons behind intention-behavior gap for learners who achieved more than they intended were mostly learner related as well. In other words, learners got motivated to learn; learners thought of their personal development; they wanted to obtain a certificate; and they perceived the course useful. Course design issues included course being clear to learners, course being developed in a professional way, course content having good quality, course being fluent, and course being appealing. This results also confirmed that intentions tend to change (Henderikx et al., 2018a).

5.1.5 Predictors of Course satisfaction and Perceived Learning in pdMOOCs

Online learning readiness dimensions and course satisfaction were used to predict perceived learning in Bilgeİş pdMOOCs. Considering all of the predictors, 37.1% of the variance in perceived learning was explained in total. The results revealed that self-directed learning, learner control, and motivation for learning dimensions of online learning readiness, and course satisfaction were significant in terms of positively predicting perceived learning in Bilgeİş pdMOOCs. These results suggested that pdMOOC learners who have more self-directed learning, learner control, and motivation for learning dimensions of online learning readiness, and course satisfaction have more perceived learning. Online learning readiness dimensions were also used to predict course satisfaction in Bilgeİş pdMOOCs. 15.2% of the variance in course satisfaction was explained by online learning readiness dimensions. The results revealed that computer/Internet self-efficacy, self-directed learning, learner control, and motivation for learning dimensions of online learning readiness were significant in terms of positively predicting course satisfaction in Bilgeİş pdMOOCs. Similarly, pdMOOC learners who have more computer/Internet self-efficacy, self-directed learning, learner control, and motivation for learning have more course satisfaction. These findings were consistent with the literature. Readiness was found to have significant influence on satisfaction in web-based learning environments or e-learning (Holsapple & Lee-Post, 2006; Morgan, 2007). Wei and Chou (2020) showed that computer/Internet self-efficacy and motivation for learning had a direct positive influence on course satisfaction. Joosten and Cusatis (2020) found that online readiness measures are significantly related to students' perceptions of learning and satisfaction. Online readiness has been found to effect successful course performance (Holsapple & Lee-Post, 2006). Kuo and Belland (2016) found out that there is a significant positive correlation between learners' satisfaction and performance within an online course. When they were more satisfied, they showed better academic performance. Horzum et al. (2015) revealed that students' online learning readiness levels indirectly predicted perceived learning. Regarding the influence of individual dimensions of online learning readiness on perceived learning and course satisfaction, computer/Internet self-efficacy and online communication self-efficacy did not have any significant contribution to predict perceived learning, and online communication self-efficacy did not have any significant contribution to predict course satisfaction. Although learners complete learning activities in MOOCs via using some type of computer/Internet tool and doing these activities is more likely to be easy for learners having high confidence in using these tools (Wei & Chou, 2020), computer/Internet self-efficacy and online communication self-efficacy dimensions, which are required to complete the learning activities in MOOCs indeed, seem to be not influential in Bilgeİş pdMOOC context as the most influential dimension for pdMOOC completion was self-directed learning. The reason behind this can be due to the fact that learners can complete Bilgeİş pdMOOCs without communicating with anyone, and they can complete all learning activities on the Internet using their devices in an easy way, where learners are required to login to the portal and go to the course page. For this reason, pdMOOC learners might not have problems related to the use of Bilgeİş Learning Portal, and they might not need computer/Internet self-efficacy and online communication self-efficacy. Parallel to this, computer/Internet self-efficacy did not predict learner achievement in a blended course (Cigdem & Ozturk, 2016), and student performance in an online course was not correlated with online technologies self-efficacy scores (Puzziferro, 2008). Wei and Chou (2020) also found that computer/Internet self-efficacy had a mediated effect on online learning perceptions and course satisfaction. Computer/Internet self-efficacy and online communication self-efficacy might have an indirect effect on perceived learning, and online communication self-efficacy might have an indirect effect on course satisfaction. In addition, these dimensions might be related to performance of learning in MOOC contexts or other dimensions of satisfaction, and therefore, these individual dimensions of online learning readiness require further investigation in MOOC contexts.

Perceived usability dimensions were used to predict perceived learning in Bilgeİş pdMOOCs. 10.4% of the variance in perceived learning was explained by perceived usability dimensions. The results revealed that perceived usefulness and overall satisfaction dimensions of perceived usability were significant in terms of positively predicting perceived learning in Bilgeİş pdMOOCs. When learners found the portal useful for them and they are satisfied with using the portal, they can use the portal effectively and this could have contributed to their perceived learning. These were in line with the literature. Liang, Jia, Wu, Miao, and Wang (2014) showed that perceived usefulness of the MOOC positively impacts learners' use of the system and in turn influences the learning outcome. Rabin et al. (2019) found that perceived course usability directly affected learner satisfaction. Furthermore, it was also found that perceived ease of use and usefulness had a significant positive effect on satisfaction where satisfaction had a significant positive effect on continuance intention to use K-MOOCs, and perceived ease of use and perceived usefulness significantly affected MOOC students' behavioral intention to use MOOCs (Joo et al., 2018; Tao et al., 2019). These could indirectly confirm the effect of perceived usability on perceived learning. In general, positive user experience and better usability have prime importance for educational-based learning systems (Harrati et al., 2016). For this reason, perceived usability might have influenced perceived learning positively. Meiselwitz and Sadera (2008) investigated the associations between usability factors and learning outcomes in an online learning context and found a significant strong positive correlation between usability and learning outcomes. In other words, system usefulness, interface quality, and information quality as usability factors accounted for nearly 68% of the variance in student learning outcomes. That is, when overall system usability increases, student learning outcomes tend to increase as well or vice versa. However, in the current study, on the other hand, interface quality and information quality did not have any significant contribution to predict perceived learning. In a similar vein, it was reported that visual design and learnability did not have any significant effect on student motivation to learn (Deshpande & Chukhlomin, 2017). However, it was also found that MOOC participants' learning experience was negatively affected by navigations and not-so-intuitive interface (Liu et al., 2015). In the current study, as pdMOOCs are provided free of charge and learners do not take them within the scope of formal learning, it might not be wrong to say that pdMOOC learners did not care about the visual design of the portal, and they just would like to have what they can obtain from a MOOC as they are provided with a free unique opportunity for learning. Moreover, Bilgeİş pdMOOC learners receive very low number of errors which were mostly related to database connection errors lasting very short time. For this reason, information quality might have had not any influence on perceived learning. Nevertheless, interface quality and information quality of the portal might need some improvements to make their effect significant on perceived learning. In addition, interface quality and information quality dimensions might be related to performance of learning instead of perception of learning.

5.1.6 Learner Perceptions

5.1.6.1 Online Learning Readiness

Among online learning readiness dimensions, the mean of motivation for learning was the highest which was then followed by computer/Internet self-efficacy, self-directed Learning, online communication self-efficacy, and self-directed learning, and learner control. It is not wrong to infer/state that bilgeis.net has met the learning needs of the learners taking courses from this portal. For this reason, online learning readiness levels of these learners could be high as one of their main motivations was to learn a new topic. In addition to quantitative findings, qualitative findings provided detailed information of online learning readiness of pdMOOC learners.

Learners mostly felt themselves ready for online learning due to their previous online learning experience, their motivation for learning, completing a course, their positive attitudes towards online learning, self-directed learning, working/studying in a related field/in education, and having learner control in the courses. In addition to these, learners felt ready for online learning due to the fact that learners were competent in technology; learners had enough computer self-efficacy; courses were based on self-paced learning; and courses were on well-structured portal. Qualitative findings confirmed the motivation for learning, self-directed learning, computer self-efficacy, and learner control dimensions of the online learning readiness scale used in this study, yet there is more to explore regarding online learning readiness in MOOC contexts. Feeling ready due to previous online learning experience and after completing a course is consistent with the literature. Liu (2019) reported that students' online learning readiness (social, technical, and communication domains) improved after taking a self-paced asynchronous orientation course. Firat and Bozkurt (2020) found a significant association between the time spent online and online learning readiness. These can partially explain that when learners spend time in online classes, they tend to feel themselves more ready for online learning.

Learners did not mainly feel themselves ready for online learning due to having bias towards online learning and needing the presence of course instructor. The other reasons included that learners lack communication self-efficacy; they lack motivation for online learning; they lack time; they do not have previous online learning experience; and they have low self-confidence and low self-efficacy. Online learning readiness is positively affected by online learning perceptions as positive online learning perception helps students feel more confident and ready to participate in online courses (Wei & Chou, 2020). For this reason, learners' bias towards online learning may be preventing pdMOOC learners' readiness for online learning. Although the frequency of needing the presence of course instructor is low, this signals the transactional distance (Moore, 1997) pdMOOC learners experienced. However, learners seemed to cope with this issue and complete the pdMOOCs without the presence of a course instructor although they needed the existence of a course instructor.

5.1.6.2 Course Satisfaction

Quantitative results showed that completing the exercises in the courses gave learners a satisfying feeling of accomplishment; they wanted to know more about course topic; they enjoyed studying the course; the feedback after exercises helped learners feel rewarded for their effort; they felt good for successfully completing the course; and they had a pleasure to work on a well-designed course. In addition to quantitative findings, qualitative findings provided detailed information on what dimensions of the course they were satisfied or not, and they mostly confirmed the quantitative results. Thirty-one learners solely stated that they were very satisfied or satisfied with the course, and nineteen mentioned that they were satisfied with learning the course content. It was indicated that MOOC learners have a feeling of sense of accomplishment after taking MOOCs (Li & Moore, 2018; Sablina et al., 2018). As mentioned by Li and Moore (2018), learners probably had the satisfied feeling because of the knowledge they learned in the courses, completing a course, and the statement of accomplishment they received.

In particular, learners mentioned their satisfaction with course design (e.g., well-designed nature of the course, free of charge, course length etc.). This was in line with literature as learning content, course design and organization aspects and teaching and learning aspects, and adequate course length had influence on satisfaction in online courses as well as MOOCs (Barbera et al., 2013; Gameel, 2016; Gil-Jaurena et al., 2017; Ilgaz & Gülbahar; 2015; Joosten & Cusatis, 2019). The characteristics of the MOOCs as free and convenient were the positive aspects for MOOC learners (Liu et al., 2014). Learners were also satisfied with course components. Learners found course video lectures effective, and interactive. The fundamental learning resources in MOOCs include video lectures (Kahan et al., 2017), and several research studies have showed that course videos are found helpful, useful, and impactful by MOOC learners (Liu et al., 2013; Watson et al., 2016; Watson et al., 2018; Zutshi et al., 2013). Interactive course videos were found pretty interesting and engaging by MOOC learners (Zutshi et al., 2013). The interactive nature of course videos supports learner-content interaction, and learner-content interaction is considered as important satisfaction factor by MOOC learners (Gameel, 2016). Also, Bilgeİş course lecture videos included some questions to check learners' understanding in the form of formative assessments. Learners may be satisfied with these lecture videos because in video assessments have pedagogical importance as they can provide learners with instant feedback in the form of formative assessment which is in turn associated with positive learning outcomes (Kizilcec et al., 2013), and embedding quizzes into videos help maintain student attention to lecture content (Hew et al., 2018).

Learners were satisfied with course being enriched examples, examples being based on real life, and feedback provided during lectures. Integrating real-world examples or problems into the content and resources made the course material very relevant. This made students enjoy the course content and resources, and this attached tangible meaning to the concepts or principles taught in the MOOCs; in this way, it sustained student interest, and helped them learn the material more easily because of the fact that students were exposed to real-life application of the principles or theories learned (Hew et al., 2018). Hone and El Said (2016) provided that MOOC content's being based on real cases/examples and practice was one of the comments MOOC learners stated with regard to their MOOC completion.

Learners were satisfied with course exams because exams reinforced their learning; exams were effective, enjoyable, and challenging. This is not surprising as testing provides strong ways of improving learning in addition to assessing it (Roediger III & Karpicke, 2006). Quizzes have been identified as a tool to support student learning in MOOCs (Zutshi et al., 2013). Using different kinds of evaluation methods was seen as one of the most important factors affecting the participants' satisfaction in online learning (Ilgaz & Gülbahar, 2015). Regarding course assignments, learners thought that assignments reinforced their learning; and they were effective and appropriate for their learning. Also, assignments including fun and enjoyable aspects make students engage more in the tasks (Hew et al., 2018). Learners found the hands-on nature of the MOOC as the most helpful aspect (Liu et al., 2015). After examining randomly sampled 249 MOOCs with 6393 students, Hew et al. (2020) found that course assessment significantly predicted student satisfaction. With the help of course exams and assignments, pdMOOC learners had an opportunity to remember the course content. They might have learned the course content better in this way, and they might have been satisfied as hands-on experience and engaging assignments as they kept students moving forward in MOOCs (Liu et al., 2014). Learners were also satisfied with receiving feedback after assignments. Influence of feedback on learning and achievement has been shown in the relevant literature (Hattie & Timperley, 2007).

Qualitative results also revealed the areas some learners were not satisfied within the course. Learners were not satisfied with course design with respect to course length, lack of support to ask questions instantly, no presence of instructor in the course, course content, and unprofessional design of the course. As it was mentioned in the section above, course design influences satisfaction (e.g., Joosten & Cusatis, 2019), and course design influences the success of an online learning experience (Song, Singleton, Hill, & Koh, 2004). Gil-Jaurena et al. (2017) revealed that MOOC learners are satisfied with appropriate and motivating course methodology, and adequate and sufficient course content. Communication also was found to influence participants' satisfaction levels after the online learning experience (Ilgaz & Gülbahar, 2015). Learners found unorganized course structure leading to confusion in MOOCs (Liu et al., 2014). In an open learning environments such as MOOCs, a learner is required to be highly self-regulated as these environments provide little guidance (Kizilcec & Halawa, 2015).

Some learners were also not satisfied with course components, Learners were not satisfied with course lectures as course lectures were not detailed; course lectures included insufficient number of examples; course lectures were shallow/simple; course lectures failed in providing more documentation about the course content; and course lectures provided very simple examples. On the other hand, Hone and El Said (2016) reported that the comments on participants' course non-completion included that courses were too sophisticated/technical/in-depth/complex; the language used in the courses was too complex; courses had too many modules; and courses were boring. Clearly, it is not that possible to satisfy all MOOC learners at the same time. It is very possible that pdMOOCs can be found very simple by some learners as pdMOOCs were designed for learners with no prior knowledge. Gil-Jaurena et al. (2017) reported that complementary material was considered very useful for learning. MOOC learners might be needing complementary material other than the main course materials.

Some learners were not satisfied with course exam formats as some courses only included the multiple choice exam format. They were also not satisfied with the number of exams, and they found exams easy. While MOOC learners considered readings and video lectures the most useful among the various types of learning materials provided in the MOOC whereas discussions and quizzes were considered less helpful (Liu et al., 2013). Learners were not satisfied with the number of assignments as they were expecting more assignments. Moreover, learners experienced delayed grading, and they thought that the grading duration was long. Learners also found assignment descriptions insufficient. Hew et al. (2018) revealed that MOOC students like moderately challenging assignments which give them opportunity to apply the contents learned. Students disliked easy assignments or questions which solely focus on testing factual recall. Bilgeİş pdMOOC learners might have needed to apply what they have learned doing more assignments. Course assignments are graded by course assistants, and they are supposed to grade the assignments within 72 hours. However, they may not fulfil this time limit due to the number of learners in the pdMOOCs and as a result, pdMOOC learners experience delayed grading unfortunately.

Learners also mentioned that they faced technical problems, and their course satisfaction was influenced by these problems although they were stated very rare. The technical problems were about videos, which were stated as they were not opening and they were freezing. Technical problems are perceived as challenges in online learning (Song et al., 2004). Similarly, Ilgaz and Gülbahar (2015) reported that participants experienced technical problems, originating from both themselves and the system, during asynchronous online lessons due to virtual classroom software issues or slow Internet connection. These influenced learners' satisfaction.

As MOOC learners have very diverse backgrounds, it is not possible to carry out a course design appropriate for every MOOC participant. MOOCs include massive and diverse group of learners, and these learners come to MOOCs with various intentions where some want to audit the course or some want to learn the subject. For this reason, a MOOC is unlikely to satisfy everyone, particularly such large number of learners, and it should be accepted that a course cannot be made for everyone (Liyanagunawardena et al., 2015). Briefly, each learner's need might be different in MOOCs, and it is not an easy task to satisfy all MOOC learners with the same course components. Regarding overall course satisfaction, it is important that no presence of instructor in the course was stated very rare. This indicates that learners can get used to the MOOC learning environments with no presence of instructor.

5.1.6.3 Factors Affecting Learning

Bilgeİş pdMOOC learners had relatively higher perceived learning mean scores which indicate high perception of learning. That indirectly shows that learners had perceived learning gains. Another study showed that learners participated in the MOOC reported perceived learning gains regardless of the instructional strategy used in the MOOC (Kim et al., 2016). In addition to quantitative findings, qualitative findings provided detailed information on what affected pdMOOC learners' learning positively and negatively. Learners stated that being able to take the MOOC whenever they want, receiving a certificate upon course completion, and knowing that courses are provided by a prestigious university, having course dictionary to learn about the terminology used in the courses, and taking notes while watching course lecture using notes field affected their learning in pdMOOCs positively. Self-pace and flexibility by learning anytime/anywhere by oneself is found as the positive aspects of the MOOC (Liu et al., 2014). With this flexibility and convenience, learners do not experience the boundaries of time and space and learn in the way they want. Reeves et al. (2017) reported that learners expecting to receive a free certificate had one-third of a standard deviation higher perceived learning. The certificate provided by MOOCs has kind of positive influence on learners' learning. METU is the popular university among public in Turkey, and Bilgeİş Learning Portal was created under METU credentials. Learners clearly trust these pdMOOCs because of this university, and it is very likely that this affected their learning positively. Also, all courses have dictionary section to clarify the terms used in the courses, and they allow learners to take notes and save them on the system.

Course lecture related issues also affected learners' learning positively in pdMOOCs. Course content, course lectures being clear, course lectures including many examples, using daily life examples in the course lectures, use of videos in the course lectures, interactive course lectures, visual design/presentation of the course lectures, studying well designed course content, simple course lectures, explanatory course content, short course content, and sequencing of the course content in course lectures influenced learning positively. Confirming these, Barbera et al. (2013) reported that learning content and course design aspects had influence on perceived learning in online courses. When the overall effect of the instructional characteristics on student outcomes was examined, student academic performance and learning are significantly predicted by the entire instructional characteristic factor positively (Joosten & Cusatis, 2019). In addition, quality of the course materials is found as the positive aspects of the MOOC (Liu et al., 2014).

Learners found course assignments instructive and reinforcing as course assignments were based on practical exercises. They also perceived positive contributions of receiving feedback after course exams, and having well designed course assignments. These were consistent with the literature as tests and exams, and self-assessments are considered very useful for learning in MOOCs (Gil-Jaurena et al., 2017). Engaging assignments keep students moving forward (Liu et al., 2014). By means of lectures, learners have exposure to the topic of instruction, and by means of assessments, learners have opportunities to monitor their understanding and to receive feedback about the topic (Kizilcec & Schneider, 2015).

Learners' intrinsic motivation, perceiving their learning experience positive, practicing course examples, perceiving the course useful affected learners' learning positively in Bilgeİş pdMOOCs. In self-paced learning environments, learners' intrinsic motivation and their efforts maintain success, and through a positive learning experience, learners can learn comfortably in MOOCs.

Some course lecture related issues affected learners' learning in MOOCs negatively as learners thought that courses had simple/shallow content; courses had short course length; courses presented insufficient number of examples in the lecture; course lecture examples focused on simple/too basic examples; course lecture included weak organization of course content; course lecture presented static texts; and course lecture lacked real life applications. Unorganized course structure of MOOCs might lead to confusion on the learner side (Liu et al., 2014). Generally, these issues tend to be related to the open nature of MOOCs. If MOOCs aim to be open for anyone, the level of difficulty of the courses neither can be too high nor too basic (Eriksson et al., 2017). Although instructional components are significant predictors of student learning in MOOCs (Jung, Kim, Yoon, Park, & Oakley, 2019), it is not possible to satisfy the learner needs of each learner in MOOCs.

Course assignment related issues also affected learning negatively. Learners mentioned facing insufficient assignment explanations, receiving insufficient feedback after assignments, having long assignment grading duration, having a requirement of submitting assignments, course assignments not matching with course lecture, and exams not being consistent with course content as the issues influencing their learning negatively. Essex and Cagiltay (2001) explored that distance learners are distressed by ambiguous instructions and technological challenges. Furthermore, the negative aspects of the MOOC included not useful feedback or lack of feedback (Liu et al., 2014).

Learner related issues also affected learners' learning negatively. These included low computer competency, bias towards online learning, already knowing the course content, being distracted while listening to course audio, having learning difficulty, having focusing problems, taking the course at different time points, perceiving the course difficult, and needing written documentations of the course lectures. Learners need enough computer competency to access the MOOC portal and take the MOOCs. Without this, it is not easy to learn on MOOCs. As online learning environments are quite different from traditional learning environments, learners might develop bias towards the effectiveness of online learning, and clearly this bias affected their learning in pdMOOCs negatively. Reeves et al. (2017) reported that learners with more prior knowledge reported learning less in MOOCs. In a similar vein, learners' already knowing the course content affected their learning negatively.

In brief, overall, course satisfaction and perceived learning codes were revealed similar and this confirms the significant relationship between course satisfaction and perceived learning as the quantitative results of this study confirmed.

5.1.6.4 Perceived Usability

Learners thought that portal was easy to use, well designed/structured, easy to understand, attractive/appealing, effective, useful, and they thought that portal provided easy access to the courses. These were in line with quantitative results of this study where learners had high perceived usefulness scores. Similarly, Yousef et al. (2015) reported learners' general satisfaction with the blended MOOC environment with respect to usability and effectiveness. Learners used the portal easily and effectively, and it can be inferred from learner responses that learners did not experience transactional distance between themselves and the learning technology (Weidlich & Bastiaens, 2018). Proper operation of MOOC platform satisfies MOOC learners (Gil-Jaurena et al., 2017). Learners found portal's interface user friendly, clear, and ideal. Bilgeİş pdMOOC learners reported interface quality and information quality scores between moderate to high. In this way, qualitative results also supported the quantitative results. This is also important as learning environment as key factors which influence experience and quality in MOOCs (Ossiannilsson et al., 2015). Korableva et al. (2019) identified user interface problems through usability testing of Coursera and Open Education MOOC platforms. Users did not find any of the platforms difficult, yet Coursera was rated as less complicated than Open Education MOOC platforms. Generally, both of the platforms appeared to have good design, and users highly rated the platforms with respect to simplicity and accessibility, amenity, and creativity. Bilgeİş learning portal was similar to both of these platforms.

In practice, the interface of Bilgeİş Learning Portal is not that complicated as it was tested very frequently during the development process. However, there have been some learners who experienced portal's interface as complicated. Learners also addressed the need for interface and visual design improvement. In a similar study, some users noted that the interface of Coursera platform was unpleasant and outdated (Korableva et al., 2019). The interface of MOOC portals could be designed in a more user friendly way. Learners also provided some technical issues influencing the portal's usability. Learners mentioned that portal was not fully mobile compatible; they had video lecture playing problems; and they experienced assignment upload problems. Unfortunately, the portal was not designed fully mobile device compatible, and therefore, it is very normal that learners were not able to use the portal and watch course video lectures effectively with their mobile devices. However, overall, Bilgeİş pdMOOC learners did not experience major usability issues in Bilgeİş courses, and they did not confront serious problems.

5.1.6.5 Perceived Benefits

Having been surrounded by lots of criticisms, MOOCs have provided considerable benefits for learners as the results of this study indicated. In both soft skill and technical courses, learners obtained knowledge benefits and personal benefits. Particularly, after completing the soft skill courses, learners gained knowledge as a result of studying the course. Personal benefits obtained from soft skill courses included awareness about one’s behavior, developing different perspectives, obtaining a certificate, being more patient, and showing more empathy. It seems like pdMOOC learners make use of what they learned from pdMOOCs. Personal benefits obtained from technical courses included taking further courses on other platforms, getting familiar with programming, obtaining a certificate, and having increased knowledge of programming and interest in programming. After completing MOOCs, learners received new knowledge and practical skills about a topic (Liu et al., 2014; Sablina et al., 2018). MOOCs are effective in helping learners understand a specific topic and apply this in real life (Goh et al., 2018). The results of perceived benefits obtained from the courses were in line with these. For example, Class Central’s 2017 Learner Survey showed that many MOOC learners do not identify tangible benefits obtained from MOOCs in the form of free and low-cost university courses. Among the common benefits, improved performance at a current job, helping to get a new job, and helping to earn a promotion were stated by MOOC learners (Shah, 2017b). The results of the current study also showed that learners did not get any short term tangible benefits although people from developing countries are more likely to report both career and educational benefits, and people with lower levels of education and lower socioeconomic status from developing countries are most likely to report tangible career benefits (Zhenghao et al., 2015).

In the study of Karnouskos (2017), respondents pointed out that corporate MOOCs contributed to their professional life, and it was also clearly highlighted that a key benefit of MOOCs included the timely delivery covering cutting-edge needs which is not possible in such a flexible or rapid way with traditional approaches. From the perspectives of the learners, MOOCs are a popular option for working professionals who are in need of continuing to update their skills and responding to their professions' changing needs (Liu et al., 2019). Although other studies revealed professional development and work practices related benefits (e.g., Milligan & Littlejohn, 2017; Petronzi & Hadi, 2016), this study was not able to reveal those as learners mostly stated that they obtained knowledge benefits and personal benefits. They might be using these benefits in their work, yet this was not revealed by this study although the purpose of Bilgeİş pdMOOCs is to develop the capacities of small medium enterprises.

Interestingly, learners also reported obtaining "no benefits" from both soft skill and technical courses. The reasons of these included that learners were already knowledgeable about the course topic; they have not used the knowledge they gained from the courses yet; information left in the air; and learners had no idea where to use the knowledge they gained. In this regard, pdMOOC learners may need some assistance on how they can apply the knowledge they gained from pdMOOCs.

5.2 Suggestions for Practice

This study provided some suggestions for MOOC designers and developers, and MOOC providers.

5.2.1 Suggestions for MOOC Designers and Developers

The following suggestions can be made for MOOC designers and developers:

- A MOOC learner should be given a one time (or many times) opportunity to view the course and examine the content etc. without any registration requirement. In this way, they can decide better whether to take the course or not, and drop out rates do not increase. Also, they can decide effectively whether the course is a correct choice for themselves, and they need to learn that course content.

- The reasons for not starting and not completing pdMOOCs showed that solely providing free courses without enough guidance does not lead to learners' entering the courses after enrollment or completing them. As Bilgeİş pdMOOCs are self-paced and do not have any starting-ending dates, this can also be confusing for learners. Therefore, learners who are not experienced in MOOCs should be provided with sufficient knowledge on what MOOCs are, how their nature is, and how they work. MOOC designers and developers should prepare a short video or infographics to make learners familiar with MOOCs. These can be sent to learners via e-mail when they register for the MOOC portal. Moreover, informative social media posts can be prepared by MOOC designers and developers. In this way, MOOC learners cannot have any misconceptions about MOOCs, take MOOCs without any complications, and they can benefit from MOOCs effectively.
- After registration for the MOOC portal, learners should be provided with orientation about how to make use of the MOOC portal, how to search for the courses, how to enroll in them, and how to proceed in the courses such as how to watch course video lectures, how to answer quizzes or how to upload assignments. It should also be emphasized that learners should check the course syllabus immediately after they enroll in a course.
- As learner related time issues was the main reason behind non-start and non-completion, how much time learners should spare for the MOOCs should be made very visible to learners on the main course page instead of solely putting this information into the course syllabus.
- As it was mentioned by pdMOOC learners that their lack of technology including no Internet connection, course materials should be designed in a way allowing downloading so that learners can access the course without Internet connection. In this way, access barriers should be removed.

- Learners mentioned that portal was not fully mobile compatible. MOOC portals should be 100% mobile compatible and in this way, they should satisfy the learning needs of MOOC learners using any device they want to use to access the courses.
- As some MOOC learners are extrinsically motivated, external rewards in addition to the certificates such as badges or achievements can be designed for learners to indicate their success.
- Course components (e.g., course lectures, exams, and assignments) of MOOCs should be designed and developed carefully. Assignment/quiz explanations should be provided for learners in detail, and learners should receive sufficient feedback after assignments/quizzes. It should be made sure that course assignments should match with course lecture, and exams should be consistent with course content. Moreover, different exams and assignments can be designed with varying difficulty, and they can be graded based on this difficulty.
- In order to maintain and increase learners' course satisfaction and their perceived learning, course length should be kept shorter, but they should include satisfying amount of learning content, and courses should continue free of charge. Course video lectures should be very interactive and enriched with examples based on real life cases and applications to prevent transactional distance. Learners see quizzes and course assignments as a way of reinforcing their learning. For this reason, quizzes and assignments should be prepared with varying difficulties. Learners should be offered opportunities to take which level of difficulty they want. Some learners do not like doing assignments. For these learners, more quizzes can be provided instead of assignments or assignments can be provided in the format of quizzes or exams based on the choice of learners.
- MOOC learners come to MOOCs with diverse motivations. Therefore, the performance of learners in MOOCs should not be expected to be the same for all learners. For example, a learner might register for a MOOC for

auditing the course. Expecting submitting assignments as a requirement from this learner is not a wise choice.

- Different presentations of the MOOC should be provided by learners with different needs. For this reason, learners should be asked why they take the MOOC in the entrance of the course. Based on this information different paths should be designed for MOOCs. For example, a learner might register for a MOOC for auditing the course. For this learner, every resource should be open; however, this type of learner should not be taken into the calculation of completion rates. A learner might register for learning and eager to do all course activities. This learner should closely be monitored and supported. A learner might register for learning with watching course video lectures only. This learner should only see the course video lectures, and they should not be required to do course exams or assignments.
- In order to prevent learner bias towards online learning and MOOCs, in the entrance page of the course, online learning and MOOCs should be introduced to learners, and their effectiveness should be shown via a short video or visual material. In addition, the course should be introduced to learners in the entrance page as well. In this way, they can develop positive views towards online learning instead of developing bias towards online learning, and can feel themselves more ready for online learning.

5.2.2 Suggestions for MOOC Providers

The following suggestions can be made for MOOC providers:

- While evaluating completion rates, traditional completion rates should not be used because the results of this study showed that they are the lowest among others, they include learners who do not even enter the MOOCs. Instead, completion rates based on learner intent should be reported if possible or else completion based on active learners should be shared because these provide a robust evaluation of completion rates, and they eliminate the learners who never get in touch with the course material. In this way, a thorough comparison can be made with the completion rates, and it might be shown that the completion rates indeed are not that low despite having received many criticisms due to low completion rates located in the literature. When completion rates are calculated using different perspectives, they do not align with the common findings raised in the literature which criticize the low completion rates of MOOCs.

- Completion rates should be standardized as it is not logical to simply compare completion rates which are conceptualized differently by various MOOC providers.
- The number of enrolled and active/observed students is not often reported openly by MOOC providers. MOOC providers should make these data public following the ethical guidelines and standards for open learning environments. This will make comparison of different completion rates as well as courses on different portals easy.
- Each MOOC provider tend to save data in the way they design the courses. However, MOOC providers should create a common comparison template as it is very difficult to compare MOOC portals with another. In this way, thorough comparisons can be made, and the educational value and potential of MOOCs can be researched better.
- In order to meet the diverse needs of massive number of learners, MOOCs should be as flexible as possible (Park et al., 2015). MOOCs provide high flexibility in learning which allows learners to participate in the courses in different ways based on one's motivations and needs (Kahan et al., 2017). Clearly, MOOCs suffer from this flexibility as this flexibility might be leading to in non-completion. Registering for a MOOC takes a few seconds; however, completing one requires some devotions, especially time wise. That is to say, the open nature of MOOCs is harmful to them. More structured MOOCs (e.g., half open MO/2OC) could be created and in this way, learners can benefit from them more.

- This study showed that learners were not able to start MOOCs due to forgetting about their registration or the web address of the portal. Therefore, MOOC portals should be more active and responsible for reminding learners of their registration and send reminder notifications frequently. Moreover, retrieving the forgotten username/password should be made easier for learners.
- This study helped understand non-starters and non-completers. In this way, these learners can be invited back to the pdMOOCs again. MOOC providers should be active in order to have non-starters start the courses or have non-completers to complete the courses. They can achive this by sending reminder notifications to non-starters and non-completers in the format of "You enrolled in the following courses on the following dates and have not started the courses yet or you enrolled in these courses on the following dates but you have not completed them. We are looking forward to seeing you again". Moreover, as the main motivations of non-starters and non-completers were learning a new topic, MOOC providers should also remind learners of their learning motivations and should direct them to the courses they are registered in order to provide learning opportunities for them.
- MOOC providers should pay close attention to learners who are less likely to complete pdMOOCs. In particular, they should pay attention to the course process of female learners; learners who are working; learners with low self-directed learning skills; learners whose age is not between 18 and 25 years old; learners who do not have Bachelor's degree or who are not still Bachelor's students; and learners whose number of course views, number of course clicks, and average quiz attempts are lower as this study showed that these learner cohort tend to non-complete the pdMOOCs.
- This study showed that time spent on the course was related to pdMOOC completion while days stayed on course was not that related to pdMOOC completion. This provided useful information for completion and non-completion in MOOCs. Learners should be supported to spend more time on

pdMOOCs uninterruptedly within few days instead of more days. However, spending more time on the course can also be problematic as well. For example, if videos are viewed repeatedly by students, this might be the indication of the fact that the video content might require further clarification or more resources (Coffrin et al., 2014). For this reason, learner behaviors should be checked constantly in MOOCs, and the system/portal can ask learners some pop up questions whether they have a problem or not.

- MOOC providers should ensure that assignments are graded on time so that MOOC learners do not lose their motivation in the courses. In this study, although assignment grading duration was 72 hours, pdMOOC learners experienced some delayed grading, and this affected their course satisfaction negatively.
- Learners should take responsibility in open learning environments as high drop out rate results from learner related issues, especially time issues as the results of this study confirmed. This tends to harm the educational potential of MOOCs. Learners should be reminded of their responsibility and how they harm the educational potential of MOOCs via notifications.
- The nature of MOOCs leads learners to register for many courses they would like. Because of this, learners tend to register for more than one course, and they queue the courses as the results of this study revealed. After some time, learners forget about this courses, and they either do not start taking these courses or do not complete these courses. If learners tend to have the behavior of registering many courses one after another, the MOOC portal should notify the learners and limit the number of courses learners can register within a certain time span.
- Bilgeİş pdMOOCs do not have a course instructor, and course assignments are graded by course assistants. In order to decrease transactional distance, contact information of course assistants should be openly made available for the learners. Also, learners should be allowed to communicate with course assistants via different channels such as e-mail or from the interface of

MOOC portal. This can reduce the transactional distance learners experience in online learning, and they do not feel isolated. In addition, learners should be informed about the support desk of the portal. This can also help reduce the transactional distance learners experience as learners will be confident that they have a unit to ask questions or report their problems as soon as possible.

- Regular operation of the support desk should be ensured. In this way, learners can have the idea that Bilgeİş Learning Portal is still very active, and they can trust the portal for their learning.
- In order to support learners emotionally, course assistants should communicate with the learners at least once during learners' online learning process. In this way, learners know that they are not isolated, and they are not alone in their self-paced learning environment.
- Learners online learning readiness is associated with their course satisfaction, and these together is closely associated with their perceived learning. MOOC providers should assess their learners' readiness for online learning, especially their readiness for self-directed learning and evaluate learners' course satisfaction and perceived learning continuously in order to provide learners with effective, efficient, and satisfying learning experiences.
- Learners' usability perceptions are closely associated with their perceived learning. Usability of MOOCs should be evaluated continuously with the target audience or real learners, and necessary revisions should be made by MOOC providers.
- Intention to complete is a feasible measure because learners who stated their intentions as complete are more likely to complete the pdMOOCs when compared to the learners who stated their intentions as unsure, browse, and audit. Also, intention-behavior gap occurs in MOOCs. Taking these into consideration, learners who state their intentions as "to complete" should be monitored closely. They should be supported more during their learning process, and interventions should be made when they stop participating in the

MOOCs since their probability of completing the course is higher than other learners.

- Learners' intention can be asked again at least once during their learning process after their first response to the intention measurement instrument in order to better evaluate learner intentions and to monitor immediately whether learner intentions change or not.
- Among online learning readiness dimensions, self-directed learning in influential on pdMOOC completion. Learners should be made aware that courses are 7/24 available, and courses require learners to self-direct their learning with their individual pace. Learners should be reminded of this responsibility and requirement.
- As some learners stated that they obtained no benefits after completing the courses, these learners should be given guidance about what they can do with the knowledge they obtain from courses.

5.3 Future Research

The need to structure the quest for "what works" should continue in MOOCs. This study was limited to four pdMOOCs provided by Bilgeİş Learning Portal. This study can be repeated with more courses from different MOOC portals.

As MOOC portals have begun to appear in developing country contexts, future research studies should focus on comparing developing country and developed country MOOCs with respect to learner motivation, success, and potentials of MOOCs in the lives of learners.

The dimensions required for online learning readiness in MOOCs is still inconclusive. This study suggests the need to address factors associated with MOOC learners' readiness. A sound measurement instrument is required to assess online learning readiness of MOOC learners focusing on the preparedness factors to succeed in MOOCs. Future research should focus on what dimensions of online learning readiness MOOC learners should possess, and particularly, learner related times issues should be examined under MOOC learners' readiness. The quantitative and qualitative results of this study can provide insights for future studies which can focus on developing a sound measurement instrument for online learning readiness in MOOCs.

Predictors of non-start can be examined in future studies. Using these data, learners tend to be non-starters can be located, and they can be supported to start the MOOOCs they registered for.

This study revealed perceived benefits obtained from the courses. Future research studies can focus on whether learners use these benefits in practice and how learners make use of these benefits.

Future research should investigate the disadvantaged MOOC learners such as the ones having some kind of disability or learners from different age groups such as the ones younger than 18 or the ones older than 60. Especially their enrollment motivations, course behaviors, and benefits they receive from MOOCs should be investigated.

This study only focused on the influence of learners' course behaviors on course completion status. The effect of learners' course behaviors on other outcomes in MOOCs should be examined.

Gender disparities in pdMOOC completion requires further research as the effect of gender on MOOC completion is still inconclusive.

This study revealed that learners who are not working are more likely to complete pdMOOCs than learners who are working. Future research should focus on why learners who are working fail to complete the pdMOOCs.

Several studies have focused on the predictors of course completion and/or certification. Overall, these predictors should be approached from presage, process, and product dimensions systematically, and the effect of learner motivation and intention on these dimensions should be checked because learner motivation and intention play a significant role on course completion. This research was unable to provide any information on the effects of course characteristics or course type on pdMOOC completion. Course type and course characteristics can be included as moderators in future studies.

Further research should focus on the factors influencing non-start both quantitatively and qualitatively as many of the learners do not log in the courses after registration.

Future research should also focus on whether non-starters start the MOOCs or whether non-completers complete the MOOCs since MOOCs in this study are self-paced and learners can come back anytime to start or complete the MOOCs. For these self-paced courses, time estimations when non-starters started the MOOCs or when non-completers completed the MOOCs can be calculated. In this way, it can be decided whether to include this learner group into completion rate calculations.

The relevant literature indicated that MOOC learners tend to provide positive intentions towards completing the MOOCs. Although they do not behave in parallel to their intentions all the time, the rate is still considerably high. MOOC providers and researchers should be aware of this high rate of intention to complete and examine the reasons why learners tend to provide more positive intentions in future studies. This can provide more insights about learner needs in MOOCs. Moreover, intentions tend to change in MOOCs as some learners did not act based on their intentions. This intention change needs further elaboration in future studies.

Although it is not easy to carry out, performance of learning in MOOCs can be researched instead of perceived learning as high perceived learning is not necessarily associated with high performance of learning as performance of learning in an online learning environment might be independent of learners’ perception about learning (Yurdugül & Menzi Çetin, 2015).

Whether online learning readiness, course satisfaction, and perceived learning differ by presage variables such as learner characteristics can be examined in further studies.

Learners course satisfaction with respect to course components can be researched in detail using quantitative and qualitative research methods.

Still, there are concerns regarding which measures should be used to evaluate the effectiveness of MOOCs. The research studies on how to standardize the outcomes of MOOCs, especially the learning outcomes of MOOCs, and how to standardize the effectiveness measures should be carried out.

REFERENCES

Aboshady, O. A., Radwan, A. E., Eltaweel, A. R., Azzam, A., Aboelnaga, A. A., Hashem, H. A., ... & Noaman, A. M. (2015). Perception and use of massive open online courses among medical students in a developing country: multicentre cross-sectional study. *BMJ Open*, *5*(1), 1-9. doi: 10.1136/bmjopen-2014-006804.

Adair, D., Alman, S. W., Budzick, D., Grisham, L. M., Mancini, M. E., & Thackaberry, A. S. (2014). Many shades of MOOCs. *Internet Learning Journal, 3*(1).

Adkins, M., & Bryant, J. (2011). Online student readiness as a predictor of online student satisfaction. (White paper). Cedar Rapids, IA: Noel-Levitz, Inc. and Smarter Services.

Aesoph, L. M. (2019). What Is Open Education?. *BCcampus Open Education Adoption Guide (2nd Ed.)*.

Agonács, N., Matos, J. F., Bartalesi-Graf, D., & O'Steen, D. N. (2020). Are you ready? Self-determined learning readiness of language MOOC learners. *Education and Information Technologies*, *25*(2), 1161-1179. doi. 10.1007/s10639-019-10017-1.

Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, *50*(2), 179-211. doi: 10.1016/0749-5978(91)90020-T.

Akadema. (2020). Hakkımızda. Retrieved from http://akadema.anadolu.edu.tr/ hakkimizda.

Albayrak, E., Güngören, Ö. C., & Horzum, M. B. (2014). Algılanan öğrenme ölçeğinin Türkçeye uyarlaması. *Ondokuz Mayıs Üniversitesi Eğitim Fakültesi Dergisi*, *33*(1), 1-14. doi: 10.7822/egt252.

Aldowah, H., Al-Samarraie, H., Alzahrani, A. I., & Alalwan, N. (2019). Factors affecting student dropout in MOOCs: a cause and effect decision-making model. *Journal of Computing in Higher Education*, 1-26. doi: 10.1007/s12528-019-09241-y.

Almeda, M.V., Zuech, J., Baker, R.S., Utz, C., Higgins, G., & Reynolds, R. (2018). Comparing the factors that predict completion and grades among for-credit and open/MOOC students in online learning. *Online Learning, 22*(1), 1-18. doi:10.24059/olj.v22i1.1060.

Alraimi, K. M., Zo, H., & Ciganek, A. P. (2015). Understanding the MOOCs continuance: The role of openness and reputation. *Computers & Education, 80*, 28-38. doi: 10.1016/j.compedu.2014.08.006.

Anderson, A., Huttenlocher, D., Kleinberg, J., & Leskovec, J. (2014). Engaging with massive online courses. In *Proceedings of the 23rd international conference on World wide web* (pp. 687-698).

Anderson, T. (2008). *The theory and practice of online learning*. Athabasca University Press.

Arif, A. (2001). Learning from the web: Are students ready or not? *Educational Technology & Society*, *4*(4), 32-38.

Atkins, D. E., Brown, J. S., & Hammond, A. L. (2007). *A review of the open educational resources (OER) movement: Achievements, challenges, and new opportunities* (Vol. 164). Mountain View: Creative common.

Aydemir, M., Çelik, E., Bingöl, İ., Karapınar, D. Ç., Kurşun, E., & Karaman S. (2016). İnternet üzerinden herkese açık kurs (İHAK) sağlama deneyimi: AtademiX. *Açıköğretim Uygulamaları ve Araştırmaları Dergisi*, *2*(3), 52-74.

Aydin, C. H. (2017). Current status of the MOOC movement in the world and reaction of the Turkish higher education institutions. *Open Praxis, 9*(1), 59-78. doi: 10.5944/openpraxis.9.1.463.

Aydin, C. H. (2018). MOOCs as change agents. In D. Jansen; L. Konings (Eds.) The 2018 OpenupEd Trend Report on MOOCs. (pp. 18-21). Maastricht, NL: EADTU. Retrieved from https://www.openuped.eu/images/Publications/The_2018_OpenupEd_trend_report_on_MOOCs.pdf

Baggaley, J. (2013). MOOC rampant. *Distance Education*, *34*(3), 368-378. doi: 10.1080/01587919.2013.835768.

Bagley, C. A., & Weisenford, J. (2015). What is best for the learner?: Are MOOCs the answer?. In *Macro-level learning through massive open online courses (MOOCs): Strategies and predictions for the future* (pp. 142-157). IGI Global.

Barak, M., Watted, A., & Haick, H. (2016). Motivation to learn in massive open online courses: Examining aspects of language and social engagement. *Computers & Education*, *94*, 49-60. doi: 10.1016/j.compedu.2015.11.010.

Barbera, E., Clara, M., & Linder-Vanberschot, J. A. (2013). Factors influencing student satisfaction and perceived learning in online courses. *E-learning and Digital Media*, *10*(3), 226-235. doi: 10.2304/elea.2013.10.3.226.

Bates, A. T. (2005). *Technology, e-learning and distance education (2nd ed.)*. Abingdon, UK: Routledge.

Bates, A. T. (2019). *Teaching in a digital age: Guidelines for designing teaching and learning (2nd ed.)*. BC Open Textbooks.

Bernard, R. M., Brauer, A., Abrami, P. C., & Surkes, M. (2004). The development of a questionnaire for predicting online learning achievement. *Distance education*, *25*(1), 31-47. doi: 10.1080/0158791042000212440.

Bersin, J. (2015). Use of MOOCs and Online Education is Exploding: Here's Why. Retrieved from https://www.linkedin.com/pulse/use-moocs-online-education-exploding-heres-why-josh-bersin.

Bevan, N., & Macleod, M. (1994). Usability measurement in context. *Behaviour & Information technology*, *13*(1-2), 132-145. doi: 10.1080/01449299408914592.

Biggs, J. (1993a). What do inventories of students' learning processes really measure? A theoretical review and clarification. *British journal of educational psychology*, *63*(1), 3-19. doi: 10.1111/j.2044-8279.1993.tb01038.x.

Biggs, J. B. (1993b). From theory to practice: A cognitive systems approach. *Higher education research and development*, *12*(1), 73-85. doi: 10.1080/0729436930120107.

Biggs, J. B. (2003). *Teaching for quality learning at university (2nd ed.)*. Berkshire, UK: McGraw-Hill Education.

Blayone, T. (2018). Reexamining digital-learning readiness in higher education: Positioning digital competencies as key factors and a profile application as a readiness tool. *International Journal on E-Learning*, *17*(4), 425-451.

Bogdan, R., Holotescu, C., Andone, D., & Grosseck, G. (2017). How MOOCs are being used for corporate training?. *eLearning & Software for Education, 2*.

Bonafini, F., Chae, C., Park, E., & Jablokow, K. (2017). How much does student engagement with videos and forums in a MOOC affect their achievement?. *Online Learning Journal*, *21*(4), 223-240. doi: 10.24059/olj.v21i4.1270.

Bonk, C. J., & Lee, M. M. (2017). Motivations, achievements, and challenges of self-directed informal learners in open educational environments and MOOCs. *Journal of Learning for Development*, *4*(1), 36-57.

Bray, E., Aoki, K., & Dlugosh, L. (2008). Predictors of learning satisfaction in Japanese online distance learners. *The International Review of Research in Open and Distributed Learning*, *9*(3). doi: 10.19173/irrodl.v9i3.525.

Breslow, L., Pritchard, D. E., DeBoer, J., Stump, G. S., Ho, A. D., & Seaton, D. T. (2013). Studying learning in the worldwide classroom research into edX's first MOOC. *Research & Practice in Assessment*, *8*, 13-25.

Brooker, A., Corrin, L., de Barba, P., Lodge, J., & Kennedy, G. (2018). A tale of two MOOCs: How student motivation and participation predict learning outcomes in different MOOCs. *Australasian Journal of Educational Technology*, *34*(1). doi: 10.14742/ajet.3237.

Brookfield, S. (1984). Self-directed adult learning: A critical paradigm. *Adult Education Quarterly*, *35*(2), 59-71.

Bryman, A. (2012). *Social research methods (4th ed.)*. New York: Oxford university press.

Butcher, N. (2015). *A basic guide to open educational resources (OER)*. Commonwealth of Learning (COL). Retrived from http://oasis.col.org/bitstream/handle/11599/36/2011_UNESCO_COL_A-Basic-Guide-to-OER.pdf.

Cabi, E., & Ersoy, H. (2017). Yükseköğretimde uzaktan eğitim uygulamalarının incelenmesi: Türkiye örneği. *Journal of Higher Education & Science/Yüksekögretim ve Bilim Dergisi*, *7*(3). doi: 10.5961/jhes.2017.219.

Cagiltay, K., & Esfer, S. (2016). Best practices analysis of MOOCs. In *E-Learn: World Conference on E-Learning in Corporate, Government, Healthcare, and Higher Education* (pp. 138-144). Association for the Advancement of Computing in Education (AACE).

Calonge, D. S., & Shah, M. A. (2016). MOOCs, graduate skills gaps, and employability: A qualitative systematic review of the literature. *The International Review of Research in Open and Distributed Learning*, *17*(5). doi: 10.19173/irrodl.v17i5.2675.

Cambridge Dictionary. (2020a). Definition of mooc. Retrieved from https://dictionary.cambridge.org/dictionary/english/mooc.

Cambridge Dictionary. (2020b). Definition of intention. Retrieved from https://dictionary.cambridge.org/dictionary/english-turkish/intention.

Cambridge Dictionary. (2020c). Definition of readiness. Retrieved from https://dictionary.cambridge.org/dictionary/english-turkish/readiness.

Cassidy, D., Breakwell, N., & Bailey, J. (2014). Keeping them clicking: promoting student engagement in MOOC design. *The All Ireland Journal of Teaching and Learning in Higher Education*, *6*(2), 1-15.

Castaño Muñoz, J., Kalz, M., Kreijns, K., & Punie, Y. (2016). Influence of employer support for professional development on MOOCs enrolment and completion: Results from a cross-course survey. In *EMOOOCs* 2016, 251-263.

Castaño-Muñoz, J., Kreijns, K., Kalz, M., & Punie, Y. (2017). Does digital competence and occupational setting influence MOOC participation? Evidence from a cross-course survey. *Journal of Computing in Higher Education*, *29*(1), 28-46. doi: 10.1007/s12528-016-9123-z.

Charo, R., Maite, A. S., & Guillermo, M. (2020). Self-regulation of learning and MOOC retention. *Computers in Human Behavior,* 106423. doi: 10.1016/j.chb.2020.106423.

Cigdem, H., & Ozturk, M. (2016). Critical components of online learning readiness and their relationships with learner achievement. *Turkish Online Journal of Distance Education*, *17*(2), 98–109. doi: 10.17718/tojde.09105.

Cisel, M. (2014). Analyzing completion rates in the first French xMOOC. Proceedings *of the European MOOC Stakeholder Summit*, *26*, 51.

Cisel, M., Mano, M., Bachelet, R., & Silberzahn, P. (2015). A tale of two MOOCs: Analyzing long-term course dynamics. European Moocs Stakeholders Summit (eMOOCs), May 2015, Mons, Belgium.

Conole, G. (2014). A new classification schema for MOOCs. *The international journal for Innovation and Quality in Learning*, *2*(3), 65-77.

Chen, Y., Gao, Q., Yuan, Q., & Tang, Y. (2019). Discovering MOOC learner motivation and its moderating role. *Behaviour & Information Technology*, 1-19. doi: 10.1080/0144929X.2019.1661520.

Christensen, G., Steinmetz, A., Alcorn, B., Bennett, A., Woods, D., & Emanuel, E. (2013). The MOOC phenomenon: who takes massive open online courses and why?. doi: 10.2139/ssrn.2350964.

Chuang, I., & Ho, A. (2016). *HarvardX and MITx: Four years of open online courses fall 2012-summer 2016*. doi: 10.2139/ssrn.2889436.

Cisel, M. (2014). Analyzing completion rates in the first French xMOOC. Proceedings *of the European MOOC Stakeholder Summit*, *26*, 51.

Clark, D. (2013). MOOCs: taxonomy of 8 types of MOOC. Retrieved from https://donaldclarkplanb.blogspot.com/2013/04/moocs-taxonomy-of-8-types-of-mooc.html.

Coffrin, C., Corrin, L., de Barba, P., & Kennedy, G. (2014). Visualizing patterns of student engagement and performance in MOOCs. In *Proceedings of the fourth international conference on learning analytics and knowledge* (pp. 83-92).

Conijn, R., Van den Beemt, A., & Cuijpers, P. (2018). Predicting student performance in a blended MOOC. *Journal of Computer Assisted Learning*, *34*(5), 615-628. doi: 10.1111/jcal.12270.

Creswell, J. W. (2014). *Research design: Qualitative, quantitative, and mixed methods approaches (4th ed.)*. Sage publications. (London).

Creswell, J. W., & Clark, V. L. P. (2007). *Designing and conducting mixed methods research*. Sage publications. (Thousand Oaks, California).

Cronan, T. P., Léger, P. M., Robert, J., Babin, G., & Charland, P. (2012). Comparing objective measures and perceptions of cognitive learning in an ERP simulation game: a research note. *Simulation & Gaming*, *43*(4), 461-480. doi: 10.1177/1046878111433783.

Cross, S., & Whitelock, D. (2017). Similarity and difference in fee-paying and no-fee learner expectations, interaction and reaction to learning in a massive open online course. *Interactive Learning Environments*, *25*(4), 439-451. doi: 10.1080/10494820.2016.1138312.

Crossley, S., Dascalu, M., McNamara, D. S., Baker, R., & Trausan-Matu, S. (2017). Predicting success in massive open online courses (MOOCs) using cohesion network analysis. Philadelphia, PA: International Society of the Learning Sciences. Retrived from https://www.upenn.edu/learninganalytics/ryanbaker/ScottCSCL2017v3.pdf.

Crues, R., Bosch, N., Anderson, C. J., Perry, M., Bhat, S., & Shaik, N. (2018). Who they are and what they want: Understanding the reasons for MOOC enrollment. *International Educational Data Mining Society*.

Crues, R. W., Henricks, G. M., Perry, M., Bhat, S., Anderson, C. J., Shaik, N., & Angrave, L. (2018). How do gender, learning goals, and forum participation predict persistence in a computer science MOOC?. *ACM Transactions on Computing Education (TOCE)*, *18*(4), 1-14.

Davies, R. S. (2003). Learner intent and online courses. *The Journal of Interactive Online Learning*, *2*(1), 1-10.

de Langen, F., & van den Bosch, H. (2013). Massive open online courses: Disruptive innovations or disturbing inventions?. *Open Learning: The Journal of Open, Distance and e-Learning*, *28*(3), 216-226. doi: 10.1080/02680513.2013.870882.

de Barba, P. G., Kennedy, G. E., & Ainley, M. D. (2016). The role of students' motivation and participation in predicting performance in a MOOC. *Journal of Computer Assisted Learning*, *32*(3), 218-231. doi: 10.1111/jcal.12130.

DeBoer, J., Stump, G. S., Seaton, D., Ho, A., Pritchard, D. E., & Breslow, L. (2013). Bringing student backgrounds online: MOOC user demographics, site usage, and online learning. In *Educational Data Mining 2013*.

DeBoer, J., Ho, A. D., Stump, G. S., & Breslow, L. (2014). Changing "course" reconceptualizing educational variables for massive open online courses. *Educational Researcher*, *43*(2), 74-84. doi: 10.3102/0013189X14523038.

DeLone, W. H., & McLean, E. R. (2003). The DeLone and McLean model of information systems success: A ten-year update. *Journal of Management Information Systems*, *19*(4), 9- 30. doi: 10.1080/07421222.2003.11045748.

Demir, Ö., & Yurdugül, H. (2015). The Exploration of models regarding e-learning readiness: Reference model suggestions. *International Journal of Progressive Education*, *11*(1).

Demir-Kaymak, Z., & Horzum, M. B. (2013). Relationship between online learning readiness and structure and interaction of online learning students. *Educational Sciences: Theory and Practice*, *13*(3), 1792-1797. doi: 10.12738/estp.2013.3.1580.

Deng, R., Benckendorff, P., & Gannaway, D. (2019a). Progress and new directions for teaching and learning in MOOCs. *Computers & Education*, *129*,48-60. doi: 10.1016/j.compedu.2018.10.019.

Deng, R., Benckendorff, P., & Gannaway, D. (2019b). Learner engagement in MOOCs: Scale development and validation. *British Journal of Educational Technology*. doi: 10.1111/bjet.12810.

Deng, R., Benckendorff, P., & Gannaway, D. (2020). Linking learner factors, teaching context, and engagement patterns with MOOC learning outcomes. *Journal of Computer Assisted Learning*. doi: 10.1111/jcal.12437.

Deshpande, A., & Chukhlomin, V. (2017). What makes a good MOOC: A field study of factors impacting student motivation to learn. *American Journal of Distance Education*, *31*(4), 275-293. doi: 10.1080/08923647.2017.1377513.

Dewan, M. A. A., Murshed, M., & Lin, F. (2019). Engagement detection in online learning: a review. *Smart Learning Environments*, *6*(1), 1. doi: 10.1186/s40561-018-0080-z.

Dillahunt, T. R., Wang, B. Z., & Teasley, S. (2014). Democratizing higher education: Exploring MOOC use among those who cannot afford a formal education. *The International Review of Research in Open and Distributed Learning*, *15*(5). doi: 10.19173/irrodl.v15i5.1841.

Downes, S. (2017). New models of open and distributed learning. In *Open Education: from OERs to MOOCs* (pp. 1-22). Springer, Berlin, Heidelberg.

Dray, B. J., Lowenthal, P. R., Miszkiewicz, M. J., Ruiz-Primo, M. A., & Marczynski, K. (2011). Developing an instrument to assess student readiness for online learning: A validation study. *Distance Education*, *32*(1), 29-47. doi: 10.1080/01587919.2011.565496.

Egloffstein, M., & Ifenthaler, D. (2017). Employee perspectives on MOOCs for workplace learning. *TechTrends*, *61*(1), 65-70. doi: 10.1007/s11528-016-0127-3.

El Said, G. R. (2017). Understanding how learners use massive open online courses and why they drop out: Thematic analysis of an interview study in a developing country. *Journal of Educational Computing Research*, *55*(5), 724-752. doi: 10.1177/0735633116681302.

Emanuel, E. J. (2013). Online education: MOOCs taken by educated few. *Nature, 503*(7476), p. 342. doi: 10.1038/503342a.

Engle, D., Mankoff, C., & Carbrey, J. (2015). Coursera's introductory human physiology course: Factors that characterize successful completion of a MOOC. *The International Review of Research in Open and Distributed Learning*, *16*(2). doi: 10.19173/irrodl.v16i2.2010.

Erdinç, O., & Lewis, J. R. (2013). Psychometric evaluation of the T-CSUQ: The Turkish version of the computer system usability questionnaire. *International Journal of Human-Computer Interaction*, *29*(5), 319-326. doi: 10.1080/10447318.2012.711702.

Eriksson, T., Adawi, T., & Stöhr, C. (2017). "Time is the bottleneck": a qualitative study exploring why learners drop out of MOOCs. *Journal of Computing in Higher Education*, *29*(1), 133-146. doi: 10.1007/s12528-016-9127-8.

Esfer, S., & Cagiltay, K. (2018). Creating a MOOC portal for workplace learning. In Ifenthaler, G. (Ed.), *Digital Workplace Learning* (pp. 167-185). Cham: Springer.

Essex, C., & Cagiltay, K. (2001). Evaluating an online course: Feedback from "distressed" students. *Quarterly Review of Distance Education*, *2*(3), 233-239.

Evans, B. J., & Baker, R. B. (2016). MOOCs and persistence: Definitions and predictors. *New Directions for Institutional Research*, *2015*(167), 69-85. doi: 10.1002/ir.20155.

Farid, A. (2014). Student online readiness assessment tools: A systematic review approach. *Electronic Journal of e-Learning*, *12*(4), 375-382.

Ferguson, R., & Clow, D. (2015). Examining engagement: analysing learner subpopulations in massive open online courses (MOOCs). In *Proceedings of the fifth international conference on learning analytics and knowledge* (pp. 51-58). doi: 10.1145/2723576.2723606.

Ferguson, R., Clow, D., Beale, R., Cooper, A. J., Morris, N., Bayne, S., & Woodgate, A. (2015). Moving through MOOCS: Pedagogy, learning design and patterns of engagement. In *Design for teaching and learning in a networked world* (pp. 70-84). Springer, Cham.

Field, A. P. (2009). *Discovering statistics using SPSS (3rd ed.)*. London: Sage.

Firat, M., & Bozkurt, A. (2020). Variables affecting online learning readiness in an open and distance learning university. *Educational Media International*, 1-16. doi: 10.1080/09523987.2020.1786772.

Firmin, R., Schiorring, E., Whitmer, J., Willett, T., Collins, E. D., & Sujitparapitaya, S. (2014). Case study: Using MOOCs for conventional college coursework. *Distance Education*, *35*(2), 178-201. doi: 10.1080/01587919.2014.917707.

Fischer, G. (2014). Beyond hype and underestimation: identifying research challenges for the future of MOOCs. *Distance Education*, *35*(2), 149-158. doi: 10.1080/01587919.2014.920752.

Fishbein, M., & Ajzen, I. (2010). *Predicting and changing behavior: The reasoned action approach*. New York, NY: Psychology press.

Fraenkel, J., Wallen, N., & Hyun, H. (2012). *How to design and evaluate research in education (8th ed.)*. New York: McGraw-Hill Education.

Fredericksen, E., Pickett, A., Shea, P., Pelz, W., & Swan, K. (2000). Student satisfaction and perceived learning with on-line courses: Principles and examples from the SUNY learning network. *Journal of Asynchronous learning networks*, *4*(2), 7-41.

FutureLearn (2014). Summary of pre-course survey data, Retrieved from https://futurelearn-production-partners.s3.amazonaws.com/wp content/ uploads/ 2014/05/ Pre-Course-Survey-Data-Summary.pdf.

Gamage, D., Fernando, S., & Perera, I. (2015). Factors leading to an effective MOOC from participiants perspective. In *2015 8th International Conference on Ubi-Media Computing (UMEDIA)* (pp. 230-235). IEEE. doi: 10.1109/UMEDIA.2015.7297460.

Gameel, B. G. (2016). *ICTs readiness among MOOC learners: a cross-national analysis* (Doctoral dissertation). The University of Texas at Austin.

Gameel, B. G., & Wilkins, K. G. (2019). When it comes to MOOCs, where you are from makes a difference. *Computers & Education*, *136*, 49-60. doi: 10.1016/j.compedu.2019.02.014.

Garrison, D. R. (1985). Three generations of technological innovations in distance education. *Distance Education,* *6*(2), 235-241. doi:10.1080/0158791850060208.

Garrison, D. R. (1997). Self-directed learning: Toward a comprehensive model. *Adult Education Quarterly*, *48*(1), 18-33. doi: 10.1177/074171369704800103.

Garrison, D. R. (2017). *E-learning in the 21st century: A community of inquiry framework for research and practice (3rd ed.)*. New York, NY: Taylor & Francis.

Glance, D. G., Forsey, M., & Riley, M. (2013). The pedagogical foundations of massive open online courses. *First Monday, 18*(5). doi: 10.5210/fm.v18i5.4350.

Gil-Jaurena, I., Callejo-Gallego, J., & Agudo, Y. (2017). Evaluation of the UNED MOOCs implementation: Demographics, learners' opinions and completion rates. *The International Review of Research in Open and Distributed Learning, 18*(7). doi: 10.19173/irrodl.v18i7.3155.

Gillani, N., & Eynon, R. (2014). Communication patterns in massively open online courses. *The Internet and Higher Education*, *23*, 18-26. doi: 10.1016/j.iheduc.2014.05.004.

Goh, W. W., Wong, S. Y., & Ayub, E. (2018). The effectiveness of MOOC among learners based on kirkpatrick's model. In Tang S., & Cheah S. (Eds.) *Redesigning Learning for Greater Social Impact* (pp. 313-323). Springer, Singapore.

Gómez-Rey, P., Barbera, E., & Fernández-Navarro, F. (2016). Measuring teachers and learners' perceptions of the quality of their online learning experience. *Distance Education, 37*(2), 146-163. doi: 10.1080/01587919.2016.1184396.

Grandzol, C. J., & Grandzol, J. R. (2010). Interaction in online courses: More is not always better. *Online Journal of Distance Learning Administration, 13*(2).

Granić, A., Glavinić, V., & Stankov, S. (2004). Usability evaluation methodology for web-based educational systems. In *Proceedings of the 8th ERCIM Workshop on User Interfaces for All* (pp. 28-29).

Greene, J. C. (2007). *Mixed methods in social inquiry*. San Francisco, CA: John Wiley & Sons.

Greene, J. A., Oswald, C. A., & Pomerantz, J. (2015). Predictors of retention and achievement in a massive open online course. *American Educational Research Journal, 52*(5), 925-955. doi: 10.3102/0002831215584621.

Guajardo Leal, B. E., Navarro-Corona, C., & Valenzuela González, J. R. (2019). Systematic mapping study of academic engagement in MOOC. *The International Review of Research in Open and Distributed Learning, 20*(2). doi: 10.19173/irrodl.v20i2.4018.

Guajardo Leal, B.E., Valenzuela González, J.R., & Scott, J. (2019). Student engagement as a predictor of xMOOC completion: An analysis from five course on energy sustainability. *Online Learning, 23*(2), 105-123. doi:10.24059/olj.v23i2.1523.

Guo, P. J., Kim, J., & Rubin, R. (2014). How video production affects student engagement: An empirical study of MOOC videos. In *Proceedings of the first ACM conference on Learning@ scale conference* (pp. 41-50). doi: 10.1145/2556325.2566239.

Gütl, C., Rizzardini, R. H., Chang, V., & Morales, M. (2014). Attrition in MOOC: Lessons learned from drop-out students. In *International workshop on learning technology for education in cloud* (pp. 37-48). Springer, Cham.

Hadi, S., & Gagen, P. (2016). M. New model for measuring MOOCs completion rates. European Stakeholder Summit on experiences and best practices in and around MOOCs. In EMOOCS 2016, 95-105.

Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2014). *Multivariate data analysis: Pearson new international edition (7th ed.)*. Essex: Pearson Education Limited.

Halawa, S., Greene, D., & Mitchell, J. (2014). Dropout prediction in MOOCs using learner activity features. eLearning Papers. Retrieved from https://oerknowledgecloud.org/sites/oerknowledgecloud.org/files/In_depth_37_1%20(1).pdf.

Harrati, N., Bouchrika, I., Tari, A., & Ladjailia, A. (2016). Exploring user satisfaction for e-learning systems via usage-based metrics and system usability scale analysis. *Computers in Human Behavior, 61*, 463-471. doi: 10.1016/j.chb.2016.03.051.

Hartnett, M., St. George, A., & Dron, J. (2011). Examining motivation in online distance learning environments: Complex, multifaceted and situation-dependent. *The International Review of Research in Open and Distributed Learning, 12*(6), 20-38. doi: 10.19173/irrodl.v12i6.1030.

Hartnett, M. (2016). *Motivation in online education*. Singapore: Springer.

Hattie, J., & Timperley, H. (2007). The power of feedback. *Review of educational research, 77*(1), 81-112. doi: 10.3102/003465430298487.

Haverila, M. (2010). Factors related to perceived learning outcomes in e-learning. *International Journal of Knowledge and Learning*, *6*(4), 308-328. doi: 10.1504/IJKL.2010.038652.

Haverila, M. (2011). Prior e-learning experience and perceived learning outcomes in an undergraduate e-learning course. *MERLOT Journal of Online Learning and Teaching*, *7*(2), 206-218.

Henderikx, M. A., Kreijns, K., & Kalz, M. (2017a). Refining success and dropout in massive open online courses based on the intention–behavior gap. *Distance Education*, *38*(3), 353-368. doi: 10.1080/01587919.2017.1369006.

Henderikx, M., Kreijns, K., & Kalz, M. (2017b). To change or not to change? That's the question… on MOOC-success, barriers and their implications. In *European Conference on Massive Open Online Courses* (pp. 210-216). Springer, Cham. doi: 10.1007/978-3-319-59044-8_25.

Henderikx, M., Kreijns, K., & Kalz, M. (2018a). Intention-behavior dynamics in MOOC learning; What happens to good intentions along the way?. In *2018 Learning with MOOCS (LWMOOCS)* (pp. 110-112). IEEE.

Henderikx, M., Kreijns, K., & Kalz, M. (2018b). A classification of barriers that influence intention achievement in MOOCs. In *European Conference on Technology Enhanced Learning* (pp. 3-15). Springer, Cham.

Hew, K. F., & Cheung, W. S. (2014). Students' and instructors' use of massive open online courses (MOOCs): Motivations and challenges. *Educational Research Review*, *12*, 45-58. doi: 10.1016/j.edurev.2014.05.001.

Hew, K. F. (2016). Promoting engagement in online courses: What strategies can we learn from three highly rated MOOCS. *British Journal of Educational Technology*, *47*(2), 320-341. doi: 10.1111/bjet.12235.

Hew, K. F., Qiao, C., & Tang, Y. (2018). Understanding student engagement in large-scale open online courses: A machine learning facilitated analysis of student's reflections in 18 highly rated MOOCs. *The International Review of Research in Open and Distributed Learning*, *19*(3). doi: 10.19173/irrodl.v19i3.3596.

Hew, K. F., Hu, X., Qiao, C., & Tang, Y. (2020). What predicts student satisfaction with MOOCs: a gradient boosting trees supervised machine learning and sentiment analysis approach. *Computers & Education*, *145*, 103724. doi: 10.1016/j.compedu.2019.103724.

Ho, A.D., Reich, J., Nesterko, S., Seaton, D.T., Mullaney, T., Waldo, J., & Chuang, I. (2014). *HarvardX and MITx: The first year of open online courses fall 2012-summer 2013* (HarvardX and MITx Working Paper No. 1). doi: 10.2139/ssrn.2381263.

Ho, A. D., Chuang, I., Reich, J., Coleman, C., Whitehill, J., Northcutt, C., Williams, J. J., Hansen, J., Lopez, G., & Petersen, R. (2015). *HarvardX and MITx: Two years of open online courses* (HarvardX Working Paper No. 10). doi:10.2139/ssrn.2586847.

Holsapple, C. W., & Lee-Post, A. (2006). Defining, assessing, and promoting e-learning success: An information systems perspective. *Decision sciences journal of innovative education, 4*(1), 67-85. doi: 10.1111/j.1540-4609.2006.00102.x.

Hood, N., Littlejohn, A., & Milligan, C. (2015). Context counts: How learners' contexts influence learning in a MOOC. *Computers & Education*, *91*, 83-91. doi: 10.1016/j.compedu.2015.10.019.

Hood, N, & Littlejohn, A. (2016a). Quality in MOOCs: Surveying the Terrain. Commonwealth of Learning. Retrieved from http://oasis.col.org/handle/11599/2352.

Hood, N., & Littlejohn, A. (2016b). MOOC Quality: the need for new measures. *Journal of Learning for Development-JL4D, 3*(3). Retrived from https://jl4d.org/index.php/ejl4d/article/view/165/155.

Horzum, M. B., Kaymak, Z. D., & Gungoren, O. C. (2015). Structural equation modeling towards online learning readiness, academic motivations, and perceived learning. *Educational Sciences: Theory & Practice, 15*(3), 759–770. doi: 10.12738/estp.2015.3.2410.

Hsiao, C. C., Huang, J. C., Huang, A. Y., Lu, O. H., Yin, C. J., & Yang, S. J. (2019). Exploring the effects of online learning behaviors on short-term and long-term learning outcomes in flipped classrooms. *Interactive Learning Environments*, *27*(8), 1160-1177. doi: 10.1080/10494820.2018.1522651.

Hsiu-Fen, L. (2007). Measuring online learning systems success: Applying the updated DeLone and McLean model. *Cyberpsychology & Behavior*, *10*(6), 817-820. doi:10.1089/cpb.2007.9948.

Ilgaz, H., & Gülbahar, Y. (2015). A snapshot of online learners: e-readiness, e-satisfaction and expectations. *The International Review of Research in Open and Distributed Learning, 16*(2). doi: 10.19173/irrodl.v16i2.2117.

Interaction Design Foundation. (2020). Usability. Retrieved from https://www.interaction-design.org/literature/topics/usability.

Jiang, S., Schenke, K., Eccles, J. S., Xu, D., & Warschauer, M. (2018). Cross-national comparison of gender differences in the enrollment in and completion of science, technology, engineering, and mathematics Massive Open Online Courses. *PloS one, 13*(9). doi: 10.1371/journal.pone.0202463.

Johnson, B., & Christensen, L. (2016). *Educational research: Quantitative, qualitative, and mixed approaches (6th ed.)*. Thousand Oaks, California: SAGE Publications.

Jokelova, A. (2013). ARCS motivational model: Theoretical concepts and its use in online courses. In *2013 IEEE 11th International Conference on Emerging eLearning Technologies and Applications (ICETA)* (pp. 189-194). IEEE. doi: 10.1109/ICETA.2013.6674427.

Joksimović, S., Poquet, O., Kovanović, V., Dowell, N., Mills, C., Gašević, D., ... & Brooks, C. (2018). How do we model learning at scale? A systematic review of research on MOOCs. *Review of Educational Research*, *88*(1), 43-86. doi: 10.3102/0034654317740335.

Joo, Y. J., So, H. J., & Kim, N. H. (2018). Examination of relationships among students' self-determination, technology acceptance, satisfaction, and continuance intention to use K-MOOCs. *Computers & Education*, *122*, 260-272. doi: 10.1016/j.compedu.2018.01.003.

Joosten, T., & Cusatis, R. (2019). A cross-institutional study of instructional characteristics and student outcomes: Are quality indicators of online courses able to predict student success? *Online Learning*, *23*(4). doi: 10.24059/olj.v23i4.1432.

Joosten, T., & Cusatis, R. (2020). Online Learning Readiness. *American Journal of Distance Education*, 1-14. doi: 10.1080/08923647.2020.1726167.

Jordan, K. (2014) Initial trends in enrolment and completion of massive open online courses. *The International Review of Research in Open and Distance Learning*, *15*(1), 133- 160. doi: 10.19173/irrodl.v15i1.1651.

Jordan, K. (2015). Massive open online course completion rates revisited: Assessment, length and attrition. *The International Review of Research in Open and Distributed Learning*, *16*(3). doi: 10.19173/irrodl.v16i3.2112.

Jung, E., Kim, D., Yoon, M., Park, S., & Oakley, B. (2019). The influence of instructional design on learner control, sense of achievement, and perceived effectiveness in a supersize MOOC course. *Computers & Education*, *128*, 377-388. doi: 10.1016/j.compedu.2018.10.001.

Jung, I., & Lee, J. (2019). The effects of learner factors on MOOC learning outcomes and their pathways. *Innovations in Education and Teaching International*, 1-12. doi: 10.1080/14703297.2019.1628800.

Kahan, T., Soffer, T., & Nachmias, R. (2017). Types of participant behavior in a massive open online course. *The International Review of Research in Open and Distributed Learning*, *18*(6). doi: 10.19173/irrodl.v18i6.3087.

Kalz, M., & Specht, M. (2013). If MOOCs are the answer-did we ask the right questions. Implications for the design of large-scale open online courses. *Maastricht School of Management in its series Working Papers*, *25*.

Kalz, M., Kreijns, K., Walhout, J., Castaño-Munoz, J., Espasa, A., & Tovar, E. (2015). Setting-up a european cross-provider data collection on open online courses. *The International Review of Research in Open and Distributed Learning*, *16*(6). doi:10.19173/irrodl.v16i6.2150.

Karnouskos, S. (2017). Massive open online courses (MOOCs) as an enabler for competent employees and innovation in industry. *Computers in Industry*, *91*, 1-10. doi: 10.1016/j.compind.2017.05.001.

Keegan, D. J. (1980). On defining distance education. *Distance Education, 1(1), 13–36.* doi:10.1080/0158791800010102.

Keller, J. M. (1987a). Strategies for stimulating the motivation to learn. *Performance & Instruction*, *26*(8), 1-7. doi: 10.1002/pfi.4160260802.

Keller, J. M. (1987b). Development and use of the ARCS model of instructional design. *Journal of instructional development*, *10*(3), 2. doi: 10.1007/BF02905780.

Keller, J. M. (2008). An integrative theory of motivation, volition, and performance. *Technology, Instruction, Cognition, and Learning*, *6*(2), 79-104.

Keller, J. M. (2010). *Motivational design for learning and performance: The ARCS model approach*. Springer Science & Business Media.

Keller, J. M. (2017). The MVP model: Overview and application. *New Directions for Teaching and Learning*, *2017*(152), 13-26. doi: 10.1002/tl.20265.

Khalil, H., & Ebner, M. (2014). MOOCs completion rates and possible methods to improve retention-A literature review. In *EdMedia+ Innovate Learning* (pp. 1305-1313). Association for the Advancement of Computing in Education (AACE).

Khalil, M. (2018). Learning Analytics in Massive Open Online Courses. *Unpublished Doctoral Dissertation.*

Khan, I. U., Hameed, Z., Yu, Y., Islam, T., Sheikh, Z., & Khan, S. U. (2018). Predicting the acceptance of MOOCs in a developing country: Application of task-technology fit model, social motivation, and self-determination theory. *Telematics and Informatics*, *35*(4), 964-978. doi: 10.1016/j.tele.2017.09.009.

Kim, W., Watson, S. L., & Watson, W. R. (2016). Perceived learning in three MOOCs targeting attitudinal change. *Educational Media International*, *53*(3), 168-183. doi: 10.1080/09523987.2016.1236890.

King, M., Pegrum, M., & Forsey, M. (2018). MOOCs and OER in the Global South: Problems and Potential. *The International Review of Research in Open and Distributed Learning*, *19*(5). doi: 10.19173/irrodl.v19i5.3742.

Kizilcec, R. F., Piech, C., & Schneider, E. (2013). Deconstructing disengagement: analyzing learner subpopulations in massive open online courses. In *Proceedings of the third international conference on learning analytics and knowledge* (pp. 170-179). ACM. doi: 10.1145/2460296.2460330.

Kizilcec, R. F., & Halawa, S. (2015). Attrition and achievement gaps in online learning. In *Proceedings of the Second ACM Conference on Learning@ Scale* (pp. 57-66). ACM. doi: 10.1145/2724660.2724680.

Kizilcec, R. F., & Schneider, E. (2015). Motivation as a lens to understand online learners: Toward data-driven design with the OLEI scale. *ACM Transactions on Computer-Human Interaction (TOCHI)*, *22*(2), 6. doi: 10.1145/2699735.

Kline, R. B. (2015). Principles and practice of structural equation modeling. New York: The Guilford Press.

Knox, J. (2014). Digital culture clash: “massive” education in the e-learning and digital cultures MOOC. *Distance Education*, *35*(2), 164-177. doi: 10.1080/01587919.2014.917704.

Koçdar, S., Okur, M., & Bozkurt, A. (2017). An Examination of xMOOCs: An embedded single case study based on Conole's 12 dimensions. *Turkish Online Journal of Distance Education*, *18*(4), 52-65. doi: 10.17718/tojde.340381.

Koller, D., Ng, A., & Chen, Z. (2013). Retention and intention in massive open online courses: In depth. *Educause review*, *48*(3), 62-63.

Konstan, J. A., Walker, J. D., Brooks, D. C., Brown, E. K., & Ekstrand, M. D. (2015). Teaching recommender systems at large scale: Evaluation and lessons learned from a hybrid MOOC. *ACM Transactions on Computer-Human Interaction*, *22*(2). doi: 10.1145/2728171.

Korableva, O., Durand, T., Kalimullina, O., & Stepanova, I. (2019). Usability testing of MOOC: Identifying user interface problems. In *ICEIS 2019-Proceedings of the 21st International Conference on Enterprise Information Systems* (Vol. 2, pp. 468-475).

Korkmaz, Ö., Çakır, R., & Tan, S. S. (2015). Öğrencilerin e-öğrenmeye hazır bulunuşluk ve memnuniyet düzeylerinin akademik başarıya etkisi. *Journal of Kirsehir Education Faculty*, *16*(3).

Koutropoulos, A., & Hogue, R. J. (2012). How to succeed in a MOOC-massive online open course. *Learning Solutions Magazine*, *8*. Retrieved from https://learningsolutionsmag.com/articles/1023/how-to-succeed-in-a-massive-online-open-course-mooc.

Kruchinin, S. (2019). An investigation into the attraction and completion rates of MOOCs. *Knowledge Management & E-Learning*, *11*(1), 38–58. doi: 10.34105/j.kmel.2019.11.003.

Kuo, Y.-C., Walker, A. E., Belland, B. R., & Schroder, K. E. E. (2013). A predictive study of student satisfaction in online education programs. *The International Review of Research in Open and Distributed Learning*, *14*(1), 16-39. doi: 10.19173/irrodl.v14i1.1338.

Kuo, Y. C., & Belland, B. R. (2016). An exploratory study of adult learners' perceptions of online learning: Minority students in continuing education. *Educational Technology Research and Development*, *64*(4), 661-680. doi:10.1007/s11423-016-9442-9.

Kurt, S. (2019). The Case of Turkish University Students and MOOCs. *American Journal of Distance Education, 33*(2), 120-131. doi: 10.1080/08923647.2019.1582284.

Kutu, H., & Sözbilir, M. (2011). Öğretim materyalleri motivasyon anketinin Türkçeye uyarlanması: Güvenirlik ve geçerlik çalışması. *Necatibey Eğitim Fakültesi Elektronik Fen ve Matematik Eğitimi Dergisi*, *5*(1), 292-312. Retrieved from http://dergipark.org.tr/balikesirnef/issue/3372/46547.

Lackner, E., Ebner, M., & Khalil, M. (2015). MOOCs as granular systems: design patterns to foster participant activity. *eLearning Papers, 42*, 28-37.

Lan, M., & Hew, K. F. (2020). Examining learning engagement in MOOCs: a self-determination theoretical perspective using mixed method. *International Journal of Educational Technology in Higher Education*, *17*(1), 1-24. doi: 10.1186/s41239-020-0179-5.

Lee, Y. (2018). Effect of uninterrupted time-on-task on students' success in massive open online courses (MOOCs). *Computers in Human Behavior*, *86*, 174-180. doi: 10.1016/j.chb.2018.04.043.

Lee, Y., & Choi, J. (2011). A review of online course dropout research: Implications for practice and future research. *Educational Technology Research and Development*, *59*(5), 593-618. doi: 10.1007/s11423-010-9177-y.

Levenberg, A., & Caspi, A. (2010). Comparing perceived formal and informal learning in face- to-face versus online environments. *Interdisciplinary Journal of E-Learning and Learning Objects*, *6*(1), 323-333.

Lewis, J. R. (1995). IBM computer usability satisfaction questionnaires: Psychometric evaluation and instructions for use. *International Journal of Human-Computer Interaction, 7*, 57-78. doi: 10.1080/10447319509526110.

Lewis, J. R. (2012). Usability testing. In G. Salvendy (Ed.), *Handbook of human factors and ergonomics* (pp. 1267-1312). Hoboken, NJ: Wiley.

Li, Q., & Baker, R. (2018). The different relationships between engagement and outcomes across participant subgroups in massive open online courses. *Computers & Education*, *127*, 41-65. doi: 10.1016/j.compedu.2018.08.005.

Li, K., & Moore, D. R. (2018). Motivating students in massive open online courses (MOOCs) using the attention, relevance, confidence, satisfaction (ARCS) model. *Journal of Formative Design in Learning*, *2*(2), 102-113. doi: 10.1007/s41686-018-0021-9.

Li, K., & Canelas, D. (2019). Learners’ perceptions and experiences of two chemistry MOOCs: Implications for teaching and design. *American Journal of Distance Education*, *33*(4), 245-261. doi: 10.1080/08923647.2019.1639469.

Li, K. (2019). MOOC learners’ demographics, self-regulated learning strategy, perceived learning and satisfaction: A structural equation modeling approach. *Computers & Education*, *132*, 16-30. doi: 10.1016/j.compedu.2019.01.003.

Liang, D., Jia, J., Wu, X., Miao, J., & Wang, A. (2014). Analysis of learners’ behaviors and learning outcomes in a massive open online course. *Knowledge Management & E-Learning: An International Journal*, *6*(3), 281-298. doi: 10.34105/j.kmel.2014.06.019.

Lim, E., & Kim, S. (2018). Exploring the factors affecting learning satisfaction in the K-MOOC learning environment. In *EdMedia+ Innovate Learning* (pp. 2100-2105). Association for the Advancement of Computing in Education (AACE).

Liu, J. C. (2019). Evaluating online learning orientation design with a readiness scale. *Online Learning*, *23*(4), 42-61. doi:10.24059/olj.v23i4.2078.

Liu, M., Kang, J., Cao, M., Lim, M., Ko, Y. & Weiss, A.S. (2013). Understanding MOOCs as an emerging online learning tool: Perspectives from the students. In T. Bastiaens & G. Marks (Eds.), *Proceedings of E-Learn 2013--World Conference on E-Learning in Corporate, Government, Healthcare, and Higher Education* (pp. 2008-2015). Las Vegas, NV, USA: AACE.

Liu, M., Kang, J., Cao, M., Lim, M., Ko, Y., Myers, R., & Schmitz Weiss, A. (2014). Understanding MOOCs as an emerging online learning tool: Perspectives from the students. *American Journal of Distance Education, 28*(3), 147-159. doi: 10.1080/08923647.2014.926145.

Liu, M., Kang, J., & McKelroy, E. (2015). Examining learners’ perspective of taking a MOOC: Reasons, excitement, and perception of usefulness. *Educational Media International*, *52*(2), 129-146. doi: 10.1080/09523987.2015.1053289.

Liu, J. C., & Kaye, E. R. (2016). Preparing online learning readiness with learner-content interaction: Design for scaffolding self-regulated learning. In *Handbook of Research on Strategic Management of Interaction, Presence, and Participation in Online Courses* (pp. 216-243). IGI Global. doi: 10.4018/978-1-4666-9582-5.ch009.

Liu, M., Zou, W., Shi, Y., Pan, Z., & Li, C. (2019). What do participants think of today's MOOCs: an updated look at the benefits and challenges of MOOCs designed for working professionals. *Journal of Computing in Higher Education*, 1-23. doi: 10.1007/s12528-019-09234-x.

Liyanagunawardena, T. R., Williams, S., & Adams, A. A. (2014). The impact and reach of MOOCs: a developing countries' perspective. *eLearning Papers*, *33*, 38-46. Retrieved from http://centaur.reading.ac.uk/32452/1/In-depth_33_1.pdf.

Liyanagunawardena, T. R., Lundqvist, K. Ø., & Williams, S. A. (2015). Who are with us: MOOC learners on a Future Learn course. *British Journal of Educational Technology*, *46*(3), 557-569. doi: 10.1111/bjet.12261.

Liyanagunawardena, T. R., Parslow, P., & Williams, S. A. (2017) Exploring 'success' in MOOCs: participants' perspective. In Bennett, R., & Kent, M. (Eds.) Massive open online courses and higher education: what went right, what went wrong and where to next? Routledge, London.

Littlejohn, A., Hood, N., Milligan, C., & Mustain, P. (2016). Learning in MOOCs: Motivations and self-regulated learning. *The Internet and Higher Education*, *29*, 40-48. doi: 10.1016/j.iheduc.2015.12.003.

Loizzo, J., Ertmer, P. A., Watson, W. R., & Watson, S. L. (2017). Adult MOOC learners as self-directed: Perceptions of motivation, success, and completion. *Online Learning*, *21*(2). doi: 10.24059/olj.v21i2.889.

Luik, P., Suviste, R., Lepp, M., Palts, T., Tõnisson, E., Säde, M., & Papli, K. (2019). What motivates enrolment in programming MOOCs?. *British Journal of Educational Technology*, *50*(1), 153-165. doi: https://doi.org/10.1111/bjet.12600.

Ma, L., & Lee, C. S. (2019). Understanding the barriers to the use of MOOCs in a developing country: An innovation resistance perspective. *Journal of Educational Computing Research*, *57*(3), 571-590. doi: 10.1177/0735633118757732.

Macleod, H., Haywood, J., Woodgate, A., & Alkhatnai, M. (2015). Emerging patterns in MOOCs: Learners, course designs and directions. *TechTrends*, *59*(1), 56-63. doi: 10.1007/s11528-014-0821-y.

Madden, T. J., Ellen, P. S., & Ajzen, I. (1992). A comparison of the theory of planned behavior and the theory of reasoned action. *Personality and social psychology Bulletin*, *18*(1), 3-9. doi: 10.1177/0146167292181001.

McAuley, A., Stewart, B., Siemens, G., & Cormier, D. (2010). The MOOC model for digital practice. University of Prince Edward Island. Retrieved from https://oerknowledgecloud.org/sites/oerknowledgecloud.org/files/MOOC_Final.pdf.

McBroom, W. H., & Reed, F. W. (1992). Toward a reconceptualization of attitude-behavior consistency. *Social Psychology Quarterly*, *55*(2) 205-216. doi: 10.2307/2786946.

Menchaca, M. P., & Bekele, T. A. (2008). Learner and instructor identified success factors in distance education. *Distance education*, *29*(3), 231-252. doi: 10.1080/01587910802395771.

Meinel, C., Willems, C., Renz, J., & Staubitz, T. (2014). Reflections on enrollment numbers and success rates at the openhpi mooc platform. *Proceedings of the European MOOC Stakeholder Summit*, 101-106.

Meiselwitz, G., & Sadera, W. (2008). Investigating the connection between usability and learning outcomes in online learning environments. *MERLOT Journal of Online Learning and Teaching*, *4*(2), 9.

Milligan, C., & Littlejohn, A. (2017). Why study on a MOOC? The motives of students and professionals. *The International Review of Research in Open and Distributed Learning*, *18*(2). doi: 10.19173/irrodl.v18i2.3033.

Morgan, P. C. (2007). *Adult learner satisfaction with web-based non-credit workforce training* (Doctoral dissertation, University of North Texas).

Morris, N. P., Hotchkiss, S., & Swinnerton, B. (2015). Can demographic information predict MOOC learner outcomes. *Proceedings of the European MOOC Stakeholder Summit*, 199-207.

Moore, M. G. (1989). Editorial: Three types of interaction. *American Journal of Distance Education*, *3*(2), 1-7. doi: 10.1080/08923648909526659.

Moore, M. (1997). Theory of transactional distance. In D. Keegan (Ed.), *Theoretical principles of distance education* (pp. 22-38). New York: Routledge.

Moore, M. G., & Kearsley, G. (2011). *Distance education: A systems view of online learning (3rd ed.)*. Belmont, CA: Cengage Learning.

Moore, R. L., & Wang, C. (2020). Influence of learner motivational dispositions on MOOC completion. *Journal of Computing in Higher Education*, 1-14. doi: 10.1007/s12528-020-09258-8.

Mubarak, A. A., Cao, H., & Zhang, W. (2020). Prediction of students' early dropout based on their interaction logs in online learning environment. *Interactive Learning Environments*, 1-20. doi: 10.1080/10494820.2020.1727529.

Muilenburg, L. Y., & Berge, Z. L. (2005). Student barriers to online learning: A factor analytic study. *Distance Education*, *26*(1), 29-48. doi: 10.1080/01587910500081269.

Naidu, S. (2014). Looking back, looking forward: the invention and reinvention of distance education. *Distance Education*, *35*(3), 263–270. doi: 10.1080/01587919.2014.961671.

Nawrot, I., & Doucet, A. (2014). Building engagement for MOOC students: Introducing support for time management on online learning platforms. In *Proceedings of the 23rd International Conference on world wide web* (pp. 1077-1082). ACM.

Nielsen, J. (1996). Usability metrics: Tracking interface improvements. *IEEE Software*, *13*(6), 1-2.

Onah, D. F., Sinclair, J., & Boyatt, R. (2014). Dropout rates of massive open online courses: Behavioural patterns. *EDULEARN14 Proceedings*, *1*, 5825-5834.

OpenUpEd. (2015). Definition Massive Open Online Courses (MOOCs). Retrieved fromhttps://www.openuped.eu/images/docs/Definition_Massive_Open_Online_Courses.pdf.

Orbell, S., & Sheeran, P. (1998). 'Inclined abstainers': A problem for predicting health-related behaviour. *British Journal of Social Psychology*, *37*(2), 151-165. doi: 10.1111/j.2044-8309.1998.tb01162.x.

Ossiannilsson, E., Altinay, F., & Altinay, Z. (2015). Analysis of MOOCs practices from the perspective of learner experiences and quality culture. *Educational Media International*, *52*(4), 272-283. doi: 10.1080/09523987.2015.1125985.

Pallant, J. (2016). *SPSS survival manual (6th ed.)*. Bershire, England: McGraw-Hill Education (UK).

Pappano, L. (2012). The Year of the MOOC. *The New York Times*, *2*(12). Retrieved from https://www.nytimes.com/2012/11/04/education/edlife/massive-open-online-courses-are-multiplying-at-a-rapid-pace.html.

Park, Y., Jung, I., & Reeves, T. C. (2015). Learning from MOOCs: A qualitative case study from the learners' perspectives. *Educational Media International*, *52*(2), 72-87. doi: 10.1080/09523987.2015.1053286.

Parkes, M., Stein, S., & Reading, C. (2015). Student preparedness for university e-learning environments. *The Internet and Higher Education*, *25*, 1-10. doi: 10.1016/j.iheduc.2014.10.002.

Parlangeli, O., Marchigiani, E., & Bagnara, S. (1999). Multimedia systems in distance education: effects of usability on learning. *Interacting with computers*, *12*(1), 37-49. doi: 10.1016/S0953-5438(98)00054-X.

Paton, R. M., Fluck, A. E., & Scanlan, J. D. (2018). Engagement and retention in VET MOOCs and online courses: A systematic review of literature from 2013 to 2017. *Computers & Education*, *125*, 191-201. doi: 10.1016/j.compedu.2018.06.013.

Perna, L., Ruby, A., Boruch, R., Wang, N., Scull, J., Evans, C., & Ahmad, S. (2013). The life cycle of a million MOOC users. In *MOOC Research Initiative Conference* (pp. 5-6).

Perna, L. W., Ruby, A., Boruch, R. F., Wang, N., Scull, J., Ahmad, S., & Evans, C. (2014). Moving through MOOCs: Understanding the progression of users in massive open online courses. *Educational Researcher*, *43*(9), 421-432. doi: 10.3102/0013189X14562423.

Petrie, H., & Bevan, N. (2009). The Evaluation of accessibility, usability, and user experience. In C. Stephanidis (Ed.), *The Universal Access Handbook* (pp.201-20-16). Boca Raton, FL: CRC Press.

Petronzi, D., & Hadi, M. (2016). Exploring the factors associated with MOOC engagement, retention and the wider benefits for learners. *European Journal of Open, Distance and e-Learning*, *19*(2), 112-129. doi: 10.1515/eurodl-2016-0011.

Phan, T., McNeil, S. G., & Robin, B. R. (2016). Students' patterns of engagement and course performance in a Massive Open Online Course. *Computers & Education*, *95*, 36-44. doi: 10.1016/j.compedu.2015.11.015.

Pilli, O., & Admiraal, W. (2016). A taxonomy of massive open online courses. *Contemporary Educational Technology*, *7*(3), 223-240.

Pilli, O., & Admiraal, W. (2017). Students' learning outcomes in massive open online courses (MOOCs): Some suggestions for course design. *Journal of Higher Education/Yüksekögretim Dergisi*, 7(1). doi: 10.2399/yod.17.001.

Poellhuber, B., Roy, N., & Bouchoucha, I. (2019). Understanding participant's behaviour in massively open online courses. *The International Review of Research in Open and Distributed Learning*, *20*(1). doi: 10.19173/irrodl.v20i1.3709.

Porter, D., & Beale, R. (2015). A policy brief on MOOCs. The Commonwealth of Learning. Retrieved from http://oasis.col.org/handle/11599/825.

Psathas, G., Chalki, P., Demetriadis, S., & Tsiara, A. (2018). Profiles and motivations of participants in Greek MOOC for Python programming. In *2018 Learning with MOOCS (LWMOOCS)* (pp. 70-73). IEEE. doi: 10.1109/LWMOOCS.2018.8534636.

Pursel, B. K., Zhang, L., Jablokow, K. W., Choi, G. W., & Velegol, D. (2016). Understanding MOOC students: Motivations and behaviours indicative of MOOC completion. *Journal of Computer Assisted Learning*, *32*(3), 202-217. doi: 10.1111/jcal.12131.

Puzziferro, M. (2008). Online technologies self-efficacy and self-regulated learning as predictors of final grade and satisfaction in college-level online courses. *The American Journal. of Distance Education*, *22*(2), 72-89. doi: 10.1080/08923640802039024.

Rabin, E., Kalman, Y. M., & Kalz, M. (2019). An empirical investigation of the antecedents of learner-centered outcome measures in MOOCs. *International Journal of Educational Technology in Higher Education*, *16*(1), 14. doi: 10.1186/s41239-019-0144-3.

Raffaghelli, J. E., Cucchiara, S., & Persico, D. (2015). Methodological approaches in MOOC research: Retracing the myth of Proteus. *British Journal of Educational Technology*, *46*(3), 488-509. doi: 10.1111/bjet.12279.

Reeves, T. C., & Hedberg, J. G. (2014). MOOCs: Let's get REAL. *Educational Technology*, 3-8.

Reeves, T. D., Tawfik, A. A., Msilu, F., & Şimşek, I. (2017). What's in it for me? Incentives, learning, and completion in massive open online courses. *Journal of Research on Technology in Education*, *49*(3-4), 245-259. doi: 10.1080/15391523.2017.1358680.

Reich, J. (2014). MOOC completion and retention in the context of student intent. *EDUCAUSE Review Online, 8*.

Reich, J. (2015). Rebooting MOOC research. *Science, 347*(6217), 34-35. doi: 10.1126/science.1261627.

Reich, J., & Ruipérez-Valiente, J. A. (2019). The MOOC pivot. *Science*, *363*(6423), 130-131. doi: 10.1126/science.aav7958.

Richmond, V. P., Gorham, J. S., & McCroskey, J. C. (1987). The relationship between selected immediacy behaviors and cognitive learning. *Annals of the International Communication Association*, *10*(1), 574-590. doi: 10.1080/23808985.1987.11678663.

Rieber, L. P. (2017). Participation patterns in a massive open online course (MOOC) about statistics. *British Journal of Educational Technology*, *48*(6), 1295-1304. doi: 10.1111/bjet.12504.

Rodriguez, C. O. (2012). MOOCs and the AI-Stanford like courses: Two successful and distinct course formats for massive open online courses. *European Journal of Open, Distance and E-Learning, 2012*(1). Retrieved from https://files.eric.ed.gov/fulltext/EJ982976.pdf.

Roediger III, H. L., & Karpicke, J. D. (2006). Test-enhanced learning: Taking memory tests improves long-term retention. *Psychological science*, *17*(3), 249-255. doi: 10.1111/j.1467-9280.2006.01693.x.

Ronaghi, F., Saberi, A., & Trumbore, A. (2014). Novoed, a social learning environment. In Kim, P. (Ed.), *Massive open online courses: The MOOC revolution*. New York, NY: Routledge.

Rovai, A. P. (2002). Sense of community, perceived cognitive learning, and persistence in asynchronous learning networks. *The Internet and Higher Education*, *5*(4), 319-332. doi: 10.1016/S1096-7516(02)00130-6.

Sablina, S., Kapliy, N., Trusevich, A., & Kostikova, S. (2018). How MOOC-takers estimate learning success: Retrospective reflection of perceived benefits. *The International Review of Research in Open and Distributed Learning*, *19*(5). doi: 10.19173/irrodl.v19i5.3768.

Sanchez, E. (2013). Can UX design improve MOOC completion rates? Retrieved from http://moocnewsandreviews.com/can-ux-design-improve-mooc-completion-rates/.

Santandreu Calonge, D., Aman Shah, M., Riggs, K., Connor, M., & Wang, S. (2019). MOOCs and upskilling in Australia: A qualitative literature study. *Cogent Education*, *6*(1), 1687392. doi: 10.1080/2331186X.2019.1687392.

Schulze, A. S. (2014). *Massive open online courses (MOOCs) and completion rates: are self- directed adult learners the most successful at MOOCs?* Pepperdine University.

Selwyn, N., Bulfin, S., & Pangrazio, L. (2015). Massive open online change? Exploring the discursive construction of the ‘MOOC’ in newspapers. *Higher Education Quarterly*, *69*(2), 175-192. doi: 10.1111/hequ.12061.

Shah, D. (2012). The MOOC juggernaut: One year later. Retrieved from https://www.class-central.com/report/growth-of-moocs.

Shah, D. (2013). The MOOC juggernaut: Year 2. Retrieved from https://www.class-central.com/report/the-mooc-juggernaut-year-2.

Shah, D. (2014). Online courses raise their game: A review of MOOC stats and trends in 2014. Retrieved from https://www.class-central.com/report/moocs-stats-and-trends-2014.

Shah, D. (2015). By the numbers: MOOCS in 2015. Retrieved from https://www.class-central.com/report/moocs-2015-stats.

Shah, D. (2016). By the numbers: MOOCS in 2016. Retrieved from https:// www.class-central.com/report/mooc-stats-2016.

Shah, D. (2017a). By The Numbers: MOOCS in 2017. Retrieved from https://www.class-central.com/report/mooc-stats-2017.

Shah, D. (2017b). Class Central Learner Survey (2017): MOOC users highly educated, have experienced career benefits. Retrieved from https://www.classcentral.com/report/class-central-learner-survey-2017.

Shah, D. (2018). By the numbers: MOOCs in 2018. Retrieved from https://www.class-central.com/report/mooc-stats-2018.

Shah, D. (2019). By the numbers: MOOCs in 2019. Retrieved from https://www.classcentral.com/report/mooc-stats- 2019.

Shah, D., & Pickard, L. (2019). Massive list of MOOC providers around the world. Retrieved from https://www.classcentral.com/report/mooc-providers-list.

Sheeran, P. (2002). Intention—behavior relations: a conceptual and empirical review. *European review of social psychology*, *12*(1), 1-36. doi: 10.1080/14792772143000003.

Sheeran, P., & Webb, T. L. (2016). The intention–behavior gap. *Social and personality psychology compass, 10*(9), 503-518. doi: 10.1111/spc3.12265.

Shi, L., & Cristea, A. I. (2018). Demographic indicators influencing learning activities in MOOCs: learning analytics of FutureLearn courses. Association for Information Systems. The 27th International Conference on Information Systems Development (ISD2018).

Siemens, G., & Long, P. (2011). Penetrating the fog: Analytics in learning and education. *EDUCAUSE review*, *46*(5), 30.

Simonson, Smaldino, S., & Zvacek, S. (2015). *Teaching and learning at a distance: Foundations of distance education (6th ed.)*. Charlotte, North Carolina: Information Age Publishing.

Shapiro, H. B., Lee, C. H., Roth, N. E. W., Li, K., Çetinkaya-Rundel, M., & Canelas, D. A. (2017). Understanding the massive open online course (MOOC) student experience: An examination of attitudes, motivations, and barriers. *Computers & Education*, *110*, 35-50. doi: 10.1016/j.compedu.2017.03.003.

Sharples, M., McAndrew, P., Weller, M., Ferguson, R., FitzGerald, E., Hirst, T., Mor, Y., Gaved, M. and Whitelock, D. (2012). *Innovating Pedagogy 2012: Open University Innovation Report 1.* Milton Keynes: The Open University.

Shrivastava, A., & Guiney, P. (2014). Technological developments and tertiary education delivery models-The arrival of MOOCs: Massive open online courses. Ministry of Education Tertiary Education Commission.

Smith, P. J., Murphy, K. L., & Mahoney, S. E. (2003). Towards identifying factors underlying readiness for online learning: An exploratory study. *Distance education*, *24*(1), 57-67. doi: 10.1080/01587910303043.

Song, L., Singleton, E. S., Hill, J. R., & Koh, M. H. (2004). Improving online learning: Student perceptions of useful and challenging characteristics. *The internet and higher education*, *7*(1), 59-70. doi: 10.1016/j.iheduc.2003.11.003.

Sun, P. C., Tsai, R. J., Finger, G., Chen, Y. Y., & Yeh, D. (2008). What drives a successful e-Learning? An empirical investigation of the critical factors influencing learner satisfaction. *Computers & education*, *50*(4), 1183-1202. doi: 10.1016/j.compedu.2006.11.007.

T Subramaniam, T., Suhaimi, N. A. D., Latif , L. A., Abu Kassim, Z., & Fadzil , M. (2019). MOOCs readiness. *The International Review of Research in Open and Distributed Learning*, *20*(3). doi: 10.19173/irrodl.v20i3.3913.

Tabachnick, B. G., & Fidell, L. S. (2007). *Using multivariate statistics (5th ed.)*. Boston, MA: Pearson.

Tao, D., Fu, P., Wang, Y., Zhang, T., & Qu, X. (2019). Key characteristics in designing massive open online courses (MOOCs) for user acceptance: an application of the extended technology acceptance model. *Interactive Learning Environments*, 1-14. doi: 10.1080/10494820.2019.1695214.

Teddlie, C., & Tashakkori, A. (2003). Major issues and controveries inthe use of mixed methods in the social and behvioral sciences. In C. Teddlie & A. Tashakkori (Eds.), *Handbook of mixed methods in social & behavioral research*, 3-50. Thousand Oaks, California: SAGE Publications.

Teo, T., & Dai, H. M. (2019). The role of time in the acceptance of MOOCs among Chinese university students. *Interactive Learning Environments*, 1-14. doi: 10.1080/10494820.2019.1674889.

Tschofen, C., & Mackness, J. (2012). Connectivism and dimensions of individual experience. *The International Review of Research in Open and Distributed Learning*, *13*(1), 124-143. doi: 10.19173/irrodl.v13i1.1143

Tseng, S. F., Tsao, Y. W., Yu, L. C., Chan, C. L., & Lai, K. R. (2016). Who will pass? Analyzing learner behaviors in MOOCs. *Research and practice in technology enhanced learning*, *11*(1), 8. doi: 10.1186/s41039-016-0033-5.

Tsironis, A., Katsanos, C., & Xenos, M. (2016). Comparative usability evaluation of three popular MOOC platforms. In *2016 IEEE Global Engineering Education Conference (EDUCON)* (pp. 608-612). IEEE.

Universities UK. (2013). Massive open online courses: Higher education's digital moment?. London, UK: Universities UK. Retrieved from https://www.universitiesuk.ac.uk/policy-and analysis/ reports/ Documents/2013/ massive-open-online-courses.pdf.

Valdivia Vázquez, J. A., Ramírez-Montoya, M. S., & Valenzuela González, J. R. (2018). Motivation and knowledge: Pre-assessment and Post-assessment of MOOC participants from an energy and sustainability project. *The International Review of Research in Open and Distributed Learning*, *19*(4). doi: 10.19173/irrodl.v19i4.3489.

Veletsianos, G., Collier, A., & Schneider, E. (2015). Digging deeper into learners' experiences in MOOCs: Participation in social networks outside of MOOCs, notetaking and contexts surrounding content consumption. *British Journal of Educational Technology*, *46*(3), 570-587. doi: 10.1111/bjet.12297.

Veletsianos, G., Reich, J., & Pasquini, L. A. (2016). The life between big data log events: Learners’ strategies to overcome challenges in MOOCs. *AERA Open*, *2*(3). doi: 10.1177/2332858416657002.

Vonderwell, S., & Savery, J. (2004). Online learning: Student role and readiness. *Turkish Online Journal of Educational Technology-TOJET*, *3*(3), 38-42.

Yousef, A. M. F., Chatti, M. A., Schroeder, U., & Wosnitza, M. (2015). A usability evaluation of a blended MOOC environment: An experimental case study. *The International Review of Research in Open and Distributed Learning*, *16*(2). doi: 10.19173/irrodl.v16i2.2032.

Walji, S., Deacon, A., Small, J., & Czerniewicz, L. (2016). Learning through engagement: MOOCs as an emergent form of provision. *Distance Education*, *37*(2), 208-223. doi: 10.1080/01587919.2016.1184400.

Wang, C. H., Shannon, D. M., & Ross, M. E. (2013). Students’ characteristics, self-regulated learning, technology self-efficacy, and course outcomes in online learning. *Distance Education*, *34*(3), 302-323. doi: 10.1080/01587919.2013.835779.

Wang, Y. & Baker, R. (2015). Content or platform: Why do students complete MOOCs? *MERLOT Journal of Online Learning and Teaching*, *11*(1).

Wang, Y., Baker, R. S., & Paquette, L. (2017). Behavioral predictors of MOOC post-course development. In *Proceedings of the Workshop on Integrated Learning Analytics of MOOC Post-Course Development*.

Watkins, R., Leigh, D., & Triner, D. (2004). Assessing readiness for e-learning. *Performance Improvement Quarterly*, *17*(4), 66-79. doi:10.1111/j.1937-8327.2004.tb00321.x.

Watson, W. R., Kim, W., & Watson, S. L. (2016). Learning outcomes of a MOOC designed for attitudinal change: A case study of an Animal Behavior and Welfare MOOC. *Computers & Education*, *96*, 83-93. doi: 10.1016/j.compedu.2016.01.013.

Watson, W. R., Yu, J. H., & Watson, S. L. (2018). Perceived attitudinal learning in a self-paced versus fixed-schedule MOOC. *Educational Media International*, *55*(2), 170-181. doi: 10.1080/09523987.2018.1484044.

Watted, A., & Barak, M. (2018). Motivating factors of MOOC completers: Comparing between university-affiliated students and general participants. *The Internet and Higher Education*, *37*, 11-20. doi: 10.1016/j.iheduc.2017.12.001.

Wei, H. C., & Chou, C. (2020). Online learning performance and satisfaction: do perceptions and readiness matter?. *Distance Education*, *41*(1), 48-69. doi: 10.1080/01587919.2020.1724768.

Weidlich, J., & Bastiaens, T. J. (2018). Technology matters – The impact of transactional distance on satisfaction in online distance learning. *The International Review of Research in Open and Distributed Learning*, *19*(3). https://doi.org/10.19173/irrodl.v19i3.3417.

Weller, M. (2014). The battle for open. *London: Ubiquity Press.*

Williams, K. M., Stafford, R. E., Corliss, S. B., & Reilly, E. D. (2018). Examining student characteristics, goals, and engagement in massive open online courses. *Computers & Education*, *126*, 433-442. doi: 10.1016/j.compedu.2018.08.014.

Witthaus, G., Inamorato dos Santos. A., Childs, M., Tannhäuser, A., Conole, G., Nkuyubwatsi, B., & Punie, Y. (2016) Validation of non-formal MOOC-based learning: An analysis of assessment and recognition practices in Europe (OpenCred). doi:10.2791/809371.

Wladis, C., & Samuels, J. (2016). Do online readiness surveys do what they claim? Validity, reliability, and subsequent student enrollment decisions. *Computers & Education*, *98*, 39-56. doi: 10.1016/j.compedu.2016.03.001.

Xing, W., Tang, H., & Pei, B. (2019). Beyond positive and negative emotions: Looking into the role of achievement emotions in discussion forums of MOOCs. *The Internet and Higher Education*, 100690. doi: 10.1016/j.iheduc.2019.100690.

Xiong, Y., Li, H., Kornhaber, M. L., Suen, H. K., Pursel, B., & Goins, D. D. (2015). Examining the relations among student motivation, engagement, and retention in a MOOC: A structural equation modeling approach. *Global Education Review*, *2*(3), 23-33.

Yang, M., Shao, Z., Liu, Q., & Liu, C. (2017). Understanding the quality factors that influence the continuance intention of students toward participation in MOOCs. *Educational Technology Research and Development, 65*(5), 1195-1214. doi: 10.1007/s11423-017-9513-6.

Young, R, Y. (2019). Article in journal 'science' argues mooc participation is declining as providers pivot. Retrieved from https://www.edsurge.com/news/2019-01-10-article-in-journal-science-argues-mooc-participation-is-declining-as-providers-pivot.

Yuan, L., & Powell, S. J. (2015). Partnership model for entrepreneurial innovation in open online learning. *E-learning Papers, 41*. Retrieved from https://e-space.mmu.ac.uk/619528.

Yurdugül, H., & Demir, Ö. (2017). Öğretmen yetiştiren lisans programlarındaki öğretmen adaylarının e-öğrenmeye hazır bulunuşluklarının incelenmesi: Hacettepe üniversitesi örneği. *Hacettepe Üniversitesi Eğitim Fakültesi Dergisi, 32*(4), 896-915. doi: 10.16986/HUJE.2016022763.

Yurdugül, H., & Menzi Çetin, N. (2015). Investigation of the relationship between learning process and learning outcomes in e-learning environments. *Eurasian Journal of Educational Research, 58*, 57-74. doi: 10.14689/ejer.2015.59.4.

Yukselturk, E., Ozekes, S., & Türel, Y. K. (2014). Predicting dropout student: an application of data mining methods in an online education program. *European Journal of Open, Distance and e-learning, 17*(1), 118-133.

Zaharias, P. (2004). Usability and e-Learning: The road towards integration. *eLearn, 2004*(6). doi: 10.1145/998337.998345.

Zaharias, P., & Poylymenakou, A. (2009). Developing a usability evaluation method for e-learning applications: Beyond functional usability. *International Journal of Human–Computer Interaction, 25*(1), 75-98. doi: 10.1080/10447310802546716.

Zawacki-Richter, O., & Naidu, S. (2016). Mapping research trends from 35 years of publications in distance Education. *Distance Education, 37*(3), 245-269. doi: 10.1080/01587919.2016.1185079.

Zhang, Q., Bonafini, F. C., Lockee, B. B., Jablokow, K. W., & Hu, X. (2019). Exploring demographics and students' motivation as predictors of completion of a massive open online course. *The International Review of Research in Open and Distributed Learning, 20*(2). doi: 10.19173/irrodl.v20i2.3730.

Zheng, S., Rosson, M. B., Shih, P. C., & Carroll, J. M. (2015). Understanding student motivation, behaviors and perceptions in MOOCs. In *Proceedings of the 18th ACM conference on computer supported cooperative work & social computing* (pp. 1882-1895).

Zhenghao, C., Alcorn, B., Christensen, G., Eriksson, N., Koller, D., & Emanuel, E. (2015). Who’s benefiting from MOOCs, and why. *Harvard Business Review*, *25*, 2-8.

Zutshi, S., O'Hare, S., & Rodafinos, A. (2013). Experiences in MOOCs: The perspective of students. *American Journal of Distance Education*, *27*(4), 218-227. doi: 10.1080/08923647.2013.838067.

APPENDICES

A. Quantitative Measurement Instruments

Demographics:

1. Yaş
2. Cinsiyet (Erkek/Kadın)
3. Eğitim durumu (Bir okul bitirmedim-İlkokul-Ortaokul-Lise-Üniversite-Yüksek Lisans-Doktora)
4. Herhangi bir engel durumunuz var mı? (Var/Yok)
5. Daha önce çevrim içi ders aldınız mı? (Aldım/Almadım)
6. İş yerindeki pozisyonunuz nedir? (Çalışanım/İşverenim/Çalışmıyorum)
7. Yaşadığınız şehir:
8. Ülke:

Readiness for Online Learning:

	Kesinlikle Katılmıyorum	Katılmıyorum	Kararsızım	Katılıyorum	Kesinlikle Katılıyorum
1.Microsoft Office Programlarının (Word, Excel ve PowerPoint) temel işlevlerini kullanmada kendime güvenirim					
2.Çevrim içi öğrenme yazılımlarını veya web sitelerini nasıl kullanacağım konusunda sahip olduğum bilgime ve becerime güvenirim					
3.Çevrim içi öğrenmede bilgiye ulaşmak için interneti kullanma konusunda kendime güvenirim					
4.Kendi çalışma planımı uygularım.					
5.Öğrenme problemleri ile karşılaştığımda destek/yardım ararım.					
6.Zamanı iyi yönetirim.					
7.Öğrenme hedeflerimi belirlerim					

8.Öğrenme performansım konusunda daha yüksek beklentilerim vardır					
9.Çevrim içi ortamda kendi öğrenme sürecimi yönlendirebilirim					
10.Çevrim içi öğrenirken diğer çevrim içi etkinliklerden (anlık mesajlaşma, internette dolaşma) dikkatim dağılmaz					
11.İhtiyaçlarıma göre çevrim içi öğretim materyallerini tekrar ederim					
12.Çevrim içi ortamda yeni fikirlere açığım					
13.Çevrim içi ortamda öğrenmeye yönelik motivasyonum var					
14.Çevrim içi ortamda hatalarımdan ders alırım					
15.Düşüncelerimi çevrim içi ortamdaki diğer kişilerle paylaşmayı severim					
16.Diğer kişilerle etkili iletişim kurmada çevrim içi araçları (e-mail, tartışma ortamları) kullanma konusunda kendime güvenirim					
17.Yazışarak kendimi ifade etmede (duygular ve espri) kendime güvenirim					
18.Çevrim içi tartışma ortamlarına sorular göndermede kendime güvenirim					

Course Satisfaction:

"*Doğru değil*", "*Biraz doğru*", "*Orta derecede doğru*", "*Doğru*", "*Çok doğru*" seçeneklerinden bir tanesini işaretlemelisiniz.

	Doğru değil	Biraz doğru	Orta derecede doğru	Doğru	Çok doğru
Bu dersin alıştırmalarını yapmak, bana başarı duygusu kazandırdı.					
Bu dersten o kadar keyif aldım ki bu konuyla ilgili daha çok şey öğrenmek isterim.					
Bu dersi çalışmaktan gerçekten zevk aldım.					
Alıştırmalardan sonra verilen geri bildirimler çalışmamın karşılığını aldığımı hissetmemi sağladı.					
Bu dersi başarıyla tamamlamak kendimi iyi hissettirdi.					
Ders o kadar güzel hazırlanmıştı ki bu dersi almak benim için bir zevkti.					

Perceived Learning:

0 ile 9 arasında değerlendirdiğinizde, bu derste ne kadar öğrendiğinizi düşünüyorsunuz?

(0= Hiçbir şey öğrenmediğimi düşünüyorum – 9= Çok şey öğrendiğimi düşünüyorum anlamına geliyor)

0 1 2 3 4 5 6 7 8 9

Perceived Usability:

Bilgeİş Öğrenme Portalinin kullanımı hakkında ne düşünüyorsunuz?

*

Her ifade için 1'den (Kesinlikle Katılmıyorum) 7'ye (Kesinlikle Katılıyorum) kadar olan sıralanmış seçeneklerden düşüncenizi yansıtan seçeneği işaretleyiniz.

	1 (Kesinlikle Katılmıyorum)	2	3	4	5	6	7 (Kesinlikle Katılıyorum)
1. Genel olarak, Bilgeİş öğrenme portalinin kullanım kolaylığından memnunum.							
2. Bilgeİş öğrenme portalini kullanmak basittir.							
3. Bilgeİş öğrenme portalini kullanarak işlerimi etkin bir şekilde yapabiliyorum.							
4. Bilgeİş öğrenme portalini rahatlıkla kullanabiliyorum.							
5. Bilgeİş öğrenme portalini kullanmayı öğrenmem kolay oldu.							
6. Bilgeİş öğrenme portalini kullanarak kısa zamanda üretken hale geldiğime inanıyorum.							
7. Bilgeİş öğrenme portalinin hata mesajları için verdiği açıklamalar karşılaştığım problemleri nasıl çözeceğimi açıkça anlatmaktadır.							

* **Her ifade için 1'den (Kesinlikle Katılmıyorum) 7'ye (Kesinlikle Katılıyorum) kadar olan sıralanmış seçeneklerden düşüncenizi yansıtan seçeneği işaretleyiniz.**

	1 (Kesinlikle Katılmıyorum)	2	3	4	5	6	7 (Kesinlikle Katılıyorum)
8. Bilgeİş öğrenme portalinin verdiği bilgiler (çevrim içi yardım, ekran mesajları vb.) açık ve nettir.							
9. Bilgeİş öğrenme portalinin verdiği bilgiler kolayca anlaşılmaktadır.							
10. Bilgeİş öğrenme portalinin arayüzünü beğendim.							
11. Bilgeİş öğrenme portalinin arayüzünü kullanmak hoşuma gidiyor.							
12. Bilgeİş öğrenme portali, beklediğim bütün işlevlere sahiptir ve yeterlidir.							
13. Genel olarak Bilgeİş öğrenme portali tatmin edicidir.							

Motivation for Enrollment (English and Turkish):

Motivations	Applies	Does not apply
Learning a new topic/subject		
For personal growth and enrichment		
General Interest in Topic		
Course Offered by Prestigious University (METU)		
Increasing my current knowledge		
Curiosity		
To Earn a Certificate/Statement of Accomplishment)		
On the job learning purpose		
Course Relevant to Job		
To Experience an Online Course)		
Challenge		
For Career Change		
Fun		
Socialization		

*
Sizi Bilgeİş Öğrenme Portalinden ders almaya sevk eden nedenler nelerdir? Verilen maddelerden sizin için geçerli olanları "Uygun", geçerli olmayanları ise "Uygun Değil" olarak işaretleyiniz.

	Uygun	Uygun Değil
1. Konulara genel olarak ilgim var	○	○
2. Yeni bir konuyu öğrenmek	○	○
3. Mevcut bilgimi arttırmak	○	○
4. Dersler/konular işimle alakalı	○	○
5. İşimi daha iyi yapabilmek için bilgi ve beceriler edinmek	○	○
6. Yeni bir iş bulabilmek için bilgi ve beceriler edinmek	○	○
7. Sertifika almak	○	○
8. Çevrim içi ders tecrübe etmek	○	○
9. Derslerin saygın bir üniversite (ODTÜ) tarafından desteklenmesi	○	○
10. Eğlenmek	○	○
11. Dersleri yapabildiğimi görmek	○	○
12. Kişisel gelişim	○	○
13. Merak	○	○
14. Sosyalleşme	○	○

Intention Survey (English and Turkish):

"People register for HarvardX courses for different reasons. Which of the following best describes you?"

- *Here to browse the materials, but not planning on completing any course activities.* [coded as Browse]
- *Planning on completing some course activities, but not planning on earning a certificate.* [coded as Audit]
- *Planning on completing enough course activities to earn a certificate.* [coded as Complete]
- *Have not decided whether I will complete any course activities.* [coded as Unsure]

Katılımcılar Bilgeiş öğrenme portaline farklı niyetlerle kayıt oluyorlar. Peki, sizi en iyi tanımlayan ifade aşağıdakilerden hangisidir?

( ) Bu derste herhangi bir ders etkinliğini tamamlayıp tamamlamayacağıma henüz karar vermedim.

( ) Bu dersin materyallerine göz atmak için buradayım ancak herhangi bir ders etkinliğini tamamlamayı düşünmüyorum (videoları izlemek, metinleri okumak, sorulara cevap vermek gibi…)

( ) Bu dersin bazı ders etkinliklerini tamamlamayı düşünüyorum ancak sertifika almayı planlamıyorum.

( ) Sertifika almak için bu dersin gerekli olan ders etkinliklerini tamamlamayı düşünüyorum.

B. Qualitative Measurement Instruments

Non-starters:

1. Bilgeİş Öğrenme Portali üzerinde … dersine kayıt olduğunuz halde neden bu dersi almaya başlamadınız? Lütfen açıklayınız.

2. … dersine neden kaydoldunuz? Lütfen açıklayınız.

Non-completers:

1. Bilgeİş Öğrenme Portali üzerinde aldığınız … dersini neden tamamlamadınız? Lütfen açıklayınız.

2. … neden kaydoldunuz? Lütfen açıklayınız.

Completers:

1. Genel olarak düşündüğünüzde, … dersini tamamlamanıza etki eden faktörler nelerdir? Açıklar mısınız?

2. … dersinin hangi yönlerinden memnun kaldınız ve hangi yönlerinden memnun kalmadınız? Açıklar mısınız? (Not: Bu soruyu dersin konu anlatımını, konu anlatımındaki etkileşimleri, alıştırmalardan sonra verilen geribildirimleri, sınavları, ödevleri, projeleri ve dersin uzunluğunu düşünerek cevaplayabilirsiniz.)

3. Tamamlamış olduğunuz … dersinden öğrendiklerinizi düşündüğünüzde derste öğrenmenizi olumlu veya olumsuz etkileyen faktörler nelerdir? Açıklar mısınız?

4. … dersinin size sağladığı faydalar/katkılar nelerdir?

5. … dersini almadan ÖNCE, öğrenmenin İnternet üzerinden gerçekleştiği derslerde öğrenmeye karşı kendinizi ne kadar hazır hissediyordunuz? Açıklar mısınız? (Not: Bu soruyu bilgisayar ve İnternet kullanabilme yetkinliğinizi, çevrim içi ortamlarda iletişim kurabilme yetkinliğinizi, öğrenmeye yönelik motivasyonunuzu, fiziksel olarak bir eğitmenin olmadığı derste öğrenme sürecinizi kendinizin yönlendirmesini, yönetmesini ve kontrol etmesini düşünerek cevaplayabilirsiniz.)

6. Bilgeİş Öğrenme Portalinin kullanımının kolaylığı veya zorluğu hakkındaki görüşleriniz nelerdir? Açıklar mısınız? (Not: Bu soruyu öğrenme portalinin kullanışlılığını, portalin görsel kalitesini, portal üzerindeki bilgilerin ve hata mesajlarının anlaşılabilirliğini ve portali kullanmakla ilgili genel memnuniyet durumunuzu düşünerek cevaplayabilirsiniz.)

Intention-Behavior Gap:

1. Bilgeİş Öğrenme Portali üzerinde kayıt olmuş olduğunuz derse başlamadan önce size sorulan

“Derse Başlamak için Seçim yapın” anketinden “Bu derste herhangi bir ders etkinliğini tamamlayıp tamamlamayacağıma henüz karar vermedim.” seçeneğini seçmiştiniz. Ders aktivitelerini kontrol ettiğimizde, bu kararınızın değiştiğini ve bu seçeneği seçmenize rağmen bazı ders aktivitelerini yaptığınızı görüyoruz. Kararınızı neden değiştirdiniz? Kısaca açıklayabilir misiniz?

2. Bilgeİş Öğrenme Portali üzerinde kayıt olmuş olduğunuz derse başlamadan önce size sorulan “Derse Başlamak için Seçim yapın” anketinden “Bu dersin materyallerine göz atmak için buradayım ancak herhangi bir ders etkinliğini tamamlamayı düşünmüyorum (videoları izlemek, metinleri okumak, sorulara cevap vermek gibi…)” niyetini seçmiştiniz. Ders aktivitelerini kontrol ettiğimizde, bu niyetinizin değiştiğini ve bu seçeneği seçmenize rağmen sertifika aldığınızı, bazı ders aktivitelerini tamamladığınızı veya ders etklinliklerine hiç başlamadığınızı görüyoruz. Niyetinizi/Kararınızı neden değiştirdiniz? Kısaca açıklayabilir misiniz?

3. Bilgeİş Öğrenme Portali üzerinde kayıt olmuş olduğunuz derse başlamadan önce size sorulan “Derse Başlamak için Seçim yapın” anketinden “Bu dersin bazı ders etkinliklerini tamamlamayı düşünüyorum ancak sertifika almayı planlamıyorum.” seçeneğini seçmiştiniz. Ders aktivitelerini kontrol ettiğimizde, bu niyetinizin değiştiğini ve bu seçeneği seçmenize rağmen sertifika aldığınızı, bazı ders etkinliklerini tamamlamadığınızı veya ders etklinliklerine hiç başlamadığınızı görüyoruz. Niyetinizi/Kararınızı neden değiştirdiniz? Kısaca açıklayabilir misiniz?

4. Bilgeİş Öğrenme Portali üzerinde kayıt olmuş olduğunuz derse başlamadan önce size sorulan “Derse Başlamak için Seçim yapın” anketinden “Sertifika almak için bu dersin gerekli olan ders etkinliklerini tamamlamayı düşünüyorum.” niyetini seçmiştiniz. Ders aktivitelerini kontrol ettiğimizde, bu niyetinizin değiştiğini ve bu niyeti seçmenize rağmen sertifika almak için gerekli olan ders etkinliklerini tamamlamadığınızı görüyoruz. Niyetinizi/Kararınızı neden değiştirdiniz? Kısaca açıklayabilir misiniz?

C. Course Syllabi

Dealing with Problematic People:

Bu proje Avrupa Birliği ve Türkiye Cumhuriyeti tarafından finanse edilmektedir.

1

Zor İnsanlarla Baş Etme

Dersin Amacı

Bu dersin amacı, KOBİ çalışanlarının şirket içinde ve dışında işleri gereği her gün karşılaştıkları zor insanları daha iyi tanıyarak, doğru yöntemlerle onlarla daha etkin şekilde baş edebilmelerini sağlamaktır. Bunun için;

- KOBİ çalışanlarını zor insan tipleri hakkında teorik olarak bilgilendirmek,
- Zor insan tiplerini ve her biri için uygun baş etme yöntemini iş hayatından bir vaka analizi ile örnekleyerek yöntemlerin akılda kalıcılığını artırmak,
- Zor insanlarla etkin şekilde baş edebilmek için uygulayabilecekleri teknikler hakkında bilgilendirmek ve
- Zor müşterilerle karşılaştıklarında nasıl davranmaları gerektiğine dair teknikler sunmak amaçlanmaktadır.

Bu sayede çalışanlar, zor insanlardan kaçınmak ya da onlara öfkelenip duygusal tepkiler vermek yerine bu insanların kendilerini olumsuz etkilemelerine izin vermeden, kendilerini ve karşı tarafı analiz edecek ve doğru teknikleri uygulayarak zor insanlarla daha iyi baş edebileceklerdir.

Önceden alınması gereken ders veya dersler

Bulunmamaktadır.

Öğrenme çıktıları

Bu dersi tamamladığınızda;

- Zor insan tanımı ve zor insan tipleri hakkında detaylı bilgi edinerek karşılaştığınız zor insanları daha iyi analiz edebileceksiniz.
- Her bir zor insan tipi ile baş edebilmek için uygun teknikler hakkında detaylı bilgi edineceksiniz.
- Katılımcı, zor insan tipleri ile çalışmaya dair iş hayatından örneklenmiş bir vaka inceleyerek kendi karşılaşabileceği durumlarda benzer davranışlar sergileyen zor insanlarla nasıl baş edebileceğine bir farkındalık kazanmış olacaktır.
- Katılımcı, zor insanlarla ve zor müşterilerle karşılaştığında onların kendisini olumsuz etkilemesine izin vermemek ve durumu etkin şekilde yönetebilmek için uygulayabileceği teknikler hakkında bilgi edinecektir.

Dersin İçerik Tablosu

BÖLÜM 1: Zor İnsanları Tanıyalım

bilgeiş

İşçi ve İşverenlerin Kapasitelerinin Bilgi ve İletişim Teknolojileri Yoluyla Geliştirilmesi Projesi

Üniversiteler Mahallesi / İhsan Doğramacı Bulvarı 17/B ODTÜ Teknokent 06531 Ankara Türkiye Tel: +90 (312) 287 58 22 - Fax: +90 (312) 287 52 83 - www.bilgeis.net - info@bilgeis.net

İKG PRO İNSAN KAYNAKLARININ GELİŞTİRİLMESİ PROGRAM OTORİTESİ

ODTÜ METU

.projectgroup

ÇSGB

Bu proje Avrupa Birliği ve Türkiye Cumhuriyeti tarafından finanse edilmektedir.

- Zor İnsan Kimdir
- İşyerinde Zor İnsanlarla Baş Etme
- Zor İnsan Tipleri
    - Saldırganlar
    - Sinsiler
    - Her Şeyi Bilenler
    - Kararsızlar
    - Balonlar
    - Fazla Uyumlular
    - Kötümserler
    - Şikayetçiler

Değerlendirmeler

- Bölüm Sonu Sınavı

BÖLÜM 2: Zor İnsanlarla Baş Etme Teknikler

- Zor İnsanlarla Baş Etme Teknikleri
- Zor Müşteriler
- Zor Müşterilerle Baş Etme Teknikleri

Değerlendirmeler

- Bölüm Sonu Sınavı

Dersin önerilen süresi

2 hafta

Katılımcıların tahmini olarak ayırması gereken zaman

Ders Süreleri

- 1.hafta - Bölüm 1: 1 saat
- 2.hafta - Bölüm 2: 1 saat

Toplamda **2 saat** ders süresi bulunmaktadır.

Değerlendirme Yöntemleri

BİLGEİŞ Öğrenme portalinde ders bölümleri boyunca ya da bölüm sonlarında olmak üzere genel olarak 2 şekilde değerlendirilirsiniz.

Biçimlendirici değerlendirme:

- Yazılım ve yazılımın bölümlerini kullanan her ders interaktif unsurlar içerir.
    - İnteraktif çalışmalar ekranın belli yerlerine tıklama, temsili komutlara, düğmelere ve diğer standart uygulama unsurlarına tıklama, temsili metin

Üniversiteler Mahallesi / İhsan Doğramacı Bulvarı 17/B ODTÜ Teknokent 06531 Ankara Türkiye Tel: +90 (312) 287 58 22 - Fax: +90 (312) 287 52 83 - www.bilgeis.net - info@bilgeis.net

kutularına metin yazma, standart sürükleyip bırakma etkileşimleri ve belirli bir yöntem veya eylemi taklit eden bir dizi adım veya daha fazlası olabilir.

- Dersler içeriği pekiştirmek için uygun olan yerlerde kısa sorular da içerir.
    - Çoktan seçmeli, boşluk doldurmalı, eşleştirmeli, sıralamalı ve diğer türlerde çeşitli sorular kullanılır.
- Dersi başarıyla tamamlamak ve katılım belgesi almaya hak kazanmak için ders boyunca olan bu değerlendirme adımlarını tamamlamak gerekmektedir.

Genel değerlendirme:

- Bu dersin bir parçası olan genel değerlendirmeler iki şekilde yapılır: Bölüm sonu sınavı ve final sınavı.
- Final notu aşağıdaki şekilde hesaplanacaktır:

Bölüm 1, Bölüm Sonu Sınavı	%50
Bölüm 2, Bölüm Sonu Sınavı	%50
Toplam	**%100**

- Dersi başarıyla tamamlamak ve katılım belgesi almaya hak kazanmak için ders değerlendirmesinde en az %70 oranında başarılı olmak gerekmektedir.

Ders Özeti

Yaşamın her alanında karşımıza iletişim kurmakta zorlandığımız kişiler, çözmekte zorlandığımız ve bizi strese sokan durumlarla karşılaşırız. Bazıları sürekli bir şeylerden şikâyet eder, bazıları karşı tarafı küçük düşürmeye çalışır, bazıları kendini olduğundan daha yetkin göstermek arzusundadır, bazıları da her olayın olumsuz yanını görme eğilimindedir. Söz konusu iş yaşamı olduğu zaman zor insanlarla ve zor durumlarla başa çıkmak daha önemli bir sorun haline gelir. Çünkü baş edemediğimiz her ilişki ve durum iş yerinde hem bizim başarımızı, verimimizi, mutluluğumuzu hem de çalıştığımız iş yerinin verimini ve huzurunu etkiler.

İş yerinde bazen bizimle aynı konumda çalışan, bazen yöneticisi olduğumuz bazen de müşterimiz olan zor insanlarla karşılaşmaktayız. Bu nedenle kimlerin ve hangi durumların bize zor geldiğini, onların zorlayıcı davranışlarını ve zor insanlarla başa çıkmak için nasıl davranmamız gerektiğini öğrenmemiz bize fayda sağlar. Önemli olan zor insanların davranışlarını kişiselleştirmememiz ve onlarla nasıl baş edebileceğimizi bilmektir.

Bu eğitim ile KOBİ çalışanlarının zor insan tiplerini analiz edebilmeleri ve onlara uygun baş etme teknikleri ile iletişimlerini yönetebilmeleri ve karlılık, performans, müşteri ve çalışan memnuniyeti gibi olumlu sonuçların artması ve huzurlu bir iş ortamı sağlanması amaçlanmaktadır. Bu eğitim sonucunda zor insanlarla iletişim bizi strese sokan olumsuz bir deneyim olmaktan çıkıp karşı tarafta farkındalık uyandırabileceğimiz ve onun zorlayıcı davranışlarını değiştirmesini sağlayabileceğimiz bir deneyime dönüşecektir.

Üniversiteler Mahallesi / İhsan Doğramacı Bulvarı 17/B ODTÜ Teknokent 06531 Ankara Türkiye Tel: +90 (312) 287 58 22 - Fax: +90 (312) 287 52 83 - www.bilgeis.net - info@bilgeis.net

Python Programming I:

Bu proje Avrupa Birliği ve Türkiye Cumhuriyeti tarafından finanse edilmektedir.

1

Python Programlama - 1

Dersin Amacı

Bu dersin amacı katılımcıların Python Programlama ile uygulama geliştirme konusunda bilgi düzeyinde, Python Programlama Dili'nin özellikleri, sürümleri, geliştirme ortamının Windows ve Linux işletim sistemi platformlarında kurulması konusunda uygulama düzeyinde ve Python Programlama Dili Kavramlarına (Python Programlama-2 dersine) giriş yapacak bilgi ve becerileri kazanmalarını sağlamaktır.

Önceden sahip olunması gereken beceri ve bilgiler

- Temel bilgisayar ve internet kullanma becerileri
- Temel düzeyde algoritma ve akışı (işleyişi) hakkında bilgi
- Programlama (program geliştirme) hakkında farkındalık düzeyinde bilgi
- Windows/Linux İşletim sisteminde kullanıcı düzeyinde bilgi

Önceden alınması gereken ders veya dersler

Bulunmamaktadır.

Öğrenme çıktıları

Bu dersi tamamladığınızda;

- Programlama ve uygulama geliştirme hakkında temel düzeyde bilgi sahibi olacaktır.
- Python Programlama Dili ve özellikleri, sürümleri hakkında temel düzeyde bilgi sahibi olacaksınız.
- Python Programlama Dili geliştirme ortamının Windows ve Linux işletim sistemi platformlarında kurulumunu yapabilecek ve temel seviyede Uygulama Geliştirme konusunda uygulama seviyesinde bilgi sahibi olacaksınız.
- Windows/Linux ortamında Python'un çalıştırılması hakkında uygulama seviyesinde bilgi sahibi olacaksınız.
- Python Programlama Dili kavramlarına giriş yapacak ve Python Programlama-2 dersini takip edebilir seviyede olacaksınız.

bilgeiş

İşçi ve İşverenlerin Kapasitelerinin Bilgi ve İletişim Teknolojileri Yoluyla Geliştirilmesi Projesi

Dersin İçerik Tablosu

BÖLÜM 1: Neden Python Programlama?

- Programlama ve Uygulama Geliştirmeye Giriş
- Python Programlama Dili

Üniversiteler Mahallesi / İhsan Doğramacı Bulvarı 17/B ODTÜ Teknokent 06531 Ankara Türkiye Tel: +90 (312) 287 58 22 - Fax: +90 (312) 287 52 83 - www.bilgeis.net - info@bilgeis.net

İKG PRO İNSAN KAYNAKLARININ GELİŞTİRİLMESİ PROGRAM OTORİTESİ

ODTÜ METU

projectgroup

ÇSGB

2

BÖLÜM 2: Python ile Programlamaya Giriş

- Python Dil Özellikleri,
- Python sürümleri, ortak ve farklı yönleri
- Geliştirme ortamına giriş

Değerlendirmeler

- Bölüm sonu sınavı

BÖLÜM 3: Python Geliştirme Ortamının Kurulması

- Geliştirme Ortamı Tanıtımı
- Windows / Linux İşletim Sistemlerinde Geliştirme Ortamı Kurulumu
- Windows/ Linux ortamında Python'un çalıştırılması

Değerlendirmeler

- Bölüm sonu sınavı
- Ders Ödevi 1: IDE kurulumu

BÖLÜM 4: Python Uygulama Geliştirme

- İlk Uygulama (Merhaba Dünya)
- Örnek Python uygulamalarının geliştirilmesi
- Python Programlama Dili Kavramlarına Giriş

Değerlendirmeler

- Bölüm sonu sınavı
- Final Ödevi: Uygulama Geliştirme

Dersin önerilen süresi

4 hafta

bilgeiş

İşçi ve İşverenlerin Kapasitelerinin Bilgi ve İletişim Teknolojileri Yoluyla Geliştirilmesi Projesi

Katılımcıların tahmini olarak ayırması gereken zaman

Ders Süreleri

- 1.Hafta – Bölüm 1: 15 dakika
- 2.Hafta – Bölüm 2: 30 dakika
- 3.Hafta – Bölüm 3: 45 dakika
- 4.Hafta – Bölüm 4: 30 dakika

Toplam **2 saat** ders süresi bulunmaktadır.

3

Değerlendirme Yöntemleri

BİLGEİŞ Öğrenme portalinde ders bölümleri boyunca ya da bölüm sonlarında olmak üzere genel olarak 2 şekilde değerlendirilirsiniz.

Biçimlendirici değerlendirme:

- Yazılım ve yazılımın bölümlerini kullanan her ders interaktif unsurlar içerir.
    - İnteraktif çalışmalar ekranın belli yerlerine tıklama, temsili komutlara, düğmelere ve diğer standart uygulama unsurlarına tıklama, temsili metin kutularına metin yazma, standart sürükleyip bırakma etkileşimleri ve belirli bir yöntem veya eylemi taklit eden bir dizi adım veya daha fazlası olabilir.
- Dersler içeriği pekiştirmek için uygun olan yerlerde kısa sorular da içerir.
    - Çoktan seçmeli, boşluk doldurmalı, eşleştirmeli, sıralamalı ve diğer türlerde çeşitli sorular kullanılır.
- Dersi başarıyla tamamlamak ve katılım belgesi almaya hak kazanmak için ders boyunca olan bu değerlendirme adımlarını tamamlamak gerekmektedir.

Genel değerlendirme:

- Bu dersin bir parçası olan genel değerlendirmeler üç şekilde yapılır: Bölüm sonu sınavı, ders ödevi ve final ödevi.
- Final notu aşağıdaki şekilde hesaplanacaktır:

Bölüm 2, Bölüm sonu sınavı	%20
Bölüm 3, Bölüm sonu sınavı	%20
Bölüm 3, Ders Ödevi 1	%10
Bölüm 4, Bölüm sonu sınavı	%20
Final Ödevi	%30
Toplam	**%100**

- Dersi başarıyla tamamlamak ve katılım belgesi almaya hak kazanmak için ders değerlendirmesinde en az %70 oranında başarılı olmak gerekmektedir.

bilgeiş

İşçi ve İşverenlerin Kapasitelerinin Bilgi ve İletişim Teknolojileri Yoluyla Geliştirilmesi Projesi

Ders Özeti

Programlama, bilgisayar programlarının yazılması, test edilmesi ve bakımının yapılması sürecine verilen isimdir. Bir diğer deyişle programlama, bilgisayarın ya da hesaplama kapasitesi olan bir birimin donanımının çalışmasına yön veren komutlar, kelimeler, süreçler ve aritmetik işlemlerdir. Python ise programlama işleminin gerçekleştirildiği programlama dillerinden bir tanesidir.

Yaşamınızın bir döneminde herhangi bir programlama dili ile az veya çok ilgilendiyseniz, Python adını duymuş olabilirsiniz. Önceden bir programlama dili deneyiminiz hiç olmamışsa dahi, Python adının bir yerlerden kulağınıza çalınmış olma ihtimali bir hayli yüksek. Bu satırları okuyor olduğunuza göre, Python adını en az bir kez duymuş olduğunuzu ve bu şeye karşı içinizde hiç değilse bir merak uyandığını varsayabiliriz.

Peki, en kötü ihtimalle kulak dolgunluğunuz olduğunu varsaydığımız bu şey hakkında acaba neler biliyorsunuz? İşte biz bu ilk bölümde, fazla teknik ayrıntıya kaçmadan, Python hakkında kısa kısa bilgiler vererek Python'ın ne olduğuna ve bununla neler yapabileceğinizi anlatmaya çalışacağız.

Hazırlanan içerik ve ders özeti vasıtasıyla, katılımcıların, temel internet kullanıcısı seviyesinden Python ile başlangıç seviyesinde yazılım geliştirebilen kullanıcı seviyesine çıkarılması planlanmıştır. İçeriğin her bölümü bir önceki bölümünün kavram ve konseptleri üzerine oturtulmuş ve başlı başına verilebilecek bir eğitim paketi halinde sunulmuştur. Bu dersin (Python Programlama-1) tamamlanmasıyla bir sonraki derste, Python Programlama-2'de, detaylarını vereceğimiz kavramlara giriş yapmış olacağız.

Tavsiye Edilen Kaynaklar

- https://www.python.org/
- https://www.python.org/
- https://tr.wikipedia.org/wiki/Python_(programlama_dili)
- http://www.python.tc/python-programlama-giris
- http://www.pythontr.com/makale/python-nedir-235

Visual Design Principles:

Bu proje Avrupa Birliği ve Türkiye Cumhuriyeti tarafından finanse edilmektedir.

1 Görsel Tasarım İlkeleri

Dersin Amacı

Bu dersin amacı katılımcılara temel görsel tasarım ilkeleri hakkında temel bilgiler vererek, bir web sitesi veya bir afiş için ihtiyaca en uygun görsel tasarımı ortaya koymalarını sağlamaktır. Elde edilen bilgiler katılımcıların tasarımda renk kullanımı, renk uyumu, metin ve tipografi ile içeriğin hedef kitleye doğru aktarımı konularında ayrıntılı bilgi sahibi olmalarını sağlayacaktır.

Bilgi ve becerilere ilişkin ön gereksinimler

- Temel bilgisayar becerileri

Önceden alınması gereken ders veya dersler

- Bulunmamaktadır.

Öğrenme çıktıları

Bu dersi tamamladığınızda;

- Temel Görsel Tasarım İlkelerinin neler olduğunu ve bunları tasarımda nasıl kullanabileceğinizi öğreneceksiniz.
- Web sayfası ve diğer dijital materyallerin görsel organizasyonu hakkında bilgi sahibi olacaksınız,
- Web sayfası ve dijital materyallerin hazırlanması için gerekli olan tasarım ipuçları ve iyi uygulama örneklerini kavrayacaksınız,
- Tasarımda renklerin nasıl kullanılması gerektiği hakkında bilgi sahibi olacaksınız,
- İyi ve kötü görsel tasarım örneklerini değerlendirebileceksiniz.

Dersin İçerik Tablosu

BÖLÜM 1: Temel Görsel Tasarım İlkeleri

- Tasarım Nedir?
- Temel Tasarım İlkeleri
- Tasarımda 3'te 1 Kuralı
- Görsel Merkez Kuralı
- Görsel Tasarım ve Arayüz Tasarımı
- İyi Tasarımın 10 Özelliği
- Kullanılabilirlik
- Arayüz Tasarımında Kullanılabilirlik
- Başarılı ve Başarısız Tasarım Örnekleri

Değerlendirmeler

- Bölüm sınavı
- Bölüm Ödevi

bilgeis

İşçi ve İşverenlerin Kapasitelerinin Bilgi ve İletişim Teknolojileri Yoluyla Geliştirilmesi Projesi

Üniversiteler Mahallesi / İhsan Doğramacı Bulvarı 17/B ODTÜ Teknokent 06531 Ankara Türkiye Tel: +90 (312) 287 58 22 - Fax: +90 (312) 287 52 83 - www.bilgeis.net - info@bilgeis.net

İKG PRO İNSAN KAYNAKLARININ GELİŞTİRİLMESİ PROGRAM OTORİTESİ

ODTÜ METU

.projectgroup

ÇSGB

Bu proje Avrupa Birliği ve Türkiye Cumhuriyeti tarafından finanse edilmektedir.

2

BÖLÜM 2: Illustrator'da çizim

- Temel Kavramlar (Renk, Renk Özü, Gölge, Renk Tonu vb.)
- Renk Teorisi
- Sıcak Renk Kullanımı
- Soğuk Renk Kullanımı
- Tek Renkli Tasarım
- Analojik Renklerle Tasarım
- Karşılıklı Renklerle Tasarım
- Yarı Karşılıklı Renklerle Tasarım
- Üçlü Tasarım

Değerlendirmeler

- Bölüm sınavı
- Bölüm Ödevi

BÖLÜM 3: Tasarımda Metin ve Tipografi Kullanımı

- Temel Kavramlar (Font, Yazıyüzü, Tipografi vb.)
- Kelime ve Jargon Kullanımı
- Büyük/Küçük Harf Kullanımı
- Küçük Font Kullanımı
- Karakter Boşluklandırması
- Satır Yüksekliği
- Tekrar Eden Metin Kullanımı
- İçeriğin Yapılandırılarak Kullanımı
- İçeriğin Hizalanması
- Okuma Alışkanlığı
- İçeriğin Bloklar Halinde Sunulması
- Satır Uzunluğunun Belirlenmesi
- Font Seçimi
- Serif Font Kullanımı
- Sans Serif Font Kullanımı
- Dekoratif Font Kullanımı
- Uygun Font Boyutu
- Arka Plan Görsel Seçimi
- Arka Plan Renk Seçimi

Değerlendirmeler

- Bölüm Sınavı
- Bölüm Ödevi

bilgeiş

İşçi ve İşverenlerin Kapasitelerinin Bilgi ve İletişim Teknolojileri Yoluyla Geliştirilmesi Projesi

Dersin önerilen süresi

3 hafta

Katılımcıların tahmini olarak ayırması gereken zaman

Ders Süreleri

- 1.hafta - Bölüm 1: 60 dakika
- 2.hafta - Bölüm 2: 60 dakika

Üniversiteler Mahallesi / İhsan Doğramacı Bulvarı 17/B ODTÜ Teknokent 06531 Ankara Türkiye Tel: +90 (312) 287 58 22 - Fax: +90 (312) 287 52 83 - www.bilgeis.net - info@bilgeis.net

İKG PRO İNSAN KAYNAKLARININ GELİŞTİRİLMESİ PROGRAM OTORİTESİ

ODTÜ METU

.projectgroup

ÇSGB

- 3.hafta - Bölüm 3: 60 dakika

Toplamda **3 saat** ders süresi bulunmaktadır.

Değerlendirme Yöntemleri

Bilgeİş Öğrenme portalinde ders bölümleri boyunca ya da bölüm sonlarında olmak üzere genel olarak 2 şekilde değerlendirilirsiniz.

Biçimlendirici değerlendirme:

- Bu ders yazılım ve yazılımın bölümlerini kullanan interaktif unsurlar içerir.
- Bir kavram, süreç ve yöntem anlatıldıktan sonra, bu yöntemleri sanal bir çevrede, interaktif olarak belirli adımları yerine getirerek uygulayacağınız ekranlar ile karşılaşacaksınız.
- İnteraktif çalışmalar; ekranın belli yerlerine tıklama, temsili komutlara, butonlara ve diğer standart uygulama unsurlarına tıklama, temsili metin kutularına metin yazma, standart sürükleyip bırakma etkileşimleri ve belirli bir yöntem veya eylemi taklit eden bir dizi adım veya daha fazlası olabilir.

Genel değerlendirme:

- Bu dersin bir parçası olan genel değerlendirmeler bölüm ödevleri ve bölüm sınavları olmak üzere iki şekilde yapılacaktır.
- Bu dersin 1. 2. ve 3. Bölümlerinin sonunda yapılması gereken bir ödev bulunur. Ödevler katılımcı sayısına, eğitmenin uygunluğuna ve diğer organizasyon veya teknik kısıtlamalara bağlı olarak iki şekilde değerlendirilebilir:
    - Eğitmenin değerlendirmesi,
    - Diğer katılımcıların değerlendirmesi.
- Final notu aşağıdaki şekilde hesaplanacaktır:

Bölüm 1, Bölüm Sonu Sınavı	%20
Bölüm 1, Bölüm Sonu Ödevi	%10
Bölüm 2, Bölüm Sonu Sınavı	%20
Bölüm 2, Bölüm Sonu Ödevi	%15
Bölüm 3, Bölüm Sonu Sınav	%20
Bölüm 3, Bölüm Sonu Ödevi	%15
Toplam	**%100**

- Dersi başarıyla tamamlamak ve katılım belgesi almaya hak kazanmak için ders değerlendirmesinde en az %70 oranında başarılı olmak gerekmektedir.

Üniversiteler Mahallesi / İhsan Doğramacı Bulvarı 17/B ODTÜ Teknokent 06531 Ankara Türkiye Tel: +90 (312) 287 58 22 - Fax: +90 (312) 287 52 83 - www.bilgeis.net - info@bilgeis.net

Bu proje Avrupa Birliği ve Türkiye Cumhuriyeti tarafından finanse edilmektedir.

4

Ders Özeti

Dersin ilk bölümünde temel görsel tasarım ilkeleri hakkında genel bilgiler verilmektedir. Özellikle bilinmesi gereken temel kavramlardan bahsedilmekte, bu kavramlar üzerinden katılımcıların aynı dili konuşabiliyor olması amaçlanmaktadır. Ayrıca, görsel tasarım ilkelerinin temelini teşkil eden iyi ve kötü tasarım örnekleri anlatılmaktadır. Bu örnekler üzerinden gerek web sayfası gerekse de diğer dijital materyallerin görsel organizasyonunda dikkat edilmesi gereken temel ilkeler detaylandırılmaktadır.

Dersin ikinci bölümünde görsel tasarımın iki temel bileşeninden biri olan renk kullanımı yer verilmektedir. Tasarımda kullanılacak görsellere yönelik renk teorisi, renk modelleri ve renk kullanımında dikkat edilmesi gereken noktalar bu bölümde anlatılmaktadır.

Dersin son bölümünde ise görsel tasarım içerisinde yer alacak metinlerin kullanımı, tipografinin temel elementleri göz önünde tutularak detaylandırılmaktadır. İkinci ve Üçüncü Bölüm sonlarında tasarımda renk, metin ve tipografi kullanımına yönelik iyi ve kötü tasarım örnekleri incelenerek, katılımcıların görsel tasarım konusundaki farkındalıklarının arttırılması sağlanacaktır.

Database Management with MS Access:

Bu proje Avrupa Birliği ve Türkiye Cumhuriyeti tarafından finanse edilmektedir.

1

MS Access ile Veri Tabanı Yönetimi

Dersin Amacı

Bu dersin amacı; varlık-ilişki modeli ve veri tabanı oluşturmak için Ms Access kullanmayı öğrenmektir.

Veri tabanları hayatımızı kolaylaştırır; örneğin şirket iletişim bilgilerini saklamak gibi çeşitli amaçlarla kullanılabilir. Veri tabanları yalnızca veri saklamaz; aynı zamanda pek çok veri üzerinde çalışırken kolaylık sağlamak açısından verileri düzenler. Belirli bir veriyi aramamız gerektiğinde, ne aradığımızı tam olarak bilmesek bile, veri tabanları sayesinde aradığımızı bulmak işimizi kolaylaştırır. Örneğin; yeni iş ortağımız için veri tabanı üzerinde arama yaptığımızda, sadece adresini bilmemiz yeterli olacaktır. Böylelikle adres bilgisi gibi herhangi bir ayrıntı sayesinde aradığımız diğer bilgilere ulaşım kolaylaşmış olacaktır.

Bunun yanı sıra, verileri ön tanımlı bir şekilde sunan formlar, raporlar ve nesneler bulunmaktadır. Verileri bu şekilde yapılandırdığımızda verilerimizi formlara dönüştürebilir ve sonunda da çeşitli raporlandırmalarla veri bütünlüğünü inceleyebiliriz. Örneğin; satış departmanı için bir MS Access veri tabanı yapılandırdığımızda kullanıcılar için oluşturduğumuz veri tabanlarına işlenecek çeşitli formlar düzenleyebilir ve bu formları istediğimiz dönemlerde rapor haline getirebilmekteyiz. Bir kişinin sizden bir veriyi kontrol etmek istediği zaman her defasında o veriyi bulmanız ve bütün hesaplamaları tekrar yapmanız gerektiğini düşünün. MS Access raporları olmadan bu işlem bir kâbusa dönüşürdü. Ayrıca oluşturduğumuz bu raporlar tek seferde oluşturulabilmekte ve ne zaman ihtiyaç duyulursa kullanılabilmektedir.

Bilgi ve Becerilere ilişkin Ön Gereksinimler

- Temel Microsoft Excel becerileri
    - Microsoft Excel üzerinde veri düzenleme
    - Dosyalarla çalışma

Önceden alınması gereken ders veya dersler

Bulunmamaktadır.

Öğrenme çıktıları

Bu dersi tamamladığınızda;

- İlişkisel veri tabanları için temel kuralları göz önünde bulundurarak veri tabanı oluşturma planlaması yapabilecek,
- Microsoft Access uygulamasını kullanarak, veri tabanlarının çoğu kısmını oluşturan farklı veri tabanı nesneleri oluşturabilecek,
- Access tabloları, sorguları, formları ve raporları oluşturmak ve saklamak için gerekli süreçleri uygulayabilecek,

bilgeiş

İşçi ve İşverenlerin Kapasitelerinin Bilgi ve İletişim Teknolojileri Yoluyla Geliştirilmesi Projesi

Üniversiteler Mahallesi / İhsan Doğramacı Bulvarı 17/B ODTÜ Teknokent 06531 Ankara Türkiye Tel: +90 (312) 287 58 22 - Fax: +90 (312) 287 52 83 - www.bilgeis.net - info@bilgeis.net

İKG PRO İNSAN KAYNAKLARININ GELİŞTİRİLMESİ PROGRAM OTORİTESİ

ODTÜ METU

.projectgroup

ÇSGB

- MS Access'te oluşturulan mevcut veri tabanlarını kullanabileceksiniz.

Dersin İçerik Tablosu

BÖLÜM 1: Verilerin düzenlenmesi için varlık-ilişki modelinin planlanması

- Ders Tanımı – Veri tabanlarına neden ihtiyaç duyarız?
- Varlık-ilişki modeli ve Bilgi tutarlılığı

Değerlendirmeler

- Bölüm sınavı

BÖLÜM 2: Tablo oluşturma

- Tablo oluşturma; veri türleri ve anahtarlar
- Veri değiştirme
- Tablolar arasındaki ilişkiler

Değerlendirmeler

- Bölüm Ödevi
- Bölüm sınavı

BÖLÜM 3: Sorgu, form ve rapor oluşturma

- Sorgu oluşturma; verileri sıralama ve ölçüt kullanma
- Form oluşturma; veri kaynağı, form türleri ve nesneler
- Rapor oluşturma; veri kaynağı, rapor bölümleri ve yazdırma

Değerlendirmeler

- Bölüm Ödevi
- Bölüm sınavı
- Final Ödevi

Dersin önerilen süresi

3 hafta

Katılımcıların tahmini olarak ayırması gereken zaman

Ders Süreleri

- 1.Hafta – Bölüm 1: 60 dakika
- 2.Hafta – Bölüm 2: 60 dakika
- 2.Hafta – Bölüm 3: 60 dakika

Toplam **3** ders bulunmaktadır.

Değerlendirme Yöntemleri

BİLGEİŞ Öğrenme portalinde ders bölümleri boyunca ya da bölüm sonlarında olmak üzere genel olarak 2 şekilde değerlendirilirsiniz.

Biçimlendirici değerlendirme:

- Her bölüm için katılımcılara geri bildirim sağlayan etkileşimli uygulamalar olacaktır. Konseptin veya prosedürün video sunumu sonrasında, katılımcı etkileşimler aracılığıyla bu adımları uygulayacaktır.
- Uygulama, ortamın temsili bir versiyonu olup, katılımcılara olumsuz veya olumlu geri bildirim sağlayacaktır.

Genel değerlendirme:

- Bu dersin bir parçası olan genel değerlendirmeler iki şekilde yapılır: Bölüm sonu sınavları ile ödevler (Bölüm 2, Bölüm 3 ve Final ödevleri)

- Final notu aşağıdaki şekilde hesaplanacaktır:

Bölüm 1, Bölüm sınavı	% 15
Bölüm 2, Bölüm sınavı	% 15
Bölüm 2, Ödev-1	% 10
Bölüm 3, Bölüm sınavı	% 15
Bölüm 3, Ödev-2	% 15
Final Ödevi	%30
Toplam	**%100**

- Dersi başarıyla tamamlamak ve katılım belgesi almaya hak kazanmak için ders değerlendirmesinde en az %70 oranında başarılı olmak gerekmektedir.

Ders Özeti

Veri tabanınızı planlamadan önce, bilmeniz gereken iki ana tür bulunur: ilişkisel (Access'te oluşturulan bir veri tabanı gibi) ve ilişkisel olmayan (veriler arasında hiçbir ilişki bulunmayan, son derece basit veri tabanları; basit Excel tabloları gibi). Access'te ilişkisel bir veri tabanı oluşturmak için, verilerin düzenlenmesi amacıyla kullanılan Varlık İlişki (ER) modelini bilmeniz gerekir. Bunun yanı sıra, veri tabanı tutarlılığını korumak için, bilgi tutarlılığına zorla özelliği son derece kullanışlıdır.

Temel Access nesneleri tablolardır. Bu tablolar, veri düzenlemesi ve gerçek verilerin saklanması için kullanılır. Gerekli alanları hazırlamak için (sütunlar bilgi parçalarını temsil eder) tabloları Tasarım Görünümü modunda düzenleriz. Her kaydı benzersiz bir şekilde temsil eden değerleri saklamak için bir alan, yani birincil anahtar kullanabilirsiniz. Birincil anahtar, eşit anlam taşıyan iki alanı bağlamak için tablolar arasında ilişki kurarken çok önemli bir role sahiptir. Bu sayede herhangi bir tablodan kayıt belirlerken hata yapma ihtimali ortadan kaldırılır.

Access özellikleri kullanılarak büyük orandaki veriler kolayca düzenlenebilir, aranabilir ve değiştirilebilir.

Tabloların yanı sıra önemli olan nesneler sorgular, formlar ve raporlardır. Sorgular, belirleyebileceğiniz bazı ölçütlerle, yalnızca sonuç olarak karşınıza çıkmasını istediğiniz verileri

Bu proje Avrupa Birliği ve Türkiye Cumhuriyeti tarafından finanse edilmektedir.

getirir; örneğin, tablodan sadece 21 yaşından büyük olanları ayıklamak istediğinizde sorgu yalnızca bu ölçüte göre sonuçları karşınıza getirir. Raporlar da buna benzerdir; ama asıl olarak sunum ve çoğunlukla baskı için kullanılacak tabloları ve tablo bölümlerini düzenlemek için oluşturulur. Bunun yanı sıra veri tabanı yönetimi için kullanıcı dostu bir ara yüz oluşturmak istediğinizde, Form Tasarımı veya Access sihirbazını kullanarak kolayca form oluşturabilirsiniz. Son kullanıcılar için veya sadece veri tabanı performansını geliştirmek için dahi oldukça kullanışlıdır.

Tavsiye Edilen Kaynaklar

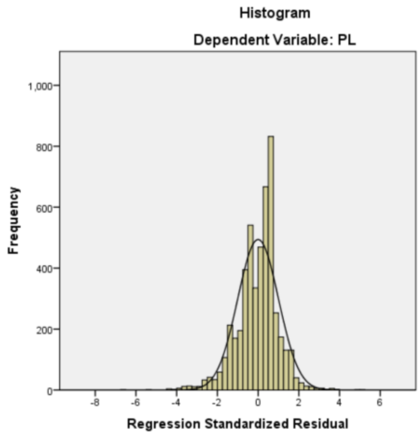
https://products.office.com/tr-TR/access

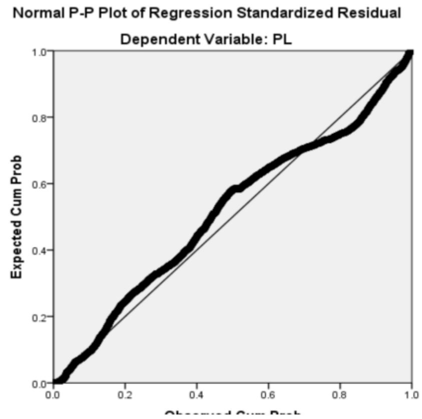
https://products.office.com/tr-tr/home

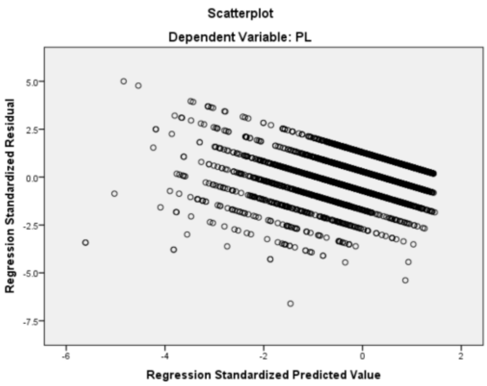
Üniversiteler Mahallesi / İhsan Doğramacı Bulvarı 17/B ODTÜ Teknokent 06531 Ankara Türkiye Tel: +90 (312) 287 58 22 - Fax: +90 (312) 287 52 83 - www.bilgeis.net - info@bilgeis.net

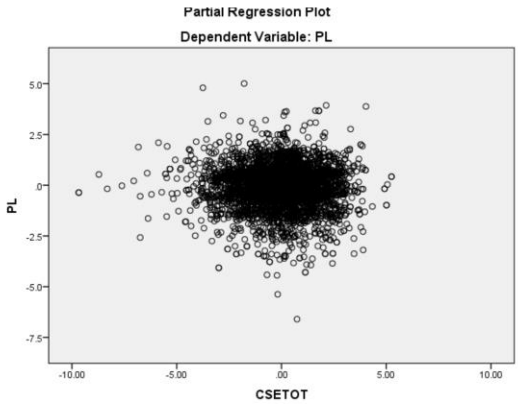
D. Multiple Linear Regression Assumptions

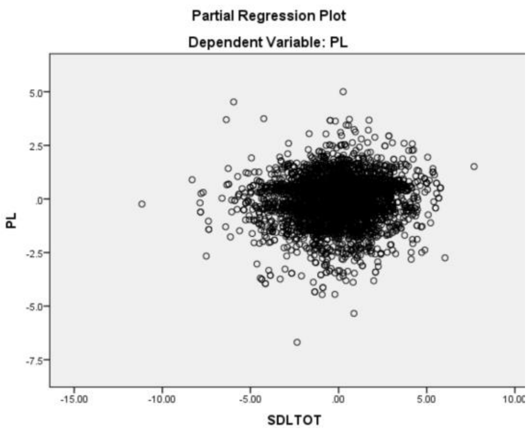
Online Learning Readiness, Course Satisfaction, and Perceived Learning:

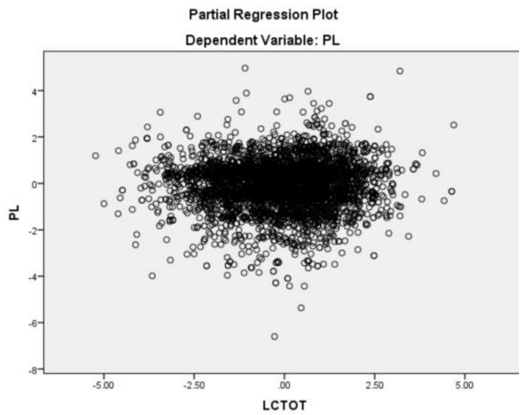


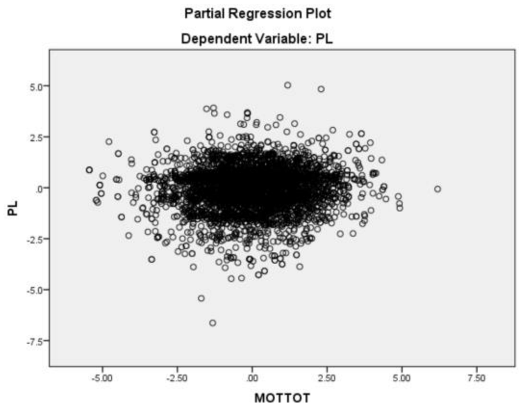


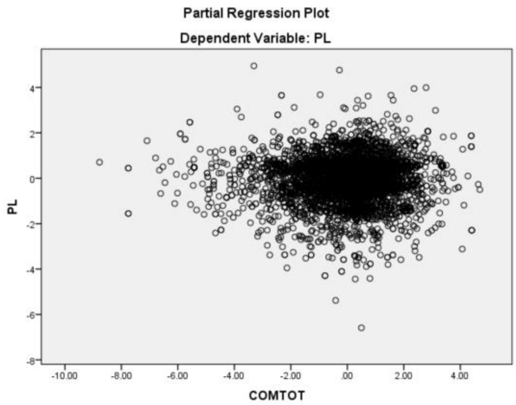


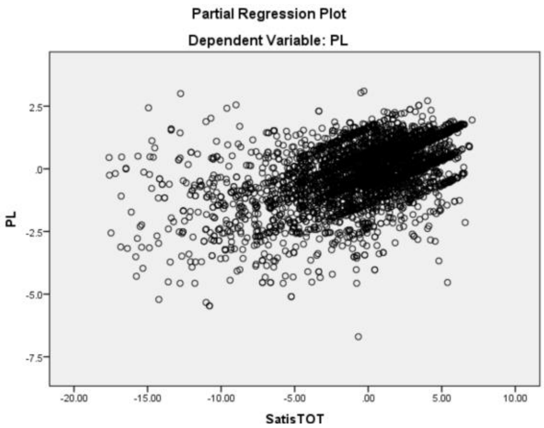




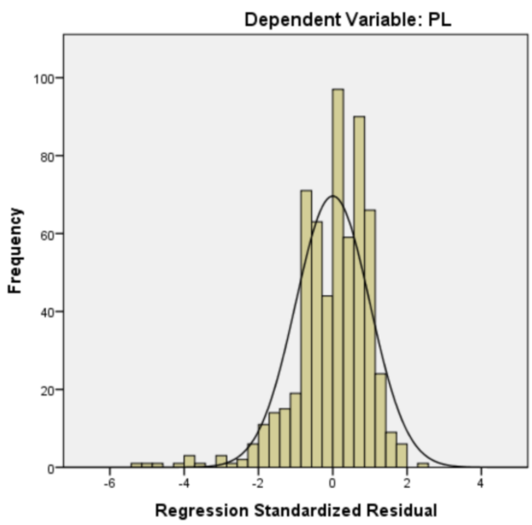


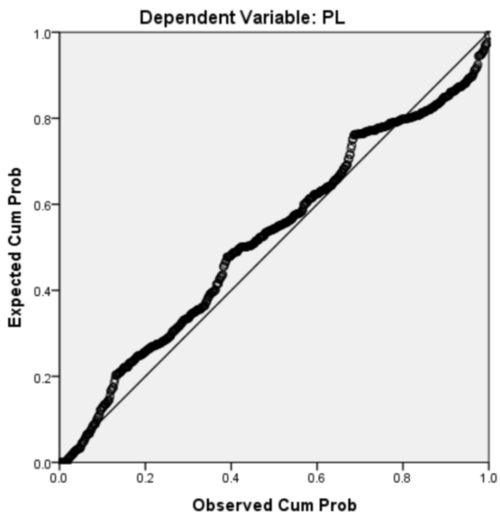


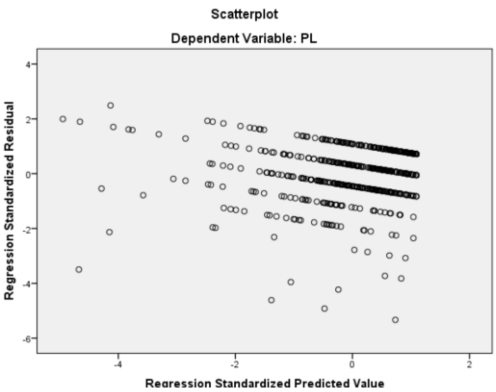


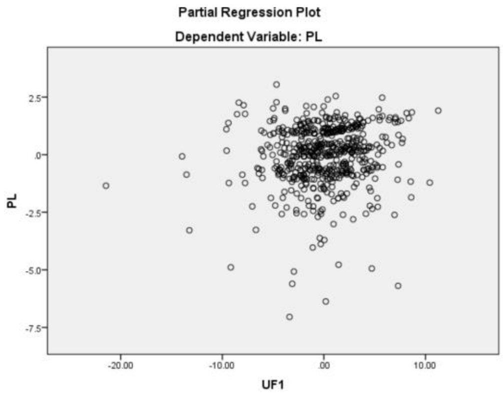


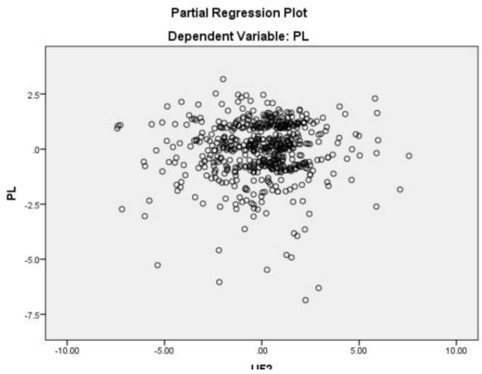
Perceived Usability and Perceived Learning:

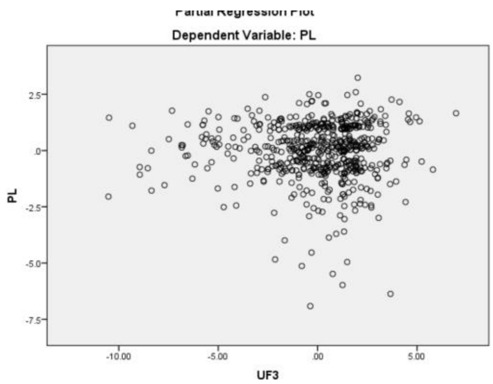


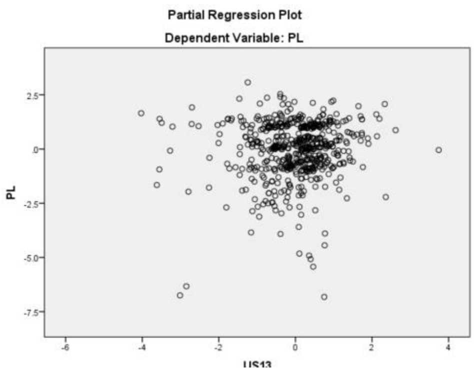



Scatterplot
Dependent Variable: PL
Regression Standardized Residual
Regression Standardized Predicted Value

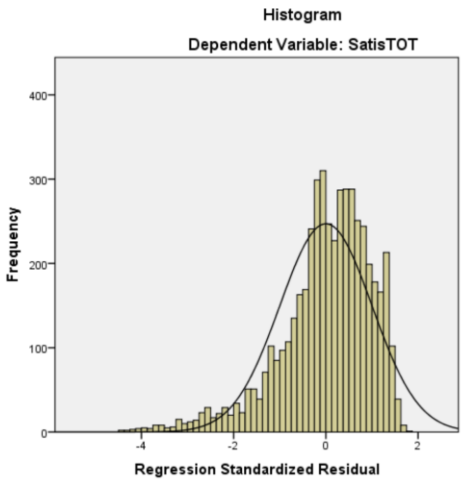

Partial Regression Plot
Dependent Variable: PL
PL
UF1

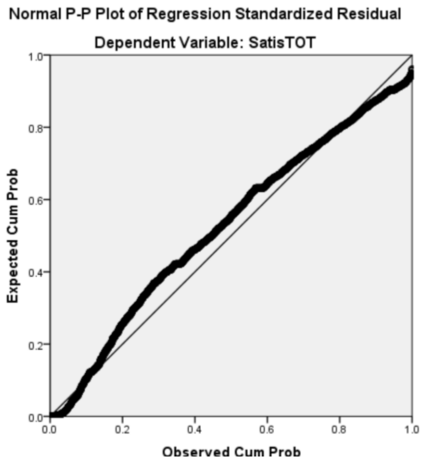

Partial Regression Plot
Dependent Variable: PL
PL

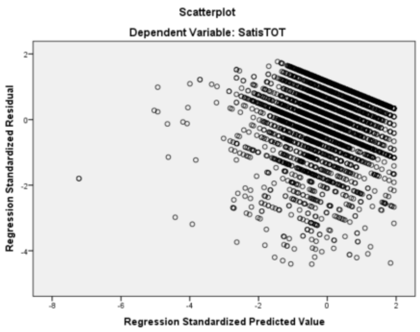

Dependent Variable: PL
PL
UF3

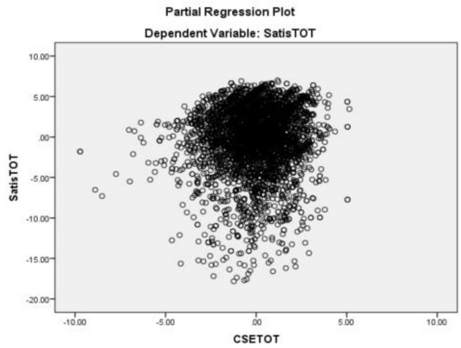

Partial Regression Plot
Dependent Variable: PL
PL

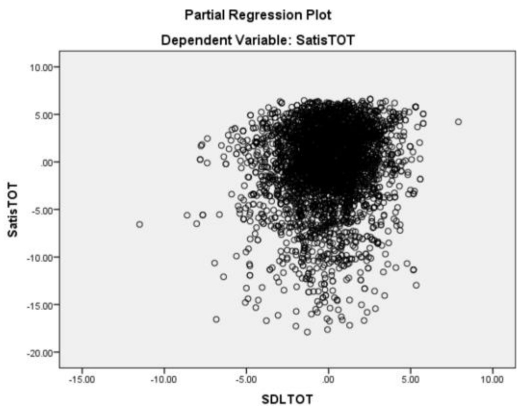
Online Learning Readiness and Course Satisfaction:

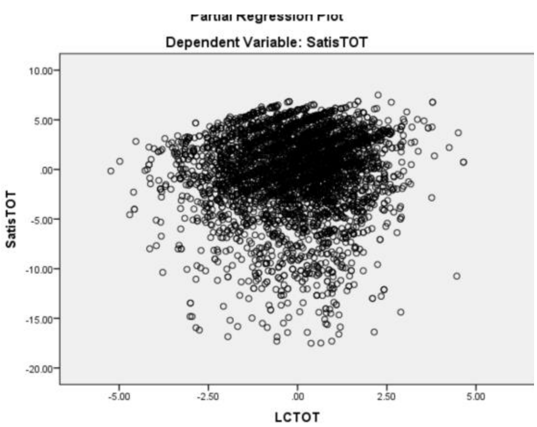


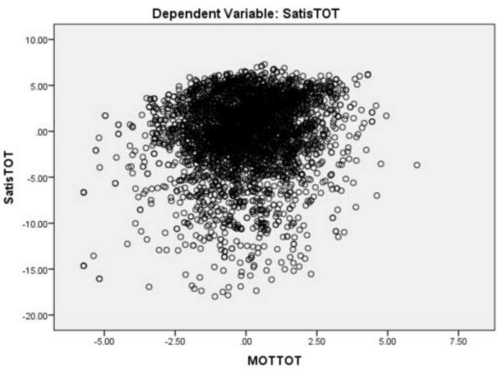


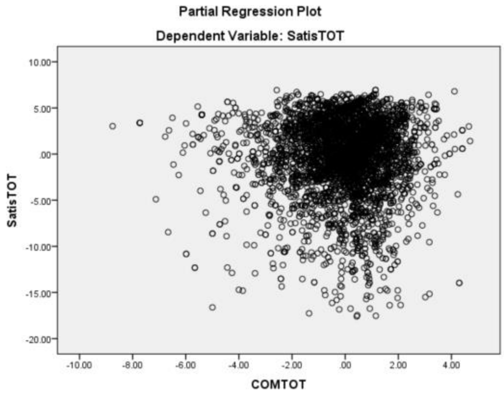









Dependent Variable: SatisTOT
SatisTOT
MOTTOT
10.00
5.00
.00
-5.00
-10.00
-15.00
-20.00
-5.00
-2.50
.00
2.50
5.00
7.50


Partial Regression Plot
Dependent Variable: SatisTOT
SatisTOT
COMTOT
10.00
5.00
.00
-5.00
-10.00
-15.00
-20.00
-10.00
-8.00
-6.00
-4.00
-2.00
.00
2.00
4.00

E. Ethics Approval Form

UYGULAMALI ETİK ARAŞTIRMA MERKEZİ
APPLIED ETHICS RESEARCH CENTER

ORTA DOĞU TEKNİK ÜNİVERSİTESİ
MIDDLE EAST TECHNICAL UNIVERSITY

DUMLUPINAR BULVARI 06800
ÇANKAYA ANKARA/TURKEY
T: +90 312 210 22 91
F: +90 312 210 79 59
ueam@metu.edu.tr
www.ueam.metu.edu.tr

Sayı: 28620816 / 338

06 Haziran 2018

Konu: Değerlendirme Sonucu

Gönderen: ODTÜ İnsan Araştırmaları Etik Kurulu (İAEK)

İlgi: İnsan Araştırmaları Etik Kurulu Başvurusu

Sayın Prof.Dr. Kürşat ÇAĞILTAY

Danışmanlığını yaptığınız doktora öğrencisi Berkan ÇELİK'in **"Yetişkinlerin KAÇD'lere Kayıt Olma ve Ders Alma Dinamikleri"** başlıklı araştırması İnsan Araştırmaları Etik Kurulu tarafından uygun görülerek gerekli onay **2018-EGT-086** protokol numarası ile **01.08.2018 - 30.12.2019** tarihleri arasında geçerli olmak üzere verilmiştir.

Bilgilerinize saygılarımla sunarım.

Prof. Dr. Ş. Halil TURAN
Başkan V

Prof. Dr. Ayhan SOL
Üye

Prof. Dr. Ayhan Gürbüz DEMİR
Üye

Doç. Dr. Yaşar KONDAKÇI
Üye

Doç. Dr. Zana ÇITAK
Üye

Doç. Dr. Emre SELÇUK
Üye

Dr. Öğr. Üyesi Pınar KAYGAN
Üye

F. Permission for Measurement Instruments

Konu:	Re: T-CSUQ-SV Kullanım İzni hk.
Gönderen:	"Oguzhan Erdinc" <erdinc.oguzhan@gmail.com>
Tarih:	7 Ağustos 2017, Pazartesi, 10:16 pm
Alıcı:	"cberkan@metu.edu.tr" <cberkan@metu.edu.tr>
Öncelik:	Normal
Seçenekler:	Tüm Başlıkları Göster | Yazdırılabilir Şekilde Göster | Bunu dosya olarak indir

```
Merhabalar,
Sordugunuz icin tesekkurler, Anket kullanima aciktir, uyarlama makalesine referans
vererek tezinizde kullanabilirsiniz.

Basarilar dilerim.

Oğuzhan

> On Aug 7, 2017, at 3:35 PM, cberkan@metu.edu.tr wrote:
>
> Merhabalar Erdinç hocam,
>
> Ben Orta Doğu Teknik Üniversitesi Bilgisayar ve Öğretim Teknolojileri
> Eğitimi Bölümü araştırma görevlisi Berkan Çelik. “Adult Learners'
> Enrollment and Course Taking Dynamics in MOOCs- Yetişkinlerin KAÇD'lere
> Kayıt Olma ve Ders Alma Dinamikleri” adlı doktora tezim kapsamında
> bilgeis.net portali üzerinden ücretsiz çevrim içi ders alacak olan
> katılımcıların portale yönelik kullanılabilirlik algılarını ölçmek için
> "TÜRKÇE-COMPUTER SYSTEM USABILITY QUESTIONNAIRE SHORT VERSION
> (T-CSUQ-SV)" ölçme aracınızı tezimde kullanmak için izninizi almak istiyorum.
>
> Tezimin kısa açıklamasını bu mailin alt kısmında bulabilirsiniz.
>
> Teşekkür ederim,
> Saygılarımla,
>
> Araş. Gör. Berkan Çelik
> Orta Doğu Teknik Üniversitesi
> Bilgisayar ve Öğretim Teknolojileri Eğitimi Bölümü
> 2. Kat C110
> Tel: 0312 210 75 24
```

Konu: Re: Hazırbulunuşluk Ölçeği Kullanım İzni hk.
Gönderen: Halil Yurdugül <yurdugul@hacettepe.edu.tr>
Tarih: 2 Ağustos 2017, Çarşamba, 5:37 pm
Alıcı: cberkan@metu.edu.tr
Öncelik: Normal
Seçenekler: Tüm Başlıkları Göster | Yazdırılabilir Şekilde Göster | Bunu dosya olarak indir | HTML olarak göster

Sevgili Berkan,
Ölçeği çalışmalarınızda kullanabilirsiniz.

Çalışmalarınızda kolaylıklar diliyorum.

Dr. Halil Yurdugül
2 Ağu 2017 16:15 tarihinde <cberkan@metu.edu.tr> yazdı:

> Merhabalar hocam,
>
> Ben ODTÜ BÖTE’den araştırma görevlisi Berkan Çelik. “Adult Learners'
> Enrollment and Course Taking Dynamics in MOOCs- Yetişkinlerin KAÇD'lere
> Kayıt Olma ve Ders Alma Dinamikleri” adlı doktora tezim kapsamında
> bilgeis.net portali üzerinden ücretsiz çevrim içi ders alacak olan
> katılımcıların Kitlesel Açık Çevrim içi Dersler’e yönelik
> hazırbulunuşluklarını ölçmek için Eğitim ve Bilim dergisinde 2013 yılında
> yayınlanan “Çevrimiçi Öğrenme Hazır Bulunuşluluk Ölçeği: Geçerlik ve
> Güvenirlik Çalışması” makalenizdeki ölçeği tezimde kullanmak istiyorum.
> Ölçeği kullanabilmek için izninizi almak istiyorum. Tezimin kısa
> açıklamasını bu mailin alt kısmına da ekledim.
>
> Teşekkür ederim,
> Saygılarımla,
>
> Araş. Gör. Berkan Çelik
> Orta Doğu Teknik Üniversitesi
> Bilgisayar ve Öğretim Teknolojileri Eğitimi Bölümü
> 2. Kat C110
> Tel: 0312 210 75 24
>

Mesaj Listesi | Okunmamış | Sil   Önceki | Sonraki

Konu: Re: Öğretim Materyaline İlişkin Motivasyon Ölçeği (ÖMMÖ) Kullanım İzni hk.
Gönderen: "serkan dincer" <dincerserkan@gmail.com>
Tarih: 2 Ağustos 2017, Çarşamba, 9:27 pm
Alıcı: cberkan@metu.edu.tr
Öncelik: Normal
Seçenekler: Tüm Başlıkları Göster | Yazdırılabilir Şekilde Göster | Bunu dosya olarak indir | HTML olarak göster

Değerli Çelik

Etik kurallara uyarak kullanabilirsiniz saygılarımla

2 Ağu 2017 Çar, saat 17:09 tarihinde <cberkan@metu.edu.tr> şunu yazdı:

> Merhabalar hocam,
>
> Ben ODTÜ BÖTE'den araştırma görevlisi Berkan Çelik. "Adult Learners'
> Enrollment and Course Taking Dynamics in MOOCs- Yetişkinlerin KAÇD'lere
> Kayıt Olma ve Ders Alma Dinamikleri" adlı doktora tezim kapsamında
> bilgeis.net portali üzerinden ücretsiz çevrim içi ders alacak olan
> katılımcıların Kitlesel Açık Çevrim içi Dersler'e yönelik
> memnuniyet durumlarını ölçmek için İlköğretim Online dergisinde 2016
> yılında yayınlanan "Öğretim Materyali'ne İlişkin Motivasyon Ölçeği (ÖMMÖ)
> Türkçe Uyarlama Çalışması" makalenizdeki ölçeğin memnuniyet boyutunu
> tezimde kullanmak istiyorum. Ölçeği kullanabilmek için izninizi almak
> istiyorum. Tezimin kısa açıklamasını bu mailin alt kısmına da ekledim.
>
> Teşekkür ederim,
> Saygılarımla,
>
> Araş. Gör. Berkan Çelik
> Orta Doğu Teknik Üniversitesi
> Bilgisayar ve Öğretim Teknolojileri Eğitimi Bölümü
> 2. Kat C110
> Tel: 0312 210 75 24
>

G. Qualitative Quotations in Turkish Language

pdMOOC Enrollment Motivations of Non-starters

Learning a new topic:

“Zor insanlarla baş etme stratejilerini doğru öğrenmek.” [L-NS 13]

“Programlama dillerine başlamak için Python dilini tercih ettim. Bu şekilde Python dilinin ve genel kodlamanın mantığını öğrenerek program üretebilmeyi planlıyorum.” [L-NS 97]

Personal development:

“İnsanlarla baş etme mekanizmalarımı güçlendirerek sağlıklı iletişimler kurmak için.” [L-NS 48]

“Temel ve kısmen kolay programlama olarak anlatılan Python’ı öğrenmek ve kendimi geliştirmek için kaydolmuştum.” [L-NS 94]

Solving work life problems:

“İş hayatımda insanlarla iletişimde daha iyi bir seviyeye çıkmak bir de zor bulduğum insanlarla baş edebilmek istiyorum. Buna yararlı olacağı umuduyla dersi almak istiyorum.” [L-NS 40]

“İş hayatında özellikle kadın yöneticilerin zor insanlar olduğunu düşünüyorum. Bu konu hakkında çözüm yolu sunan bir eğitim olduğunu düşündüğüm için kayıt oldum…” [L-NS 57]

“İletişim sıkıntılarımı yenmeyi amaçlıyorum. Memur olmamız sebebiyle Türkiye'nin her yerinde her türlü insanla muhatap oluyoruz. Kültürel olarak da farklılıklar olunca, iletişim sıkıntısı yaşamamak mümkün değil.” [L-NS 64]

Professional development:

“Bir okul öncesi öğretmeniyim o yüzden mesleki gelişimime katkı sağkayacağını düşündüm.” [L-NS 55]

“Bir İç Mimar olarak görsel tasarım ilkelerine hakim olmam gerektiğini düşünerek bu derse kaydoldum. Tasarım ilkelerini kendi tasarımlarımda kullanırken emin olarak kullanmayı düşünerek bu derse kaydolmuştum.” [L-NS 164]

“Kendimi iş alanımda geliştirmek için” [L-NS 209]

“İş ve kariyer anlamında kendime katkı sağlamak” [L-NS 218]

Increasing current knowledge:

“Grafik tasarımı eğitiminde yüksek lisans yapıyorum ve alana dair daha yeterli olmak için aldım.” [L-NS 188]

“İlgimi çekiyor, reklam ajansında staj yapıyorum. Bilgi haznemi genişletmek için bu derse kaydoldum.” [L-NS 195]

“Web tasarımcıyım bu konuda eksiklerim olduğunu düşünüyorum aynı zamanda sertıfika almak istiyorum.” [L-NS 199]

Solving daily life problems:

“Gerek iş hayatında gerek gündelik hayatta zor insanlarla baş etmek oldukça çaba isteyen bir durum. Bu eforu minimuma indirip zor insanlarla baş etmek ve kalan eforumu hayatıma yönlendirmek için bu derse kaydoldum.” [L-NS 5]

“Günlük hayatımı kolaylaştıracağına inandığım için bu dersi aldım. Günlük hayatımda zor insanlarla karşılaştığımda nasıl davranmam gerektiği konusunda bilgi edinmeyi bekliyorum.” [L-NS 33]

“Bilgisayar, İnternet gibi ortamlarda güvenli olarak işlemler yapabilmeyi, sanal ortamlarda herhangi bir olumsuzlukla karşılaşmamak veye karşılaşırsam neler yapabilirim diye öğrenmek istedim.” [L-NS 200]

Job relevance:

“Özel anaokulu kreş müdüresiyim çalışan ve veliler ile diyalog halindeyim, zaman zaman zor insanlarla karşı karşıya kalmaktayım. Çözüm önerilerini öğrenmek istiyorum.” [L-NS 15]

“İK uzmanıyım ve birçok zor insanla baş etmek zorundayım.” [L-NS 31]

“İşim gereği afiş, broşür tasarlamam söz konusu oldu. Yardımcı olacağını düşündüğüm için kaydoldum.” [L-NS 168]

“Bilgisayar alanında çalışıyorum…” [L-NS 177]

Interest in the topic:

“Siber güvenlik alanına ilgi duyduğum için Python progrmalama 1 dersini almak istedim.” [L-NS 78]

“Programcılığa ilgim olduğu için kayıt oldum. Bu dersten beklentim ise iş dallarında Python’ı etkin kullanabilmektir.” [L-NS 139]

“Python programlama ön bilgim var. İlgi ve uzmanlık alanıma girmesi nedeniyle kayıt oldum… I have a programming background in Python. I registered because of my interest and expertise .” [L-NS 161]

Perceiving the course useful for work:

“Çalışma ortamım çok stresli ve sorunlu insanlar mevcut. Bana faydalı olacağını düşünüyorum.” [L-NS 17]

“Satış ve pazarlama işinde olduğum için işim gereği faydalı olacağını düşünmüşümdür.” [L-NS 26]

“Ben teknoloji ve tasarım öğretmeniyim. Dersime faydalı olacağını düşündüğüm için.” [L-NS 174]

pdMOOC Enrollment Motivations of Non-completers

Learning a new topic:

“İnsanlarla sağlıklı iletişim kurabilmeyi öğrenmek ve zor kişiliklerle de sinirlenmeden etkileyici ikna edici konuşma gerçekleştirebilmek için.” [L-NC 17]

“Zor insanlarla nasıl baş edildiğini öğrenebilmek ve bunun sertifikasını alabilmek için” [L-NC 22]

“Python programlama dilini ogrenmek icin…” [L-NC 37]

“İnternette görsel paylaşım yaptığımda göze hoş görünmesini sağlamak için.” [L-NC 159]

“Görsel tasarım hakkında bilgi sahibi olmak istedim…” [L-NC 160]

“Genel anlamda veritabanları hakkında farklı bilgiler edinme.” [L-NC 185]

Increasing current knowledge:

“Katıldığım yapay öğrenme yaz okulunda yaptığımız bazı uygulamalarda zorlandım ve Python Programlamayı daha iyi öğrenmem gerektiğine karar verdim.” [L-NC 66]

“Birçok programın dili olduğu ve temel bir programlama dili olduğu için Python dersine kayıt oldum. Var olan bilgimi artttırmak istiyorum.” [L-NC 68]

“Çünkü kayıt olduğum zamanlarda SQL programlamasını öğreniyordum, mevcut bilgimi arttırmak ve farklı alanlarda bilgim olsun diye kaydoldum.” [L-NC 142]

Interest in the topic:

“Çok ilgi duyduğum bir alan. Özellikle yöneticilik yaptığım için çalışmak zorunda kaldığım zor insanlarla profesyonel iletişim kurmak istiyorum.” [L-NC 10]

“…Hem kendimi farklı bir alanda geliştirmek hem de ilgim olan bir alanda çalışmalar yapmak için bu programı [Python] öğrenmek için kaydoldum.” [L-NC 41]

“Ben yazılımı seviyorum bir şeyleri sıfırdan yapmak beni motive ediyor mutlu ediyor daha önce web tasarım kursu aldım ve bitirdim. Onu daha ileriye taşımak için algoritma ve yazılımı öğrenmek istedim.” [L-NC 78]

“Görsel tasarıma ilgi duyduğum için.” [L-NC 172]

“Görsel tasarıma ilgi duyuyorum, lisans eğitimi aldığım mesleğimle ilgili gerçekleştirmek istediğim fikirlerim var, bu konuda bana faydalı olacağını düşünüyorum.” [L-NC 174]

“MS Access ile ilgileniyorum.” [L-NC 176]

Personal Development:

“Ben insanlarla diyaloglarimi geliştirmek istiyorum. Ayrıca eğitime ve kişisel gelişime çok önem veriyorum…” [L-NC 30]

“Kendimi farklı yönlerden geliştirmek amacıyla kaydoldum.” [L-NC 69]

“I signed up to improve myself in different ways.” [L-NC 69]

“Yeteneklerimi geliştirmek, yeni şeyler öğrenmek istiyordum.” [L-NC 170]

Curiosity:

“…Hem merak ettim hem de faydalı olabilir diye düşünmüştüm.” [L-NC 31]

“Programlama konusu ilgimi çekmişti. Nasıl yapılıyor merak ettim bu yüzden derse kaydoldum. Beklentim merakımı gidermekti.” [L-NC 51]

“Tamamıyla kişisel meraktan dolayı derslere katıldım.” [L-NC 62]

Job relevance:

“İşinde insanlarla iletişim kuran herkesin alması gereken bir eğitim. Yetişkin eğitimleri veriyorum. Bu ders benim için önemli." [L-NC 1]

“Herkes Python önemli diyor ben de iş alanımla ilgili olduğu için temel bilgi edinmek istedim.” [L-NC 38]

“Yayıncılık yapıyorum ve tasarıma ilgi duyuyorum. Yaptığım işle ilgisi olacağını düşündüm.” [L-NC 157]

Perceiving the course useful for work:

“Mesleğim (öğretmenlik) gereği faydalı olacağını düşündüğüm için kayıt yaptırmıştım.” [L-NC 5]

“Infaz ve koruma memuruyum mahkumlar ile ilişkilerimi daha başarılı hale getirmem de faydası olacağını düşündüm.” [L-NC 8]

“MS Access ile ilgileniyorum… Kendimi geliştirmek istiyorum bu konuda, hatta belki şirketteki iş yükümü hafifletecek çözümlere de sayenizde ulaşabilirim diye umuyorum.” [L-NC 175]

Non-starters’ Reasons for Not Starting the pdMOOCs

Learner Related Time Issues:

Lack of time:

“Zaman bulamadım.” [L-NS 27]

“Almak istiyorum fakat şuanlık zamanım yok. Zamanım olduğu ilk fırsatta Bilgeİş Öğrenme Portalı üzerindeki derslerden faydalanmak istiyorum.” [L-NS 33]

“Zamanım çok az yoğunluktan. Bana hatırlatma veya linkler gelmesini isterim günlük düzenli temizce ilerlemek için.” [L-NS 47]

“Henüz vakit bulamadım.” [L-NS 59]

Lack of time due to work load/activities:

“Artan iş yoğunluğu nedeniyle bir süredir kayıt olduğum derslere zaman ayıramıyorum.” [L-NS 86]

“İşlerimin yoğunluğu dolayısı ile çok istememe rağmen zaman ayıramadım.” [L-NS 88]

“İş yoğunluğum nedeniyle alamadım, ama uygun bir zamanda almayı planlıyorum.” [L-NS 97]

“Oldukça yoğun bir iş tempom bulunmakta ve sene sonunda ise daha rahat bir çalışma ortamına dönmekteyim…” [L-NS 100]

Lack of time due to educational activities:

“Kendi üniversitemdeki ders yoğunluğundan dolayı vaktim olmadı.” [L-NS 63]

“Büyük bir yoğunluktan dolayı derslere giremediğimden, tez yazdığımdan dolayı maalesef henüz başlayamadım. Fakat en kısa sürede derse girişimi yapacağım.” [L-NS 68]

“Elektrik-Elektronik Mühendisliği okuduğum için Python Programlamaya ilgi duyup, vakit ayırmak istedim fakat yoğun bir sene geçirdiğim için vakit ayıramadım.” [L-NS 81]

“Merhabalar, tamamen benden kaynaklanan sorun yüzünden. Doktora tez aşamasındayım ve ikisini beraber yürütürüm sandım ama olmadı.” [L-NS 93]

“Derse kayıt olduktan sonra yoğun bir şekilde sınavlarım ve ödevlerim olduğu için derse kayıt olduğum halde derse başlayamadım.” [L-NS 110]

Lack of time time due to daily activities:

“Kayıt işlemini telefonla gerçekleştirdim ve günlük hayat yoğunluğum sebebiyle hemen başlayamadım…” [L-NS 2]

“Daha meşgul olmaya başladığımdan dersi almak için uygun vakti bulamadım.” [L-NS 5]

“İnternet ortamında ve belli bir disiplin gerektirmeyen online derslerde, yaşantımdaki yoğunluk dersi aldığını unutmasına bile sebep olabiliyor. Mailinizle hatırladım.” [L-NS 72]

“Maalesef çok tempolu bir dönemden geçtim.” [L-NS 77]

Learner Related General Issues:

Forgetting that s/he registered for the course:

“Unuttum, maille hatırlatmanızı isterdim” [L-NS 9]

“Kendimle daha fazla meşguldüm … Kayıt olduğum bu ders aklımdan çıktı.” [L-NS 154]

“Kayıt yaptırdığımı unuttum.” [L-NS 168]

“Yeni bir işe girdim ve işlerim çok yoğun olduğundan eğitimleri tamamen unuttum...” [L-NS 175]

Insufficient knowledge on MOOCs:

“Çünkü başlama tarihini hatırlatan herhangi bir bildirim gelmediğinden ben dersin tarihlerini unuttum.” [L-NS 83]

“Dersin başladığına dair bir bildirim gelmedi. Dersi takip edeceğim link hakkında bir bilgi alamadım. Derslerin başladığını bile bu maille öğrendim.” [L-NS 156]

Needing reminder notifications:

“Sayfanızı rastlantı eseri buldum tekrar bulma konusunda zorlandım keşke derse kayıt olduktan sonra mail adresine bir bağlantı yollansa.” [L-NS 49]

“Yoğunluktan ders başlangıç tarihini unutmuşum. Hatırlatıcı sms, mail ulaşmadığı için derslere katılım gösteremedim.” [L-NS 165]

“Dersle ilgili daha sonra hatırlatma epostası almadım ve bu dersi aldığımı günlük yaşamdaki işlerimin yoğunluğundan dolayı tamamen unuttum.” [L-NS 188]

Health problems:

“Geçirdiğim bir kaza sonucu uzun süredir yaralarımla uğraşıyorum ve İnternet’e giremiyorum, şans eseri şimdi gelen maile baktığımda fark ettim.” [L-NS 3]

“Rahatsızlığım nedeniyle başlayamadım. Derse katılım sağlayacağım.” [L-NS 17]

“Sağlık sorunları nedenleri ile.” [L-NS 129]

Already knowing the course content:

“Psikolojiye karşı ilgim var ve bununla ilgili İnternet’te birçok yazı okudum, kitap okudum. Zor İnsanlarla Baş Etme dersine psikolojiye olan ilgim ile kayıt oldum fakat bilmediğim çokta farklı bir şey olmadığı için devam etme isteğim olmadı. Ders kötü değil hiç bilgisi olmayan birisi için faydalı ama benim için yeni bir bilgi yoktu.” [L-NS 14]

“Okulda Python eğitimi aldım.” [L-NS 85]

Learner Related Technical Issues:

No access to Internet:

“İnternetim olmadığından katılamadım.” [L-NS 67]

“Öğrenci evimde İnternet olmadığı için yazın stajdan sonra ailemin evinde dersleri almaya devam edeceğim.” [L-NS 89]

“Öğrenciyim, yurtta kalıyorum ve yurtta İnternet yok.” [L-NS 105]

“Vaktim olmadi bir de suan bulundugum evde net yok” [L-NS 127]

No access to a computer:

“Son aldığım dersten bu yana bilgisayara erişimim yoktu.” [L-NS 95]

“… iş dışında kişisel bir bilgisayar almayı planlıyorum.” [L-NS 100]

“Şu anda yurt dışındayım ve bilgisayarım yanımda değil.” [L-NS 160]

Internet connection problems:

“İnternet bağlantısında sorunlar yaşamaktayım bu yüzden eğitime başlayamıyorum. En kısa sürede bu sorunu çözüp eğitime başlayacağım.” [L-NS 178]

“İnternet bağlantılarımla ilgili sorunlardan dolayı katılamadım.” [L-NS 180]

“Zaman ve İnternet bağlantı problemleri.” [L-NS 208]

Broken computer:

“Bilgisayarım bozulduğu için başlayamadım.” [L-NS 48]

“PC’im bozuk ve şu an yeni PC alamıyorum.” [L-NS 219]

Course Related General Issues:

Courses not qualified enough:

“Eğitimleri nitelikli bulmadım ve verilecek olan belgenin yeterli işlevsellikte olmadığı düşüncesine kapıldım.” [L-NS 69]

“Son derece amatörce ve genel halk kitlesine hitaben hazırlanmış bir eğitim sistemi. Orta ve üst seviye öğrencilere hitap etmediği için başlamadım.” [L-NS 109]

Simple course content:

“Ben kaydolduğumda zaten kendim bir şeyler öğrenmiştim. Ders içeriği basit ve sıkıcı geldi ama yeni başlayan biri için iyi hazırlanmış bir içerik.” [L-NS 118]

“Bu ders gördüğüm kadarıyla temel şeyleri kapsıyor. Fakat bu dersi bitirsem bile devamında takip edip kendimi geliştireceğim bir ders olmadığı için (sitede sadece python prg.-2 var) derse başlamadım. Nedenim: bir bütünün parçası olamaması. Yine de dersi kısa bir süre içinde tekrar gözden geçirmeyi düşünüyorum.” [L-NS 145]

Portal/Course Related Usability Issues:

Courses not fully mobile compatible:

“Telefonda eğitimi alamadım. Bilgisayar problemim var. Telefondan almaya çalıştım. Olmadı…” [L-NS 167]

“Telefon üzerinden dersi dinlemem ve ödevleri yapmam sıkıntı oluyor...” [L-NS 185]

Course videos not accessible due to work Internet filters:

“Çalıştığım okuldan ders videosuna erişemedim. Bu yüzden derse başlayamadım.” [L-NS 25]

MOOC Related Issues:

Registering for multiple courses and Queuing the courses:

“Bilgeİş Öğrenme Portali'da birçok ders aldım ve aldığım dersleri sıraya koyarak çalışmaya başladım. Zor İnsanlarla Baş Etme dersi benim ikinci hedefimdi. İlk dersim olan proje yönetimini bitirdim.” [L-NS 12]

“…Yaklaşık ilgi alanıma giren 20 derse kayıt oldum. Şu ana kadar yaklaşık 6 dersi tamamladım ve tamamlamaya (öğrenmeye) devam edeceğim.” [L-NS 161]

“Tüm derslere sırayla katılıyorum.” [L-NS 177]

“Başka dersler de aldığım için sıra ona gelmedi.” [L-NS 217]

Non-completers’ Reasons for Not Completing the pdMOOCs

Learner Related Time Issues:

Lack of time:

“Yeterli vaktim olmadı.” [L-NC 115]

“Çok temel seviyede başladığı için biraz sıkıldım. Sonra da vakit bulup tamamlayamadım.” [L-NC 119]

“Eğitimleri tamamlamak istiyorum ancak çok vaktim olmuyor.” [L-NC 124]

Lack of time due to work load/activities:

“KPSS sınavına hazırlanıyorun, aynı zamanda günde 12 saat özel sektörde çalışıyorum. Doğal olarak kursu tamamlayacak ne vakit, ne de kafa bulamıyorum...” [L-NC 131]

“Fazla zamanım yoktu. Çalışma saatlerim fazla olduğundan fazla vakit ayıramadım.” [L-NC 149]

Lack of time due to educational activities:

“Üniversite eğitimim sırasında vakit bulamadım.” [L-NC 134]

“Staj ve dgs sınavı durumlarından dolayı tamamlayamadım.” [L-NC 161]

“Yoğun ders programım, akademik kariyerim ve özel nedenlerden dolayı Görsel Tasarım İlkeleri dersini tamamlayamadım.” [L-NC 173]

Lack of time time due to daily activities:

“Çok arzu etmiştim ama o kadar yoğunum ki fırsatım olamadı.” [L-NC 20]

“Yoğun olduğum bir dönem olduğu için izlemeye fırsatım olmadı.” [L-NC 28]

“Dönemsel yoğunluktan dolayı unutmak ve öncelik kaybı denilebilir.” [L-NC 185]

Learner Related General Issues:

Forgetting that learner was taking the course:

“Öyle bir ders aldığımı hatırlamıyorum.” [L-NC 48]

“…bu kursu tamamen unuttum.” [L-NC 93]

“Böyle bir ders aldığımı unuttum.” [L-NC 144]

“Dönemsel yoğunluktan dolayı unutmak ve öncelik kaybı denilebilir.” [L-NC 185]

Insufficient knowledge on MOOCs:

“Derse katılım saatini hatırlayamadım.” [L-NC 6]

“…Dersin başladığına dair herhangi bir bilgi almadım.” [L-NC 72]

“Dersin başladığına dair bir uyarı emaili gelmedi.” [L-NC 132]

Health problems:

“Sağlık problemleri yüzünden.” [L-NC 161]

“…sağlık problemimden ötürü vakit ayıramadım.” [L-NC 171]

Perceived course content difficulty:

“Dersin bazı bölümlerini anlamadim...” [L-NC 83]

“Bu konuda sıfıra yakın bilgide olduğumdan ders ağır geldi, başka eğitim platformlarından ve youtube da bulunan eğitim videolarından takviye almayı düşündüm…” [L-NC 92]

Reviewing/Looking at the course:

“Python zaten biliyordum Sadece merak ettigim icin bakmak istedim.” [L-NC 39]

“Açılan derslerle ilgili içeriği merak ettiğim ve kısaca bir göz atmak için kaydolmuştum derse. Bu nedenle dersi tamamlama gibi bir amacım olmadı.” [L-NC 57]

Taking a break:

"Ara verdim. Şu anda başka bir sitede yapay zeka dersi alıyorum. O bittiğinde Python dersine devam edeceğim." [L-NC 103]

"Ders içeriklerinin zayıf olmasından dolayı ara verdim." [L-NC 138]

Taking other course(s) at the same time:

"Aynı zamanda başka eğitimler de alıyordum. Python eğitimine 8. aydan itibaren devam edeceğim." [L-NC 80]

"Benim dersleri yarım bırakmamda ise Bilgeİş sitesinin eksiklerinden ziyade kendi tembelliğim kendimi motive edememem zaman ayıramamam ve devam ettiğim diğer derslerimin olması." [L-NC 169]

Learner Related Technical Issues:

No access to Internet:

"İnternet erişimi olmayan bir yerdeyim." [L-NC 105]

"İnternet imkanım olmadığı için." [L-NC 106]

"İnternet bağlantımı kaybettiğim için." [L-NC 166]

Broken computer:

"Bilgisayarım bozuldu." [L-NC 75]

"Bilgisayarım arızalandı." [L-NC 110]

"Bilgisayarım virüs kaptı virüsü temizlemek ve bilgisayarı kullanır hale getirmek uzun sürdü bu arada başka işlere daldım." [L-NC 184]

Not being able to run the required program on one's computer:

"Programın doğru versiyonunu bilgisayarıma yüklememe rağmen çalıştıramadım. Yama falan gerekiyor dediler. Sizinle bir ilgisi yok…" [L-NC 77]

"Bilgisayarımda olan bi sıkıntı doğrultusunda programı yükleyemedim. Bi kaç kez denememe rağmen bilgisayarım buna izin vermedi." [L-NC 94]

Slow Internet connection:

"Bulunduğum konumdaki İnternet ağı yavaş ve başka bir imkanım olmadığı için yarım bırakmak zorunda kaldım." [L-NC 49]

Course Design Related Issues:

Navigational design of course video lectures:

"…Bir de tek tek sayfa geçmek eğitimi alırken çok sıkıcı. Çok sayfa olması beni caydırdı." [L-NC 38]

“Videoları ileri sarıp geçememe gibi bir problem vardı tam hatırlayamıyorum.” [L-NC 139]

“Ders videoları çok bölünüyor ve ilgiyi yeterince sabit tutamıyor.” [L-NC 158]

Course Content Related Issues:

Simple course content:

“Dersin içeriği çok basitti.” [L-NC 67]

“Çok temel seviyede başladığı için biraz sıkıldım.” [L-NC 119]

“Ders anlatımları basit ve yetersiz geldi. Youtube platformu üzerinde çok daha iyi konu anlatımına sahip kanallar bulunuyor. ODTÜ gibi bir kurumun böyle yavan ders vermesine şaşırdım.” [L-NC 164]

Portal/Course Related Usability Issues:

Portal/Courses not fully mobile device compatible:

“Videolar telefondan açılınca sıkıntılar çıkıyor bunun yanında benimde vaktim olmadığı için ilgilenemedim.” [L-NC 99]

“Ders mobilde olsa daha iyi olurdu.” [L-NC 101]

Course videos not accessible due to work Internet filters:

“Çok fazla teknik problem oldu. Ders içeriğine erişemedim sürekli yazdım. İlerleme pek olmadı. Sonra kızdım ve bıraktım. Umarım erişim sorununuz hallolmuştur.” [L-NC 7]

“Videoları açmakta güçlük çekiyorum. Okulda görev yaptığım için İnternet kalitesi çok yüksek değil.” [L-NC 9]

“…Ayrıca çalıştığım kurumun - ki kendisi MEB olur - İnternet hattından kurslara erişim sağlanamıyordu. Başka kaynaklara yönelmek zorunda kaldım.” [L-NC 79]

Inadequate portal interface design:

“Websitesinin tasarımı çok yetersiz.” [L-NC 43]

“Arayüz daha güzel yapılabilirdi.” [L-NC 101]

“Çünkü sitenin tasarımı … aşırı basitti.” [L-NC 139]

Complicated portal interface design:

“Websitesin tasarımı çok yetersiz, gerekli yönlendirmeler yapılmıyor ve çok karışık.” [L-NC 43]

“Çok karmaşık bir portaldı kullanamadım.” [L-NC 142]

MOOC Related Issues:

Registering for many courses:

"…Aynı anda sitenizden birçok eğitime kayıtlıyım (açgözlülük) ve Python gibi çoğu dersi henüz tamamlayamadım. Belli bir düzende kademe kademe ilerliyorum." [L-NC 92]

"Portal üzerinde aynı anda iki kursu devam ettirmeye çalışmamdan dolayı bu kursu tamamen unuttum." [L-NC 93]

Completers' Reasons for Completing the pdMOOCs

Wanting to learn a new topic:

"Bilgi edinerek gündelik hayatta kullanma isteği." [L-C 16]

"Kodlamaya giriş yapmak ve Python üzerinden ilerlemek için." [L-C 90]

"21. yy eğitiminin gerekliliği yeni teknolojileri öğrenmek ve öğrencilere rehberlik etmek için." [L-C 121]

"Veri Tabani üzerinde MS Access ile neler yapilabildigini kavrayabilmek amaciyla dersi tamamladım." [L-C 139]

"Günlük hayatta bu konuları öğrenmeye ihtiyaç duyduğumu hissettim." [L-C 142]

Solving/Dealing with daily life problems:

"Farketmeden zor insanların baskısın altında kaldığımı farkettim ve sonuna kadar eğitimi almak istedim." [L-C 17]

"Hayatimda stres çok fazla ve bazi insanlari anlamakta zorluk cekiyordum." [L-C 31]

"Günlük hayatta karşılaştığımız olaylar ve müsebbibi insanlar ile olan sorunları çözmek için" [L-C 54]

"Öğretmenlik bölümü mezunu olduğumdan toplumdaki insanlarla olumlu iletişim kurabilmek için." [L-C 73]

Solving/Dealing with work life problems:

"Çalışma hayatında karşılaştığım durumlar." [L-C 16]

"İş hayatımda iç ve dış müşteriler ile olan iletişim süreçlerinde yaşadığım deneyimler." [L-C 21]

"İş hayatı ve genel olarak hayatımızda karşılaşılan zor durumlara karşı hazırlıklı olmak, stresi yönetilebilir kılmak." [L-C 25]

"İş hayatinda her zaman zor insanlarla karşilaşma olasiliğiniz çok yüksek. Bu nedenle zor insanlarla baş etme stratejilerini öğrenmek istedim." [L-C 46]

Personal development:

“Hekimim. Çok farklı insanlarla muhatap oluyorum. Hem şiddetten korunabilmek hem de hastalarımla daha sağlıklı ilişki kurabilmek için tamamladım.” [L-C 6]

“İş ve özel hayatlarında, stres altında normalden daha agresif olan insan profilleri ile daha rahat diyaloglar kurup kendimi daha doğru ve etkili ifade edebilmek adına bu programa kayıt oldum ve tamamladım.” [L-C 27]

“Kendimi geliştirmek, veritabanı hakkında bilgimi arttırmak ve iş bulmak için.” [L-C 134]

Interest in the topic:

“Kod yazmayla ilgileniyorum ve sürekli kendimi geliştirmek istiyorum. En büyük faktör bu oldu.” [L-C 92]

“Yazılım ve kodlamaya ilgi duymam.” [L-C 101]

“Emekli olmadan önceki işimde veri tabanları ile alakalı büyük listelerle çalışıyordum. İlgimi çektiği için öğrenmek istedim.” [L-C 141]

Perceived usefulness of the course:

“Yönetici pozisyonundayım. İş arkadaşlarımla ilişkilerimde yararı olacağını düşündüm.” [L-C 13]

“Heryerde kullanılmaya uygun bir dil olduğu için tamamladım.” [L-C 110]

“Gelecekte ingilizcesi ve yazılım bilgisi olan kişilere ihtiyaç duyulacağı için.” [L-C 119]

Professional development:

“Kururumumun yapacağı unvan değişikliği sınavına hazırlanma olanağı buldum.” [L-C 84]

“…Araştırma görevlisi olduğum için programlamanın temelleri dersinde python işlenecek ve ben asiste edeceğim için bu dersi tamamladım.” [L-C 91]

“Ben bir öğretmenim. Dersin mesleki olarak kendimi geliştirmemde bana faydalı olacağını düşündüm.” [L-C 130]

Curiosity:

“Merak etme, zor insanlarla iletişim hakkında bilgi sahibi olma.” [L-C 28]

“Tamamen merak ve yeni bir şeyler öğrenme isteği. Kamuda sağlık sektöründe istatistik biriminde çalışıyorum...” [L-C 106]

To obtain a certificate:

“Ders günlük hayat ile bağlantılı olmasından dolayı hoşuma gitmişti, günümüz insan tiplerini dersleştirerek anlatması ve baş etme yöntemlerini anlatması bana artı katacağı için dersi bitirip sertifikamı almak istedim.” [L-C 29]

"Python'da ilerlemek ve sertifika sahibi olmak için." [L-C 95]

"Sertifika almak." [L-C 125]

The Reasons behind Intention-behavior Gap

The Reasons Behind Why Learners Achieved Less Than Intended

Learner Related Time Issues

Lack of time:

"Dersleri izlemek için vakit ayıramıyorum." [L 4-47]

"Sitenizde bulunan eğitim süreleri çok fazla gelmişti yeterli zamanı ayıramadım." [L 4-75]

Lack of time due to work load/activities:

"İşlerden ve yoğun stressten zaman ayıramıyorum." [L 4-46]

"Derslere başlamak için seçim yaptığım zamanlarda bolca boş vaktim vardı. Pekçok ders seçimi yaptım. Sonrasında çok zaman geçmeden bir işe girdim ve günde 12 saat çalışıyorum. Bana kalan zamanda da bu derslere vakit ayıramıyorum." [L 4-119]

Lack of time due to educational load/activities:

"Üniversite sınavına hazırlandığım için vakit ayıramıyorum." [L 4-18]

"Okul ve sınavlar dolayısıyla vakit bulamıyorum maalesef ama çok istiyorum." [L 4-48]

Lack of time time due to daily load/activities:

"…Küçük bir bebeğimiz olduğundan akşamları şu ana kadar fırsat bulamadım." [L 4-74]

"Hala yapmam gereken şeyler var. Her gün yoğunum." [L 4-89]

Learner Related General Issues

Forgetting that learner was taking the course:

"Açıkçası böyle bir programa kayıt yaptırdığımı unuttum." [L 4-38]

"Sadece yoğunluktan aklımdan çıkmış malesef. Siz hatırlattınız." [L 4-84]

"Yoğun bir yüksek lisans ve İngilizce kursu programlarına başladigim için vakit ayiramadım. Daha sonra üzerinden zaman geçti ve ben dersi aldığımı dahi unuttum. Bu mail bir nevi hatırlatma gibi oldu bana." [L 4-128]

Insufficient knowledge on MOOCs:

"Tüm etkinlikleri tamamladığım halde bana bir geri dönüş yapılmadı ödevler için. Bu sıkıntıların giderilmesini istiyorum. Tüm ödevleri yaptım ama ödevlerle ilgili bir sonuç alamadım." [L 4-14]

"Dersleri kaçırınca toparlayamadim. Vakit azlığı da etkili oldu ama devam etmek isterim." [L 4-52]

"Bilgilendirme almadığım ve ders saatlerini bilmedigim icin takip edemedim." [L 4-59]

Health problems:

"Rahatsız olduğum için derslere devam edemedim." [L 4-99]

"Çok ciddi bir rahatsızlığım var. Sağlık problemlerim engel teşkil etti." [L 4-114]

Private problems:

"Hem okul hayatımda hem de özel hayatda sıkıntılar yaşadığım için bu türlü etkinlik ve eğitime zaman ayırmadım." [L 4-26]

"Özel sebeplerden dolayı devam edemedim." [L 4-66]

No interest in certificate:

"Sertifka almanın önemli olmadığına karar verdim. Önemli olan öğrenmek." [L 4-50]

"Sertifika ile zaten ilgilenmediğime karar verdim." [L 1-20]

Taking a break:

"…Bir süre ara verdim dersleri tamamlamak için devam edicem." [L 1-28]

"TÜBİTAK Lise araştırma projeleri yarışmasına hazırladığım süreçte bilgeiş üzerinden öğrenmeye ara verdim." [L 4-42]

Learning enough without completing the course activities:

"Bana yardımcı olacak gerekli bilgiyi aldığımdan bütün konuların devamını takip etmem gerekmedi. Kendi kişisel gelişimim için gerekliydi…" [L 3-9]

Learner Related Technical Issues

Internet connection issues:

"Ev taşıma sonrası ufak bir İnternet bilgisayar uyuşmazlığı sorunum var." [L 4-6]

"Sürekli bir İnternet bağlantısına sahip olmadığından dolayı derslere devam edemiyorum. Sertifika almak istiyorum kararım yerinde duruyor." [L 4-43]

"İnternete erişim açısından çekilen sıkıntı nedeniyle tamamlayamadım." [L 4-44]

“Video izleyebilmek için yeterli İnternetim olmadığından dersleri tamamlayamadım.” [L 4-91]

Not being able to access the portal using work computer:

İşyerinde internetin sınırlı olması sebebiyle siteye girmekte zorlanıyordum. Evde ise derslerle ilgilenmedim.” [L 4-64]

“Hala tamamlamaya kararlıyım ancak iş yerindeki bilgisayarımız kısıtlı olduğundan iş yerinden erişmem mümkün olmadı…” [L 4-74]

Low computer features/specifications:

“Bilgisayarımda bazı ders videolarını izleyemedim.” [L 1-1]

“Python ile programlama öğrenmek istiyordum fakat bilgisayarımın özellikleri çok düşük olduğundan ve yeni bilgisayar alacak maddi gücüm olmadığından Python için indirdiğim derleyiciyi silmek zorunda kaldım aksi takdirde bilgisayarımda yapacağım diğer işleri gerçekleştiremiyordum.” [L 4-129]

Portal/Course Related Usability Issues

Not being able to access course content:

“Bağlı bulunduğum kurumda ilgili eğitim materyalleri açılmamakta olup bundan dolayı eğitimlerimi tamamlayamamaktayım.” [L 4-7]

Courses not fully mobile device compatible:

“Mobil olarak videoları rahat izleyemediğim ve bilgisayarda izlemek için gerekli zamanı bulamadığım için.” [L 4 -17]

MOOC Related Issues

Registering for multiple courses:

“Derslere başlamak için seçim yaptığım zamanlarda bolca boş vaktim vardı. Pekçok ders seçimi yaptım. Sonrasında çok zaman geçmeden bir işe girdim ve günde 12 saat çalışıyorum. Bana kalan zamanda da bu derslere vakit ayıramıyorum.” [L 4-119]

“Kararımı degistirmedim… Diger derslere de henüz baslamaya vaktim olmadı.” [L 4-98]

No physical course environment/context:

“Fiziksel bir ortam olmadığı için gerekli ciddiyeti sağlayamadım ders için. Mailiniz üzerine tekrar başlama kararı verdim.” [L 4-58]

The Reasons Behind Why Learners Achieved More Than Intended

Learner Related General Issues

Got motivated to learn:

“Dersi öğrenmek istedim…” [L 1-8]

“I wanted to learn the course …” [L 1-8]

“Zaman ayırıp ayıramayacağımdan emin değildim ama daha sonra dersi tamamlamak istedim…” [L 1-13]

“I was not sure whether I could spare enough time for the course, but later I wanted to complete the course.” [L 1-13]

Perceived the course useful:

“…Dersin bana faydalı olacağını düşündüm.” [L 1-8]

“…I thought that the course would be useful for me.” [L 1-8]

“Dersin faydalı olması yüzünden.” [L 1-16]

“Because the course was useful.” [L 1-16]

Personal development:

“Boş zamanlarımda kendimi geliştirmek ve zamanımı değerlendirmek istedim.” [L 1-25]

“I wanted to improve myself in my free times, and I wanted to make use of my time.” [L 1-25]

“Kendimi geliştirmek istedim.” [L 1-29]

“I wanted to improve myself.” [L 1-29]

Wanted to obtain a certificate:

“Elimde belge olmasının güzel olacağını düşündüm…” [L 1-29]

“I thought that it would be better to have a certificate in hand…” [L 1-29]

“Dersi yararlı buldum ve sertifika almayı istedim.” [L 1-34]

“I found the course useful, and I wanted to obtain a certificate.” [L 1-34]

Online Learning Readiness

Not Feeling Ready for Online Learning

Bias towards online learning:

“İlk kez sizin sayenizde ders aldım. Daha önce çevrim içi eğitimin (genel olarak) başarısı konusunda bazı önyargılarım vardı... I took lessons for the first time thanks to you. I previously had some biases about the success of online education (in general) ...” [L-C 33]

“Daha önce internetten eğitime çok mesafeliydim. Bilgeiş benim bu konudaki bütün düşüncelerimi değiştirdi…” [L-C 46]

“Dersi almadan önce online olarak ders almanın zor olduğuna inanıyordum bu yüzden de bu tür ders alımlarına sıcak bakmıyordum ancak bu dersten sonra daha ilgili ve daha hazır olabileceğime karar verdim.” [L-C 75]

“Açıkçası, bireysel olarak öğrenilen, bir eğitmenin olmadığı platformlarda (özellikle internet gibi kafa dağıtabilme potansiyelinin yüksek olduğu bir platformda) öğrenme konusunda çok ağır önyargılarım vardı. Onlar tamamen olmasa da, büyük kısmı gitti diyebilirim.” [L-C 92]

Needing presence of the instructor:

“Şöyle bir gerçek var ki örgün bir öğrenim herşeyin üstündedir. Çünkü sadece teorik bilgiyi değil hocaların deneyimlerini ve bir konu hakkındaki düşüncelerini öğrenebiliyoruz. Çevrim içi veya uzaktan öğrenimde öyle değil. Hocayla birebir iletişim halinde olmadığımız için bazı bilgiler ne kadar iyi anlatılırsa anlatılsın yerine oturmayabilir…” [L-C 34]

“Sosyal ilişki isteyen derslerde tecrübelerden yararlanmak için öğretmeni gerekli buluyorum…” [L-C 119]

“Açıkcası karşımda bana anlatan bir öğretmen ve sınıf olmadığı için dikkatimin dağılacağını düşünüyordum ve kendimi hazır hissetmiyordum…” [L-C 61]

Feeling Ready for Online Learning

Previous online learning experience:

“İlkokul yıllarımdan itibaren sertifika programı olarak olmasa dahi yazılım ve web tasarım gibi konularda her şeyimi internet üzerinden öğrenmiş birisi olarak buna fazlasıyla hazırdım.” [L-C 94]

“Ahmet Yesevi Üniversitesinden online eğitim aldığımdan deneyimim var.” [L-C 106]

“Daha önce de sanal platformlardan dersler aldığım için gayet hazır hissediyordum.” [L-C 108]

“Daha önce farklı platformlardan online kurslara katilmistim. O yuzden bir sorun olmadi.” [L-C 120]

Motivation for learning:

“…Kendim açısından soruyu değerlendirdiğimde ise ben kişisel gelişimimin büyük bir kısmını bilgisayar üzerinden tamamlamaktayım. Sebebi ise iş yoğunluğu nedeniyle örgün eğitimlere vakit ayıramamam. Alınan eğitimlerin olumlu sonuçlarını gördükçe insanlara tavsiye ediyorum.” [L-C 25]

“Karakter olarak öğrenmeye açık ve istekli oluşum nedeniyle derslerinizi hiç düşünmeden almaya karar verdim. Ayrıca geçmişte bir eğitmen olarak öğrencilerime öğrenmenin yaşı olmadığını her zaman söylerdim. Neden kendim için bunu yapmayım?” [L-C 26]

“Ben bişeyler öğrenmeye hep hazır olduğumdan İnternet üzerinden de öğrenmeye (çevrimiçi) olarak hazır idim.” [L-C 32]

“Genelde eğitimi tamamlama isteğim olmuyordu bu sistemde eğitimi tamamlama ödevleri hazırlama isteği üst seviyede idi keyif aldım.” [L-C 138]

Feeling ready after completing a course:

“Tam hazır değildim, pek bilgim yoktu. Dersi bitirmenin o konuda da faydası oldu.” [L-C 41]

“İnternet'te son derece geniş bilgilere ulaşma şansımızın olduğunu biliyordum. Ancak bu tür eğitimlerin daha disipline edilmiş ve öğretmeyi amaçlayan ve teşvik eden formatını görünce son derece memnun oldum. Daha rahat ve zamanı iyi değerlendirerek derse kendimi kaptırıyorum. Bu dersi aldıktan sonra, internet üzerinde özellikle sosyal medya alanında gereksiz zaman harcamayı da bıraktım ve kendimi daha hazır hissediyorum.” [L-C 45]

“İlk defa internet üzerinden eğitim aldım gayet keyifli bir deneyimdi...” [L-C 115]

Positive attitudes twowards online learning:

“İnternet üzerinden eğitim alma konusuna her zaman olumlu bir yaklaşımım oldu ve kendim için gerekli olacağını düşündüğüm konularda internet üzerinden eğitimler almaya devam etmeyi düşünüyorum.” [L-C 27]

“Kendi boş vakitlerimde böyle eğitici programları kendime yararlı buluyorum ve zamanımı kendim yönetiyorum.” [L-C 44]

“Çevrimiçi öğrenmeyi her zaman daha çok sevdim. Belli bir fiziksel alana ve zamana bağlı olmamak güzel.” [L-C 114]

Self-directed learning:

“…İnternetteki çoğu dersin öğretmene ihtiyaç duymayacağını düşündüğüm için dersleri almakta kendimi gayet hazır hissettim.” [L-C 119]

“Daha önce de İnternet üzerinden dersler aldım. Zamanı ve öğrenmeyi kendinize göre planlamak biz çalışanlar için kolaylık sağlıyor.” [L-C 121]

Working/studying in a related field:

“Bilgisayar alanında okuduğum için hazır hissediyordum.” [L-C 69]

“Uzaktan eğitim merkezinde uzun yıllar görev yaptığım için ve Moodle öğrenme yönetim sistemini daha önce kullandığım için kendimi her zaman teknolojik anlamda hazır hissediyordum…” [L-C 91]

“Bilgisayar öğretmeni olarak çalışıyorum.” [L-C 118]

Learner control:

“İnternet üzerinden öğrenmenin verimli bir metod olduğu düşüncesindeyim. Ayrıca dilediğiniz zaman süreci yönetme özgürlüğüne sahip olduğum için kendimi hazır hissediyordum.” [L-C 21]

“Öncelikle online olduğu için istediğim zaman durdurup mola verebiliyordum ve çok güzel bir şey okula gitmeden serfitika ayağıma dakikasında geliyor. Düşünsenize!” [L-C 36]

“Genelde internetten video izleyerek derslerime çalışıyorum anlamadığım veya kaçırdığım yeri geri alabiliyorum hazırdım böyle bir deneyime...” [L-C 116]

Course Satisfaction

The Areas Learners Satisfied with in the Course:

Course Design:

Well designed:

“Dersin kurgusu iyi yapılmış ve aktarılmış.” [L-C 45]

“Dersin her bakımdan gayet iyi tasarlanmış olduğuna inanıyorum…” [L-C 47]

“Guzel hazirlanmis bir dersti. Memnun olmadığım bir yön hatırlamıyorum.” [L-C 85]

Teaching methods/techniques:

“…BilgeİŞ Öğrenme Portalı online ders alımlarında kesinlikle yarar sağlayan bir portal. Kullanmak kesinlikle hoşuma gitti. Diğer online ders alımlarına göre dersin anlatılış şekli … memnun olduğum yönler oldu.” [L-C 75]

“Anlatım yöntemi … açısından memnun kaldım.” [L-C 98]

“Dersin işleniş şekli ve ödevlerden gayet memnunum...” [L-C 132]

Course length:

“Verilen ders hem süre hemde aktivite ve ödevler açısından uygundu ve benim ihtiyaclarımı karşıladı.” [L-C 137]

“Online olması ve videoların yeterli uzunlukta olup insanı sıkmaması beni memnun etti.” [L-C 62]

Free of charge:

“…Böyle bir dersi ücretsiz ve kaliteli olarak vermenizden de memnun kaldım.” [LC- 132]

“… Dersin ücretsiz olması ve dersi bitirince sertifika almak mutlu hissettiriyor.” [LC- 134]

"…Bu portal sayesinde kurslarda paralar harcayarak öğrenebilecek bilgileri İnternet üzerinden ücretsiz, hızlı, güvenilir, basit ve anlaşılır olarak öğreniyoruz. Bu yüzden memnun edici." [L-C 136]

Certificate:

"…Dersin sertifikalı oluşundan … memnun kaldım." [L-C 15]

"Bize böyle bir eğitim ve sonrasında sertifika olanağı sağladığınız için çok memnun kaldım." [L-C 139]

Self-paced:

"İstediğim zaman istediğim yerde eğitim aldığım için memnun kaldım." [L-C 122]

"Dersi istediğim zaman tamamlayabilecek olmam benim için iyi idi." [L-C 127]

"Kaldığımız yerden devam etmek ve zamanı kendimize göre ayarlayabilmek güzeldi." [L-C 134]

Course Components – Course Lectures:

Effective/Instructive:

"Konu anlatımı öğreticiydi." [L-C 4]

"Konu ıyi anlatılıyor." [L-C 7]

"Dersi izlemek … eğlenceli ve öğretici idi" [L-C 74]

"…Ders anlatımı esnasında yapılanlar bence etkiliydi." [L-C 135]

"…Konu anlatımları … yeterince etkiliydi. Ve bu durum dersi tamamlamak için beni teşvik etti." [L-C 136]

Clear:

"Anlaşılır bir konu anlatımı olmasından memnun kaldım." [L-C 60]

"Ders programlama öğrenmek isteyen biri için fazlasıyla uygundu. Dersin … konu anlatımı anlaşılır…" [L-C 82]

"Dersin kolay ve anlaşılır olması beni memnun ederken…" [L-C 95]

"Konu anlatımları anlaşılır…" [L-C 104]

"…anlaşılabilir basit (etkili) bir dil kullanılmış. Sıfır bilgiye sahip kişiler bile kolaylıkla öğrenebilir." [L-C 133]

Simple:

"…Hic programlama bilgisi olmayan kisiler dahi kolayca mantigini anlayabilecek duzeyde basit olarak islenmis konular." [L-C 88]

“Sertifika programları genellikle hiç bilmeyen insanları giriş seviyesine getirmeyi hedefliyor gibi, bundan memnun kaldım. Giriş seviyesinden orta seviyeye, ortadan da ileri seviyeye çıkaracak kurslar da bekliyoruz.” [L-C 94]

“Derslerin temel düzeyden başlanarak verilmesinden ve portalı kullanmaktan memnunum.” [L-C 136]

Concise:

“…Konu kısa ve öz şekilde işlenmişti. Hem yeterli bilgiyi verip hem de rahat bir ortam sunuyordu.” [L-C 62]

“… The topic was brief and concise. It provided both adequate information and a comfortable environment.” [L-C 62]

“Konu anlatımları özdü.” [L-C 96]

“Course lectures were concise.” [L-C 96]

“...Konu anlatımı öz ve açıklayıcı.” [L-C 126]

“… Course lectures were concise and explanatory.” [L-C 126]

Enriched with examples:

“Ders … örneklerle zenginleştirilmiş. Bu bakımdan memnun kaldım.” [L-C 32]

“Memnun kaldığım şeyler, dersin örneklerle desteklenmesi…” [L-C 34]

“Sıfırdan programlamaya başlayan birisi için gayet anlaşılır şekilde konu anlatımı ve hemen arkasından örneklerle desteklenmesi … memnun ediciydi.” [L-C 106]

Explanatory:

“Dersin anlatımı … açıklayıcı.” [L-C 17]

“Başlangıç için güzel tasarlanmış, açıklayıcı bir ders.” [L-C 90]

“Güzel ve açıklayıcı bir ders anlatımı mevcut. Memnun kaldım.” [L-C 121]

Fluent:

“Dersin .. akıcı olmasından memnun kaldım.” [L-C 15]

“Akıcı ve yönlendirici bir model ile konular aktarılmış. Oldukça başarılı bir yapıda.” [L-C 21]

“Dersten çok memnun kaldım, Anlatım akıcı ve düzgün…” [L-C 78]

“Kolay, basit anlatım, akıcı anlatım, rahat anlama kolaylıgı” [L-C 107]

Course Components – Course Exams:

Reinforcing learning:

"Sınavlar pekiştirici, bilgilendirici şekilde hazırlanmış…" [L-C 45]

"… Sınavlar konuya daha hakim olunmasını sağlamakta." [L-C 99]

"…sınav soruları öğretici…" [L-C 104]

Effective:

"Dersten çok memnun kaldım … sınavlar yerinde ve öğrenmemde etkiliydi." [L-C 92]

"…Sınav soruları öğretme açısından gayet başarılı." [L-C 33]

Enjoyable/Fun:

Learners found course exams enjoyable/fun. Learners expressed:

"…deneme sınavlarını yapmak eğlenceli ve öğretici idi." [L-C 74]

"Sınavlar … çok hoşuma gitti. Araştırmak öğrendiklerini uygulamak daha kalıcı olmasını sağılıyor." [L-C 130]

Course Components – Course Assignments (f= 28):

Reinforcing learning:

"… Verilen ödevler dersi daha iyi kavramama sebep verdi." [L-C 127]

"…ödevler dersi tekrar etme açısından faydalı ve gerekli." [L-C 45]

"…Dersin ödevleri öğrenmeyi geliştirici…" [L-C 82]

Effective:

"Ödevlerinden memnun kaldım, gayet öğretici ve pratiğe dayanan ve fazla zorlamayan eğlenceli ödevlerdi." [L-C 92]

"Konu anlatımları ve ödev içeriklerinin öğrenmemde etkili olmasından memnun kaldım." [L-C 135]

Receiving feedback after assignments:

"…ayrıca ödevler teslim edildikten sonra danışmanların ödev hakkında yorumlarda bulunarak ödevlere cevap vermesi memnun kalmama sebep olmuştur." [L-C 75]

"Ödevlerden geri bildirim almaktan memnun kaldım." [L-C 94]

"… ödev ve ödev kontrol sisteminden memnun kaldım." [L-C 108]

The Areas Learners Not Satisfied with in the Course:

Course Design:

Course length:

“Fakat sadece tek olumsuz eleştirim ders uzunluğu malesef kısa. Daha fazla örneklerle çeşitlendirilip uzatılabilir.” [L-C 91]

“... dersin uzunluğu … daha çok olabilirdi.” [L-C 134]

“…Ders daha uzun olsa idi kendi açımdan daha verimli olurdu.” [L-C 126]

“…Ders daha uzun olursa bizim için daha iyi olur.” [L-C 138]

Lack of support to ask questions instantly:

“…Memnun kalmadığım taraf ise; … anlamadığımız yerleri anlık sorabileceğimiz kimse yok.” [L-C 92]

“…anlamadığım bir konu olduğunda iletişime geçeceğim bir kimse yok bu beni biraz zorladı.” [L-C 102]

Technical requirements:

“Eğitimlerde bir programın belirli bir sürümünün kullanılma zorunluluğunun dayatılması beni memnun etmedi.” [L-C 95]

Course Components – Course Lectures:

Not detailed:

“Keşke daha uzun ve ayrıntılı olsaydı. Yine de çok şey öğrendim.” [L-C 6]

“Ders içerikleri genişletilebilir.” [L-C 13]

“…Bu derse gelince konu biraz daha uzun ve kapsamlı olabilirdi…” [L-C 25]

“Yeterli bilgi yoktu. Daha ayrıntılı olabilirdi.” [L-C 38]

“Çok fazla genel bir anlatım olmuş…” [L-C 66]

“Daha derine inilebilirdi.” [L-C 81]

“Konu anlatımları daha ayrıntılı olabilirdi. Başka yerlerden eksikliğini hissettiğim kısımlar hakkında bilgi aldım.” [L-C 97]

“Ders detayının arttırılması gerekir.” [L-C 103]

The number of examples:

“…örnekler çoğaltılarak kavramların daha net anlaşılması sağlanabilir.” [L-C 51]

“…the number of examples can be increased to provide a clear understanding of the concepts.” [L-C 51]

“Konu ile ilgili örnekler benim için yeterli değildi. Sanırım azda olsa konu hakkında bilgisi olan kişilere göre hazırlanmıştı. Benim hiçbir ön bilgim yoktu...” [L-C 126]

“Örnekler yetersiz. Daha bol ve açıklayıcı örneğe ihtiyaç var.” [L-C 140]

Shallow/Simple:

“Dersin genelini fazla basit buldum ilgim dağıldı.” [L-C 23]

“Konuları biraz daha derinlemesine inceleyebilir, detaya girebilirsiniz diye düşünüyorum. Biraz basit ve yüzeysel kalmış hissi uyandırdı bende.” [L-C 109]

“Cok basit anlatilmis biraz daha kapsamli bilgiler ve algoritmalar gosterilebilirdi.” [L-C 111]

“Anlatım içerikleri boş, çok basit. İçerikler daha kapsayıcı olabilirdi.” [L-C 113]

Lack of more documentation about the course content:

“…bu dersleri takviye edecek örnek olayları da içeren ek dokümantasyonlar daha faydalı olacaktır.” [L-C 25]

“…Memnun kalmadığım yanı yanı çok fazla örnek üzerinde durulmaması bu eğitime uygun en azından güvenilir bir ek kaynak eser sunularak kişisel gelişime destek olunabilir.” [L-C 64]

Very simple course examples:

“Verilen bilgilerden memnunum. Memnun olmadığım nokta ise örneklerin çok basit olması.” [L-C 16]

“…Bu dersler öğreticilik açısından faydalıydı sadece örneklerin fazla basit olması kendimi yeterince geliştirememe neden oldu. Daha zor örnekler derse eklenebilir.” [L-C 96]

Course Components – Course Exams:

Exam format:

“Bu derste elbette bir değerlendirme olması gerekiyordu sonunda sertifika olmasından dolayı yalnız test yerine daha pratik güncel hayat ile deneyim kazanabilme yada pratik yapabilme üstüne olsaydı daha verimli olacağını düşünüyorum.” [L-C 29]

“Keşke ders sınav ve ödevleri daha çok ve soru tipi açısından çeşitli olsa. Çok tekrar yapabilsek iyi olurdu.” [L-C 65]

The number of exams:

“Keşke ders sınav ve ödevleri daha çok ve soru tipi açısından çeşitli olsa. Çok tekrar yapabilsek iyi olurdu.” [L-C 65]

Easy (f=1):

Learners found course exams easy, and they were not satisfied with this. Learners expressed:

“…Sınavlar kolaydı. Biraz daha zorlaştırılabilir.” [L-C 70]

Course Components – Course Assignments:

The number of assignments:

"… Bu programda sertifika alabilmek için ödevleri zorunlu tutmak bence doğru değil. Meb bile kaldırdı ödevleri. Zaten ödevler yapılsa da yapılmasa da belirli bir seviyede kalıyor. Bunun yerine bolca sınav eklenebilir. Bir de online alıştırmalar ve sınavlar çoğalmalı." [L-C 90]

"Oldukça etkili ve memnun kaldığım bir eğitim oldu. Biraz daha Python diline aşina oldum. Daha fazla örnek ve ödevler olsaydı daha memnun olurdum." [L-C 93]

Delayed grading:

"…dersten geçip geçmediğimi aylar sonra öğrenmem beni gerçekten sinirlendirdi." [L-C 95]

"Derslerden genel anlamda memnundum lakin ödevlerim puanlandırılmadı ve sertifikamı alamadım. Bundan memnum değilim." [L-C 105]

"Ödevlerin zamanında değerlendirilmediğini düşünüyorum ve sertifikanın geç gelmesi benim memnun olmadığım kısımlardır." [L-C 135]

Long grading duration:

"… ödevlerin onaylanma süresi vakit alıyordu…" [L-C 94]

"Proje ödevleri kısmında bazı sıkıntılarım oldu. Mesela puanlama dönüşü uzun oldu…" [L-C 89]

"…Sisteme yüklenen ödevlerin değerlendirilme zamanını olumsuz buldum." [L-C 98]

Assignment description:

"…Ödevlerin ve projelerin nasıl hazırlanıp teslim edilecegini daha acik bi sekilde yazarsaniz ya da bir ornek gosterirseniz daha iyi olur diye düşünüyorum." [L-C 120]

Factors Affecting Learning

Positive Influencing Factors:

Course design related issues:

Self-paced learning:

"Evimde rahat zamanlarda istediğim vakitte dersi işleyebildim inanılmaz güzeldi." [L-C 35]

"İstediğimiz zaman çalışabilmemiz ve kendimize göre planlamamız olumlu faktörlerden." [L-C 121]

Course Lecture Related Issues:

Course content:

“Genel anlamda ders içeriği ve çalışma şekli öğrenmemde olumlu etki yaptı.” [L-C 44]

“Zor insanlarla baş edebilmeyi teorik olarak öğrenmek güzeldi.” [L-C 54]

“Bildiğimi zannettiğim bazı temel kavramların aslında ne olduğunu öğrenmek öğrenmemi olumlu etkiledi. Temel olarak güzel anlatılmış.” [L-C 114]

Clear course lectures:

“Konu anlatımlarının anlaşılır olması öğrenmemi olumlu etkiledi.” [L-C 60]

“Olumsuz etkileyen bir durum yok. Oldukça net ve açıklayıcı bir ders.” [L-C 93]

“Olumlu yönü dinleyeni sıkmadan Pyhton dersini keyifli öğretmesi. Derslerin akıcı ve çok anlaşılır olması.” [L-C 104]

Course examples:

“Verilen örnekler bana konuyu daha iyi anlamamda yardımcı oldu.” [L-C 57]

“Olumsuz yönde etkileyen bir şey olmadı, uygulamaya yönelik örnekleri faydalı buldum.” [L-C 138]

Use of daily life examples:

“Dersin, klasik ders anlatımı yerine hayatın içinden örneklerle desteklenmiş olması … öğrenmeyi pozitif etkileyen faktörler.” [L-C 25]

“… Farklı insan profilleri ile ilgili hazırlanmış telefon konuşması örneklerinin, konuları şekillendirip algılamamı pekiştirici etkisi olduğunu ifade etmek isterim.” [L-C 27]

Course lectures with videos:

“Videolar çok hoştu gerçekten olumlu katkı sağladı. Toplantı masasında kendim oturuyormuş gibi hissettim …” [L-C 29]

“Olumsuz herhangi bir düşüncem yok. Videolu anlatımlar … konuların akılda kalmasını pekiştiriyor.” [L-C 33]

Interactive:

“Dersin, klasik ders anlatımı yerine … interaktif olması … öğrenmeyi pozitif etkileyen faktörler.” [L-C 25]

“Profesyonel ve uzman kişiler tarafından çoklu ortam tasarımına uygun olarak geliştirilmiş etkileşimli içerikler olumlu yönde etkiledi...” [L-C 91]

Visual design/presentation of the course:

“Görsellerin iyi bir şekilde kullanılması dersi anlamamı sağlayan olumlu etkilerden biri oldu.” [L-C 40]

“The good use of the visuals was one of the positive effects that made me understand the course.” [L-C 40]

“Dersin görsel anlatımının öğrenmemde olumlu etkisi oldu …” [L-C 129]

“Visual presentation of the course had a positive effect on my learning…” [L-C 129]

Course Assignment and Exam Related Issues:

Having course assignments:

“…proje ödevi konuların akılda kalmasını pekiştiriyor.” [L-C 33]

“Ödevler gerçekten kişinin bilgisini geliştirir nitelikteydi.” [L-C 82]

“Olumlu yönleri uygulamali ve ödev sisteminin olmasiyla daha da öğretmeye açık olup olumsuz yani bulunmamaktadir.” [L-C 139]

Immediate feedback after exams:

“…Sinavlardaki geri bildirim sistemi, ödev ve sinavlar eğitimlerin ciddiyetini arttırıyor ve öğrenmemizi olumlu etkiliyor.” [L-C 46]

“Sınav geri dönütlerinin hemen olması güzel.” [L-C 130]

Learner Related General Issues:

Intrinsic motivation:

“…Bildiklerimi yenileme bilmediklerimi öğrenme şansı buldum.” [L-C 13]

“Öğrenmemi olumsuz etkileyen bir durum bulunmamakta, gireceğim sınava hazırlanmamda son derece istifade ettim.” [L-C 84]

“Bir şeyler öğrenip başarmak beni yeni öğrenmelere karşı güdülüyor.” [L-C 97]

“Verilen ders kapsamında beni teşvik edici ve ya itici bir durum yok. Derse tutunmak ve öğrenmek benim içimden gelen bir durum.” [L-C 119]

“Genelde eğitimi tamamlama isteğim olmuyordu bu sistemde eğitimi tamamlama ödevleri hazırlama isteği üst seviyede idi keyif aldım.” [L-C 138]

Positive learning experience:

“Olumsuz faktör yoktu. Öğrenme sürecim genel anlamda olumluydu.” [L-C 6]

“Ders tecrübem genel anlamda olumluydu.” [L-C 96]

Enjoying the course:

“…ders konu anlatımlarından gayet zevk aldım...” [L-C 92]

"Olumlu yönü dinleyeni sıkmadan Pyhton dersini keyifli öğretmesi…" [L-C 104]

"Kendim bir yerde kullanacak olduğum için severek yaptım ve öğrendim." [L-C 110]

Practising course examples:

"İnteraktif olması ve örnekleri denemem." [L-C 101]

"Örnekler benim için çok faydalı oldu. Orada kopyala yapıştır ile çok şey değiştirip kendime uygun bir çıktı alabiliyordum." [L-C 102]

"Programı indirip bilgisayara kurduğum için alıştırmaları aynı anda yapabiliyordum ve bu da öğrenmeme büyük katkı sağladı." [L-C 116]

Negative Influencing Factors:

Course Lecture Related Issues:

Simple/Shallow course content:

"Dersin fazla basit olması … öğrenmemi kötü etkiledi." [L-C 23]

"…Olumsuz etkileyen faktörler; dersler çok kısa yüzeyseldi…" [L-C 92]

"Ders tecrübem genel anlamda olumluydu fakat pratik olarak yani gerçek hayatta kullanıma yönelik bir uygulama yazabilmek istiyordum fakat bu tarz bir içerik ya da anlatım biçimine sahip değildi…" [L-C 96]

"Bir şey ogrenmedim. Kimseye bu anlatımlarla kazandıracağı bir şey yok." [L-C 113]

Short course length:

"Ders süresi ve örnekler arttırılmalı." [L-C 124]

"Dersin kısa anlatılması olumsuz. Daha bol ve açıklayıcı örnek daha iyi olur." [L-C 140]

Insufficient number of examples in the lecture:

"Örneklerin eksik olması öğrenmemi olumsuz etkiledi." [L-C 7]

"…Olumsuz yönü: daha çok ayrıntı ve örneğe gerek olması." [L-C 15]

"Örnekler iyi ama yeterli değil." [L-C 64]

Course Assignment Related Issues:

Insufficient assignment explanations:

"…Ayrıca derslere ilk girişte ve ödev çalışmaları konusunda daha belirleyici ve açıklayıcı olmayışınız olumsuz etkiledi." [L-C 26]

"Bazı noktalarda dersin sunumunu takip ederken anlatılan konulardan sonra verilen projeler ve ödevlerde istenenlerle konuları bağdaştırmakta zaman zaman zorluk çektim bu yüzden dersin örnekleri ve ödevleri konusunda daha açık olunması gerektiğini düşünüyorum…" [L-C 75]

"…Olumsuz etken olarak da ödevleri verebilirim bundan kastım ödevin nasıl hazirlanacağinin daha belirgin bir şekilde anlatılması." [L-C 120]

Insufficient feedback after assignments:

"…Ayrıca ödevlerden sonra verilen geri bildirimler kapsamlı ve yeterli değildi." [L-C 75]

"…Ödevlerden sonra geri bildirimler yetersiz. Neyi eksik ya da tam yaptığımı farkedemedim." [L-C 126]

Assignment grading duration:

"Ödevlerin değerlendirilme süresi öğrenmemi olumsuz etkiledi." [L-C 24]

Learner Related General Issues:

Technical Issues:

Technical problems on the course:

"Dersin bazen donması öğrenmemi olumsuz etkiledi diyebilirim." [L-C 42]

"Sometimes the freezing course lectures affected my learning negatively." [L-C 42]

"Sitenin yoğunluğunda kaynaklanan bazı teknik sorunlar olmuştu." [L-C 79]

"There had been some technical problems caused by the busy web traffic on the portal." [L-C 79]

Portal Usability

Portal Related General Issues:

Easy to use:

"Portal kesinlikle mükemmel dizayn edilmiş, basit ve kullanışlı arayüzü..." [L-C 92]

"Kullanımı gayet kolay diye düşünüyorum. Bu siteden birçok sertifika aldım." [L-C 97]

"Kullanımı her açıdan kolay." [L-C 104]

"Kullanımının çok kolay olduğunu düşünüyorum." [L-C 112]

Only very few learners mentioned that portal was moderately easy to use (f=2), and portal was difficult to use (f=1).

Well designed/Structured:

“Bu konuda hiçbir eksik olduğunu düşünmüyorum. Herşey gayet açıklayıcı ve basit. Bilgisayar kullanmayı bilmeyen ya da bilgisayarla arası iyi olmayan biri bile gayet rahat ve birine ihtiyaç duymadan kullanabilir.” [L-C 34]

“Kolaydı çünkü gerek tasarım gerek dil ve üslup gerek anlatıcı becerisi tam bir bütün oluşturmuş...” [L-C 36]

“Son derece yalın hazırlanmış bir portal. Hatta bir ara sizlerden bu derslerin videosunu istemeyi bile düşündüm…” [L-C 45]

“…Çok iyi tasarlanmış bir sistem ayrıca her dersin sonunda geçip kalmaya göre katılıma göre sertifika vermekte çok akıllıca. Benim için çok yararlı olduğunu düşünüyorum.” [L-C 62]

“Portal oldukca basarili aradigim ders iceriklerine kolayca ulasabiliyorum. Dersleri izlerken dikkatimi dagitacak gozu yoracak bir durum yok.” [L-C 88]

Easy to understand/comprehend:

“Portal herkesin anlayabileceği dilde kolayca hazırlanmıştı. Basit ve özensiz bir portal değildi bence.” [L-C 10]

“Arayüzü anlaşılabilir olduğu için kimsenin zorlanacağını zannetmiyorum.” [L-C 110]

“Portalin kullanımı ile ilgili hiçbir sıkıntı yok. Gayet pratik, anlaşılır.” [L-C 126]

“Gayet kolay. Portal kullanışlı ve anlaşılabilir.” [L-C 130]

Attractive/Appealing:

“Genel olarak güzel bir portal. Geliştirilebilir elbette.” [L-C 9]

“Gayet kolay ve güzel ama bazı dersler açılmakta zorlanıyor açılmıyor.” [L-C 28]

“Çok guzel ve rahat. Yabanci sitelerdeki ozel egitim programlari da aynen bu sekilde. Web sitesi tasarimi daha iyi yapilabilir ve gelistirilebilir. Ayrica egitim sayisinin kesinlikle artmasi gerekli ve e-posta yoluyla insanlari bilgilendirmenizi oneririm.” [L-C 128]

Useful:

“Kolay, açık ve anlaşılır, faydalı.” [L-C 63]

“Portal kullanışlı, arkadaşlarıma tavsiye ediyorum.” [L-C 76]

“Gayet kullanışlı bir sistem kurulmuş. Herhangi bir sıkıntı yaşamadım.” [L-C 96]

“Oldukça faydalı bir site olduğunu düşünüyorum.” [L-C 125]

In addition to finding the portal useful, learners also mentioned the perceived usefulness of the portal.

“Portal çok işime yaradı ve daha almayı düşündüğüm bir çok ders var … Benim için çok yararlı olduğunu düşünüyorum.” [L-C 62]

One learner also mentioned the need for guidance on the first login to the course as the portal did not provide any guidance on the first login.

Portal Interface Related Issues:

User friendly interface:

“Her yönüyle tamamen kolay ve basit bir arayüze sahip kullanışlı bir hizmet.” [L-C 73]

“Web arayüzü gayet kullanıcı dostu. Aşamaları göstermesi işi daha da etkili kılmış…” [L-C 91]

“Derse kayıt olma, ödevleri siteye yükleme, dersin sorumlu görevlisi ile iletişime geçme kanalları çok kolaydı... Bir de sertifikamı istediğim zaman tekrar indirebiliyorum.” [L-C 127]

“Genel itibariyle düzgün bir arayüz ve kullanıcıyı yormayan bir kullanıma sahip.” [L-C 133]

“Genel itibariyle kullanıcı dostu bir arayüz ve kullanıcıyı yormayan bir kullanıma sahip.” [L-C 133]

Complicated interface:

“Başta kavraması biraz karışık bir sayfa düzeniydi. Ancak biraz girince alışılıyor.” [L-C 77]

“Arayüzü kullanmak çok zor. Başka sisteme göre de karısık yanı İstanbuluzem’e.” [L-C 107]

Need for interface improvement:

“Genel olarak güzel olmakla birlikte arayüz biraz daha rahat anlaşılabilir seviyeye çıkartılabilir. Özellikle bir ders içinde bir konu bittiği zaman diğerine geçmek daha kolay hale getirilebilir.” [L-C 108]

“…Web sitesi tasarimi daha iyi yapilabilir ve gelistirilebilir…” [L-C 128]

Need for visual design improvement:

“Portalin kolay bir sistemi olduğunu düşünüyorum. Görsel ve grafikler geliştirilebilir. Seçilen fotoğraflar kurgu olduğu için çok yapmacik görünüyor. Daha iyi grafikler ve fotoğraflarla hatta video ve animasyonlarla zenginleşen eğitimler daha büyük etki yaratabilir.” [L-C 46]

“…Görselliği biraz daha geliştirilebilir.” [L-C 83]

Technical Issues:

Portal not fully mobile compatible:

“Tablet kullanırken çok zorlanıyorum. Ekranın bir kısmını göremiyorum. Bununla ilgili çalışma yapmanız hoşuma giderdi.” [L-C 51]

“…mobilden girdiğimizde zorlukla karşılaşılıyor. Örneğin menüler çok büyük gelebiliyor.” [L-C 91]

“Mobil sitenin etkileşim olarak zor olması.” [L-C 103]

Video lecture playing problems:

“…videoların açılmaması, geç açılması, bazı bölümleri atlaması motivasyonu düşürüyor. Derslere girmek için zamanınızı ayarlıyorsunuz. Fakat teknik problemler çıkıyor. Daha sonra zaman bulamıyorsunuz. Dersten soğuyorsunuz…” [L-C 13]

“…bazı dersler açılmakta zorlanıyor, açılmıyor.” [L-C 28]

Assignment upload problems:

“Bazı etkinlikleri yüklerken sorunlar yaşadım bunlar sistemseldi, onun dışında olumsuz bir şey yaşamadım…” [L-C 61]

“Ödev gönderimi … konusunda sorunlar yaşanabiliyor … eğitimin 2. bölümünde ödev gönderiminde problem yaşıyorum.” [L-C 121]

Perceived Benefits from Courses

Perceived Benefits Obtained from Soft Skill Courses

Knowledge Benefits:

Dealing with problematic people:

“Sorun yaratabilecek durumlardan daha kolay uzaklaşmayı öğrendim. Mesleğimde de günlük hayatımda kullanıyorum.” [L-C 7]

“İş yerimde zor insanlarla baş etmeye karşı daha bilgili oldum.” [L-C 18]

“Başlıktan da anladığımız üzere zor insanlarla baş etme konusunda bana katkıları bulundu. Bu bilgileri her insan hayatının her yerinde kullanabilir. Okul, işyeri, ev ve hatta sokakta bile.” [L-C 32]

“… bana faydaları ise insanlara ne şekilde yaklaşmam onlara nasıl bir tutum izlemem gerektiğini öğrendim.” [L-C 36]

About analyzing and understanding types of people:

“Zor insanların neden zorluk çıkardıklarını daha iyi anladım.” [L-C 1]

“İnsanları olduğu gibi kabul etmeyi, ve daha iyi analiz etmeyi öğrendim…” [L-C 13]

“Çalışma hayatında insanların davranış biçimlerini daha iyi anlamaya ve daha anlayışlı olmaya başladım diyebilirim.” [L-C 16]

About communicating with people:

“Yalnız dersin bana kattığı en önemli özellik daha doğrusu pekiştirdiği insanlar ile karşılaşınca iş, okul ve ya günlük hayatta olsun 1-2 dk insanları tartıp, karakter analizi yapmam gerektiği oldu.” [L-C 29]

“Günlük hayatımda insanların davranışlarını cozumleyerek onlarla daha iyi iletişim kurmaya çalışıyorum.” [L-C 38]

Personal Benefits:

Raised awareness about one's behavior:

“Kendi davranışlarımdaki sorunların farkına vardım.” [L-C 2]

“Bazen kendimizin de empati kuramadığını fark ettim.” [L-C 54]

Developed different perspectives:

“Farklı bakış açılarına sahip oldum. İnsanlarla konuşurken, tartışırken ani kararlar, ani konuşmalar yapmıyorum, düşünerek konuşuyorum ve ben diliyle konuşuyorum.” [L-C 34]

“Eğitim bakış acımı değiştirmede ve olaylara farklı yönden yaklaşma konusunda etkili oldu.” [L-C 50]

Obtained a certificate:

Obtaining a certificate was considered personal benefits by the learners. Two learners stated:

“İletişim kurmak benim için çok önemli ve bu ders bunu en zor koşullarda yapabildiğimi belgelemiş oldu.” [L-C 43]

“Sertifika almış olmam yararlı oldu, günlük yaşantımda ve okulda iletişinlerimde olumlu etkiler yarattı.” [L-C 60]

Being more patient:

“Artık daha çok sabırlıyım.” [L-C 12]

“Daha önceleri tepki verirken dersten sonra insanlara daha sabırla ve profesyonel yaklaşmamız konusunda fayda sağladı.” [L-C 14]

Showing more empathy:

“Daha fazla empati kurmaya başladım.” [L-C 26]

“Öncelikle sürekli ben dili kullanmaya başladım ve karşımdaki insanla daha çok empati kurmaya başladım.” [L-C 35]

Perceived Benefits Obtained from Technical Courses

Knowledge Benefits:

About programming using Python:

“Bu ders Python programlama dilinin temel bilgileri konusunda yardımcı oldu. Bu bilgileri Python eğitimimin devamında temel olarak kullanacağım.” [L-C 108]

“Python ile programlama hakkında bilgi sahibi oldum ve Python Programlama 2 dersine geçişimde yardımcı oldu...” [L-C 115]

About basics of coding/programming:

“Programlama ile ilgili temel bilgileri edindim.” [L-C 87]

“Bu dersteki bilgiler nihayetinde bir proje yapmak icin yetersiz. Fakat python syntax olarak dusunursek temeli guzel vermis. Temel programlama mantigini cok guzel vermis. Bundan sonra kisi kendini gelistirmeli…” [L-C 88]

“Bu ders Python programlama dilinin temel bilgileri konusunda yardımcı oldu. Bu bilgileri Python eğitimimin devamında temel olarak kullanacağım.” [L-C 108]

About basics of databases:

“Access ve veritabanı hakkında temel bilgiye sahip oldum ve ileride veritabanı ile ilgili daha rahat uğraş vermeme olanak sağladı.” [L-C 134]

“Veri tabanlarının hazırlanması ve kullanılması hakkında bir fikrim oldu. Şu an için kullanacağım ortam yoktur fakat ileride mutlaka olacaktır.” [L-C 141]

Personal Benefits:

Taking further courses on other platforms:

“Bilgeiş tarafından aldığım Python programlama derslerinden sonra Udemy tarafından Mustafa Murat Çoşkun hocamızdan Sıfırdan İleri Seviyeye Python 3 dersini almamda ki en büyük etken oldu.” [L-C 83]

“Bilgeişte başladığım programlamaya giriş ve Python derslerinden sonra kendimi geliştirmek için Python ile ilgili başka derslere yöneldim ve açıktan web tasarımı okumaya başladım.” [L-C 90]

Got familiar with programming:

“Python 1 dersinin bana ilk faydası farkındalık yaratmasıdır. Sadece duyduğum bir dildi fakat eğitimden sonra ne olduğunu ne olmadığını ne işe yarayabildiğini öğrendim. Araştırma görevlisi olduğum için programlama dilleri-1 dersi kapsamında öğrendiklerimi kullanacağım. Ayrıca öğrencilerime tavsiye edeceğim bu platformu.” [L-C 91]

“Programlamaya biraz daha aşina oldum. Uygulama ve küçük uygulamalar geliştirmek için kullanacağım. Tabi ilerde yapay zekaya kadar ilerlemek için çaba sarf ediyorum.” [L-C 93]

Obtained a certificate:

“Tek katkısı sertifika. Sanırım giriş dersi olduğu için pek fazla bir şey anlatılmadı. Phyton'a giriş gibi bir şeydi...” [L-C 92]

“Özgeçmişimde sertifika bölümünde gösterebiliyorum.” [L-C 125]

Increased knowledge of programming:

“Python dilinde kendimi geliştirmemi ve programlamaya olan ilgimin artmasını sağladı.” [L-C 82]

“Genel programlama bilgimi pekiştirmemi sağladı fakat ileri düzey örnekler ya da günlük hayatta kullanmak isteyebileceğim programların kodlaması ile ilgili içerik bulunmadığı için henüz kulanma fırsatım olmadı.” [L-C 96]

CURRICULUM VITAE

PERSONAL INFORMATION

Surname, Name: Çelik, Berkan
Nationality: Turkish (TC)
Date and Place of Birth: 24 February 1988, Zonguldak
Marital Status: Single
Phone: +90 506 561 08 37
email: berkancx@gmail.com

EDUCATION

Degree	Institution	Year of Graduation
MS	METU Comp. Edu. and Inst. Tech.	2014
BS	METU Comp. Edu. and Inst. Tech.	2011
AD	Kocaeli University, Computer Technologies and Programming	2007
High School	Gazi Anatolian Vocational High School, Ankara	2005

WORK EXPERIENCE

Year	Place	Enrollment
2012-Present	METU Comp. Edu. and Inst. Tech	Research Assistant
2011-2012	Van Yuzuncu Yil University Comp. Edu. and Inst. Tech	Research Assistant

FOREIGN LANGUAGES

Advanced English

PUBLICATIONS

1. Atas, A. H., & Çelik, B. (2019). Smartphone Use of University Students: Patterns, Purposes, and Situations. *Malaysian Online Journal of Educational Technology*, *7*(2), 59-70. doi: 10.17220/mojet.2019.02.004.

2. Aldemir, T., Celik, B., & Kaplan, G. (2018). A qualitative investigation of student perceptions of game elements in a gamified course. *Computers in Human Behavior*, *78*, 235-254. doi: 10.1016/j.chb.2017.10.001.

3. Aldemir, T., Ataş, A. H., & Celik, B. (2019). A systematic design model for gamified learning environments: GELD model. *Design, Motivation, and Frameworks in Game-Based Learning* (pp. 30-56). IGI Global.

4. Cagiltay, K., Esfer, S., & Celik, B. (2020). Insights into a nationwide pdMOOC portal: Bilgeis.net of Turkey. *MOOCs and Open Education in the Global South: Challenges, Successes, and Opportunities*. Routledge.

5. Cagiltay, N. E., Cagiltay, K., & Celik, B. (2020). An analysis of course characteristics, learner characteristics, and certification rates in MITx MOOCs. *The International Review of Research in Open and Distributed Learning*, *21*(3), 121-139. doi: 10.19173/irrodl.v21i3.4698.

HOBBIES

Travelling, Volleyball, Languages